

**Evaluation Report  
Assessing the Effectiveness of  
Academic and Behavioral Improvements  
among Various Groups of Students Attending  
“Hardy Brain Camp: Wordquest” Program At  
Boys & Girls Clubs of Greater Oxnard and  
Port Hueneme**



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# Table of Contents

|   |           |
|---|-----------|
| <b>Acknowledgements .....</b>   | <b>2</b>  |
| <b>Executive Summary .....</b>  | <b>4</b>  |
| <b>1) Introduction:.....</b>  | <b>8</b>  |
| <b>2) Description of Current Study and Various Components of the Evaluation .....</b> | <b>11</b> |
| <b>3) Report of the Findings .....</b>  | <b>14</b> |
| <b>3.1) Improvement Reported by the Staff.....</b>                                    | <b>14</b> |
| <b>3.2) Improvement in TOSWRF .....</b>   | <b>15</b> |
| 3.2.1) TOSWRF for Rio Plaza.....  | 15        |
| 3.2.2) TOSWRF for Rio Real .....  | 17        |
| <b>3.3) Improvement in Processing Speed .....</b>                                     | <b>22</b> |
| 3.3.1) Improvement in Processing Speed for Rio Plaza .....                            | 22        |
| 3.3.2) Improvement in Processing Speed for Rio Real.....                              | 24        |
| <b>4) Overall Findings and Conclusion .....</b>                                       | <b>28</b> |
| <b>APPENDIX A.....</b>  | <b>33</b> |

## Executive Summary

Children struggle in school for many reasons. Slow and/or weak thinking/processing skills cause much of the problems they face. As a consequence it is challenging to complete schoolwork, pay attention, read, and do math. Often, these students receive tutoring or extra help for these visible symptoms - but not for the underlying weak processing/thinking skills that create these problems. When children face such problems they can get frustrated, lose their attention and interest in school and this may push them to misbehave. This creates a vicious cycle and may cause them to fail and lose the golden opportunity of learning at school and becoming successful in their lives as they grow up to adulthood.

The field of Learning Disability (LD) was founded on the assumption that neurobiological factors are the basis of these disabilities. As the field progressed, definitions of LD continued to attribute disabilities in learning to intrinsic (neurobiological) rather than extrinsic (for example, environmental or instructional) causes, even though there was initially no objective way to assess the presence of recognized brain dysfunction.

New scientific studies proved that a large number of children need support in a timely manner to overcome their existing biological and neurological impediments to learning. It became clear that failure to act in the early years of a child's development may create an irreversible condition. The importance of a timely intervention became more obvious in the minds of parents, community leaders and policy makers.

Hardy Brain Camp program provides educational opportunities through its innovative approach and special curriculum to strengthen the core foundation of the brain and create successful learning outcomes. It employs a multisensory method combining visual, auditory, kinesthetic, and cognitive experiences with a timed beat to increase a child's capacity for learning. As a result, children gain a functional, efficient way to process information, and are able to learn and complete their schoolwork much faster. This is a

unique program and there is nothing similar to it in the existing educational market and environment.

This report presents the findings from sessions, which were completed in over three months from September 9<sup>th</sup> to December 18<sup>th</sup> of 2013. Club members completed 20 sessions. The intervention was designed to improve reading and processing speed using a cognitive reading program presented in a multisensory lesson plan.

All together some 147 students enrolled in the program. Some 114 of them received their training at Rio Real and the remaining 33 were trained at Rio Plaza. Out of the two groups 143 completed their training successfully, which shows a completion rate of 97.3%.

This evaluation provides detailed information and analyses that became available through staff rating and test/evaluation results of various components of the training program. In brief the success of the program is reviewed through three pieces of evaluations as described below:

- Evaluation of staff on how children progressed during the course of the program. The following five areas were evaluated by the staff:
  - Ability to pay attention and focus
  - Ability to complete work independently
  - Ability to follow instructions/directions
  - Ability to read with less frustration
  - Self-confidence, Self-esteem

The findings show that students showed improvement in all five areas measured by Likert Scale of 1 to 5 (1= very low, 3 =average, 5 =excellent/high). The rate of improvements showed an increase of 23% to more than 31% in these areas.

- TOSWRF was employed for measuring of word identification and speed (i.e. reading fluency), word comprehension, and general reading ability.. Form A was used

for pre-testing and Form B for the post-test. The outcome presented an outstanding level of success for almost every child who participated in the training. The p value computed for all such changes showed that improvements were not due to chance.

- Processing Speed was measured using Woodcock Johnson 3rd Edition Tests of Cognitive Abilities Visual Matching 2 and Decision Speed tests. Processing speed is the speed at which someone can take in information, make sense of it, formulate a response, and output the response. Once again the result in almost every case proved that improvements occurred. The zero value of p value proved that changes were not due to chance.

Details of data and analyses of the report can be seen in the text of this report. The outcome of the surveys/evaluations and basic data are presented in Appendix A.

Based on the information gathered from pre/post assessment of the children who went through the training the following outcomes have been achieved and documented.

Summary of Findings from Staff Assessment:

- Ability to read with less frustration increased 26.8%
- Ability to follow instructions/directions improved 23.3%
- Ability to pay attention and focus improved 25.2%
- Ability to complete work independently improved 23.7%
- Self-confidence and self-esteem increased 31.1%

**Findings from information gathered from TOSWRF and Processing Speed (Woodcock Johnson 3rd Edition Tests) present the following results:**

**Mean Value of Length of Improvement Measured in Years/Months of Advancement**

| <b>Location and Grade</b> | <b>TOSWRF</b> | <b>Improvement</b>       | <b>Processing Speed</b> | <b>Improvement</b>              | <b>Statistical Significance</b>                      |
|---------------------------|---------------|--------------------------|-------------------------|---------------------------------|--|
| Plaza                     | 0.70          | Over 7 months            | 1.03                    | Over one year                   | Significant  |
| Real Grade 2              | 1.50          | One year and five months | 1.45                    | One year and four & half months | Significant  |
| Real Grade 3              | 0.98          | About a year             | 1.26                    | One year and two & half months  | Significant  |
| Real Grade 4              | 0.91          | About a year             | 1.30                    | One year and three months       | Significant  |
| Real Grade 5              | 1.08          | More than a year         | 1.65                    | One year and Six & half months  | Significant  |
| Real Grade 6              | 1.07          | More than a year         | 0.94                    | About a year                    | TOSWRF not significant, Processing Speed significant |
| All Locations and Grades  | 1.06          | More than a year         | 1.30                    | One year and three months       | Significant  |

In summary, the findings from the information gathered show that word identification and speed (i.e. reading fluency), word comprehension, and general reading ability **improved by more than a year** while the improvement in processing speed showed an **improvement of one year and three months**.

## 1) Introduction:

Learning disorders and disabilities include a variety of learning problems. Despite a misunderstood notion among many, such problems are not functions of intelligence or effort among the learners. In fact, most are just as smart as everyone else. Their brains are simply wired differently. This difference affects how they receive and process information. Simply put, children and adults with learning disabilities see, hear, and understand things differently. This can lead to trouble with learning new information and skills, and putting them to use. The most common types of learning disabilities involve problems with reading, writing, math, reasoning, listening, and speaking. <sup>1</sup>

Children struggle in school for many reasons. The most important is slow thinking/processing skills. Students with thinking/processing weaknesses have problems completing schoolwork, paying attention, reading, and doing math. Often, these students receive tutoring or extra help for these visible symptoms - but not for the underlying weak processing/thinking skills that creates these problems. When children face such problems they can get frustrated, lose their attention and interest in school and this may push them to misbehave.

A learning disability (LD) is usually defined as unexpected underachievement—specifically, students who do not listen, speak, read, write, or develop mathematics skills commensurate with their potential, even though there has been adequate opportunity to learn. Historically, unexpected underachievement has been attributed to intrinsic neurobiological factors that indicate that students with LD will require specialized instruction to achieve at expected levels based upon some index of aptitude, usually an IQ test score. The concept of unexpected underachievement has been reported in medical and psychological literature since the mid-19th century under the rubrics of dyslexia, word blindness, dysgraphia, dyscalculia, and other terms. However, it has only been since 1962, when Samuel Kirk, a psychologist at the University of Illinois, coined the term

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<sup>1</sup> For more information see Helpguide.org, 2016 <http://www.helpguide.org/articles/learning-disabilities/learning-disabilities-and-disorders.htm>



learning disabilities, that the concept of unexpected underachievement attained formal recognition in the education community.

The concept of learning disabilities and the need for different specialized educational services also made intuitive sense to parents, teachers, and policymakers. The term did not stigmatize children. Specifically, the learning difficulties displayed by youngsters with LD were not due to mental retardation, poor parenting, or psychopathology. The term likewise reflected optimism. Students with LD had not yet reached their potential: their difficulties in learning to read, write, and/or calculate occurred despite adequate intelligence, sensory integrity, healthy emotional development, and cultural and environmental advantage. Education programs were needed that recognized differences among children with LD, those who learned “normally,” and those who manifested physical, sensory, and intellectual handicaps that affected academic achievement.

The field of LD was founded on the assumption that neurobiological factors are the basis of these disabilities. As the field progressed, definitions of LD continued to attribute disabilities in learning to intrinsic (neurobiological) rather than extrinsic (for example, environmental or instructional) causes, even though there was initially no objective way to assess the presence of recognized brain dysfunction.

New scientific studies proved that a large number of children need support in a timely manner to overcome their existing biological and neurological impediments to learning. It became clear that failure to act in the early years of a child’s development may create an irreversible condition. The importance of a timely intervention became more obvious in the minds of parents, community leaders and policy makers.

Hardy Brain Camp program provides educational opportunities through its innovative approach and special curriculum to strengthen the core foundation of the brain and create successful learning outcomes. It employs a multisensory method combining visual, auditory, kinesthetic, and cognitive experiences with a timed beat to increase a child’s capacity for learning. As a result, children gain a functional, efficient way to process information, and are able to learn and complete their schoolwork much faster. This is a

unique program and there is nothing similar to it in the existing educational market and environment.

Over the years this program has helped hundreds of children who have been attending Boys & Girls Clubs. The results are extraordinary and they have been presented through several reports, including the present one. The training is effective and spans 15.75 hours. It allows the club members to gain a level of success and growth in hours, rather than months of academic preparation and hard work. Hardy programs employ choreographed movement, balls, and a timed beat to teach reading, spelling, and math.

Sherrie Hardy comes with an impeccable background as an elementary school teacher beginning in 1972. She is extremely familiar with the challenges of young children and their struggle in facing learning difficulties. Inspired by the urge to make a difference, she devoted her career to helping children who faced insurmountable obstacles to fit into the school system. Sherrie Hardy earned a Master's in Child and Family Therapy, taught in public and private schools, and ran motor-skills development labs.

Her experience as an educator enabled her to establish Hardy Brain Training Clinic, Hardy Academy, and Hardy Foundation, a 501(c) 3 not-for-profit corporation in 2003. The corporation since its establishment devoted all its efforts to addressing the needs of children with severe learning deficits.

Hardy's 40 years of experience in teaching, and counseling with a focus on helping children with special needs allowed her to reach a remarkable level of success. With the expertise of research teams at California Lutheran University and University of Santa Barbara she has created some evidence based intensive programs to improve the way that brain learns. Through the help of her programs thousands of students were helped across the nation and around the world. These students have shown tremendous growth in their classroom performance and remarkable level of success in the standardized tests, such as the California Star Test.

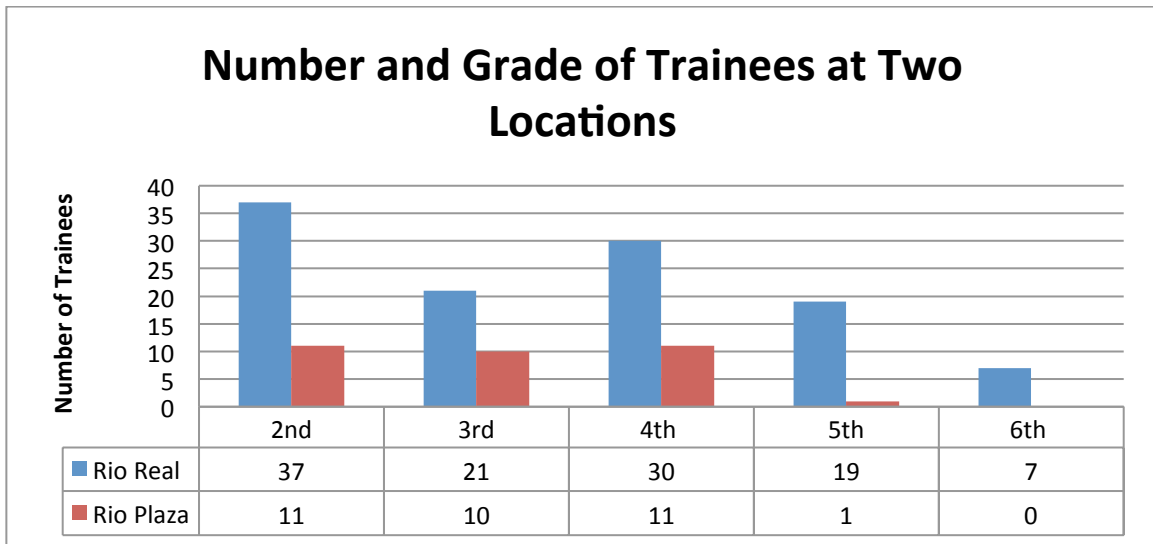
Jeff Henley, a member of the National Board of the Boys & Girls Clubs of America in 2009 witnessed the success of the program and considered it as a unique opportunity to extend the help to a larger group of children. Jeff Henley and Sherrie Hardy applied these programs to the Boys & Girls Clubs with the objective of bringing a rapid pace of improvement in the ability of children to read, learn, pay attention, and become successful in schools.

Wordquest and Mathquest are the newest programs that are used to guide children through choreographed movements and use the visual, auditory, kinesthetic, and cognitive areas of the brain simultaneously. The existing research has shown enormous improvements in reading/math and processing speed.

## **2) Description of Current Study and Various Components of the Evaluation**

This report presents the findings from Wordquest sessions, which were completed in over three months from September 9<sup>th</sup> to December 18<sup>th</sup> of 2013. Club members completed 20 sessions. The intervention was designed to improve reading and processing speed using a cognitive reading program presented in a multisensory lesson plan.

The groups of children came from various grades, from grade two to grade six, from the Boys and Girls Clubs of Oxnard and Port Hueneme at Rio Plaza and Rio Real. The breakdown can be seen in the following charts:

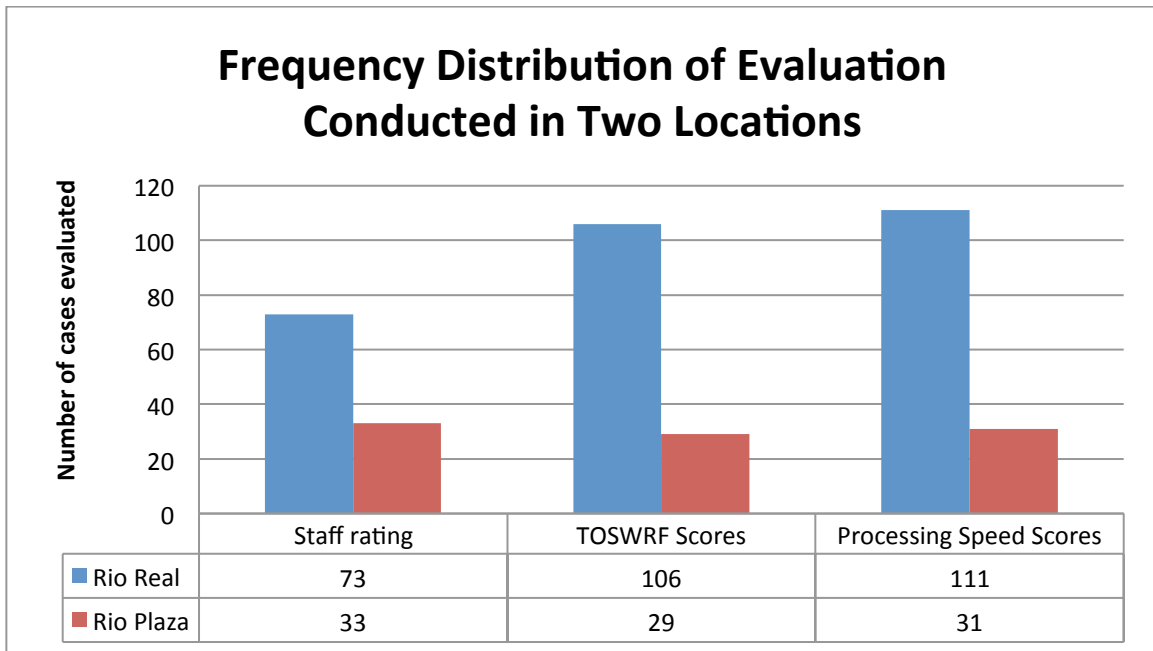


**Source: Hardy Brain Camp**

All together some 147 students enrolled in the program: 114 of them received their training at Rio Real and the remaining 33 were trained at Rio Plaza. Out of the two groups 143 completed their training successfully, which shows a completion rate of 97.3%. The rates of completion in both locations were high. 31 out of 33 who attended Rio Plaza and 112 out 114 who attended the trainings at Rio Real completed their respective program.

This evaluation provides detailed information and analyses that became available through staff rating and test/evaluation results of various components of the training program.

This can be seen in the following chart:



**Source: Hardy Brain Camp**

All three pieces of the evaluation were carried out with regard to the overwhelming majority of the participants and therefore enjoy a high rate of reliability.

Staff used the following scale to conduct their evaluation in relevant areas. A Likert Scale of one to five (1= very low, 3 =average, 5 =excellent/high.)

- Ability to pay attention and focus
- Ability to complete work independently
- Ability to follow instructions/directions
- Ability to read with less frustration
- Self-confidence, Self-esteem

TOSWRF is described in its manual as the primarily measuring of word identification and speed (i.e. reading fluency), word comprehension, and general reading ability. Form A was used for pre-testing and Form B for the post-test.

Processing Speed was measured using Woodcock Johnson 3rd Edition Tests of Cognitive Abilities Visual Matching 2 and Decision Speed tests. Processing speed is the speed at which someone can take in information, make sense of it, formulate a response, and output the response.

The Wordquest program takes club members through a fairy tale adventure. This program uses a combination of visual, auditory, kinesthetic, and cognitive components set to a timed beat with choreographed lessons on a dance mat. The movement session is followed up with a lesson that can be accessed on tablet, desktop or laptop computers. The program is designed for grades 1 to 6 as well as older students who need remedial instruction. Participants learn 315 important sight and patterned words in 15.75 hours of training, which are divided into 21 sessions.

### 3) Report of the Findings

In this section of the report we present the findings for various components of the evaluation. A comprehensive account of the basic data with detailed information is also given in the appendix of the report.

#### 3.1) Improvement Reported by the Staff

The following table presents the breakdown of the scores given by the staff and the overall rate of improvement for various grades. The breakdown can be seen in the following charts:

| <b>Oxnard: Real &amp; Plaza Staff Ratings Total 106/136 kids</b> |                      |                             |                                 |                |  |                             |
|--|----------------------|-----------------------------|---------------------------------|----------------|--|-----------------------------|
| # of kids  | Group                | Reduced Reading Frustration | Improved Following Instructions | Improved Focus | Improved Ability to Work Independently | Self-Confidence/Self-Esteem |
| 19   | Real Group 5         | 575                         | 675                             | 600            | 575                                    | 750                         |
| 22   | Rea Group 4          | 250                         | 300                             | 350            | 400                                    | 350                         |
| 18   | Real Group 3         | 350                         | 100                             | 500            | 300                                    | 400                         |
| 14   | Real Group 2         | 300                         | 200                             | 300            | 150                                    | 300                         |
| 33   | Plaza                | 1375                        | 1200                            | 925            | 1100                                   | 1500                        |
| <b>Total</b>   | <b>106 kids</b>      | <b>2850</b>                 | <b>2475</b>                     | <b>2675</b>    | <b>2525</b>                            | <b>3300</b>                 |
|  | <b>% Improvement</b> | <b>26.80%</b>               | <b>23.30%</b>                   | <b>25.20%</b>  | <b>23.70%</b>                          | <b>31.10%</b>               |

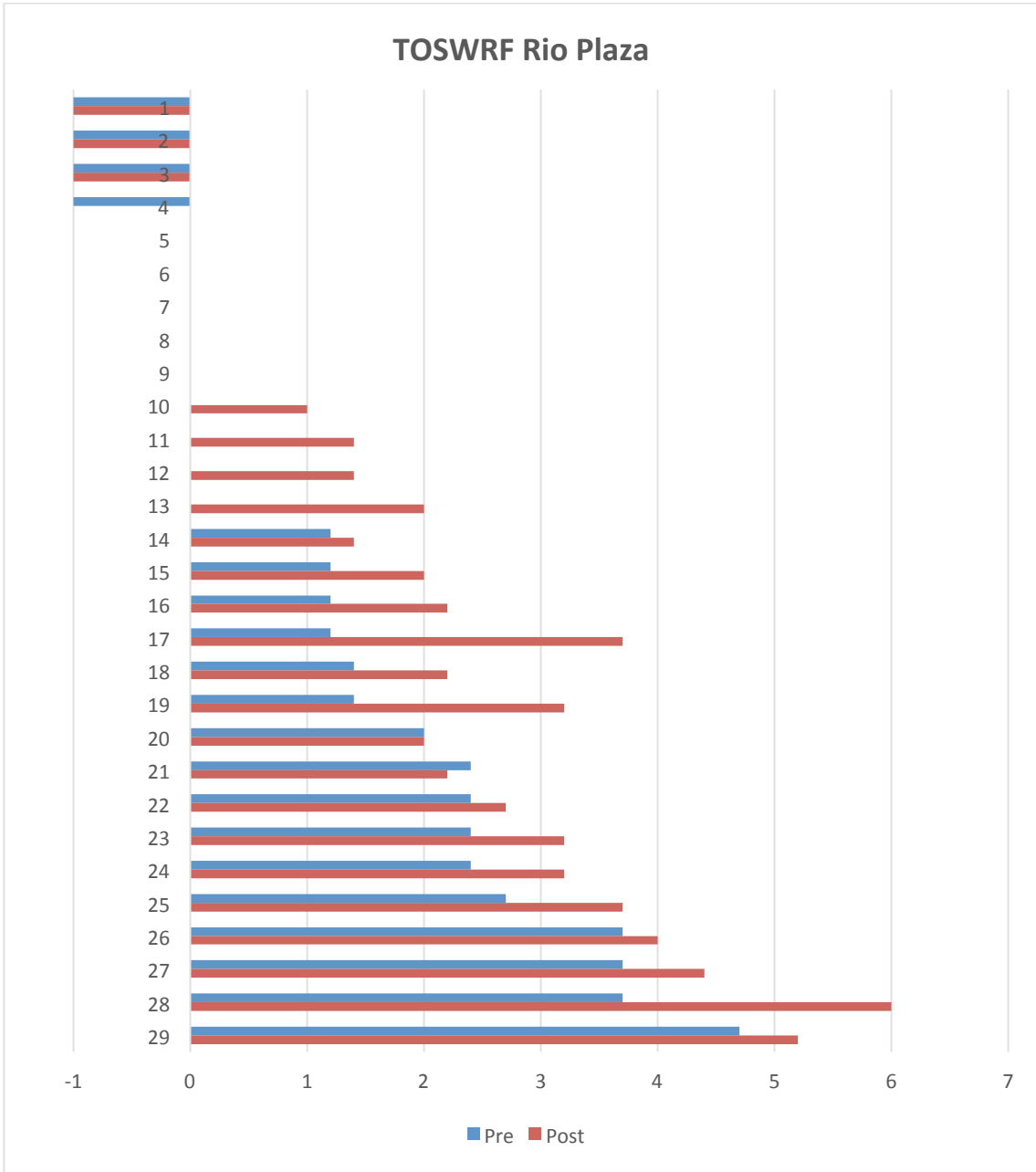
**Source: Hardy Brain Camp**

The above table presents an impressive rate of improvement in all levels at the two locations. The rates of improvements vary from 23% to more than 31%.

## **3.2) Improvement in TOSWRF**

The findings will be given for the Rio Plaza as a whole, while they will be broken down by various groups (grades) for Rio Real. The breakdown of the data does not underreport the findings and the last segment of the report presents an overall account of the changes in a combined format where the data from all locations and grades are pooled together.

### **3.2.1) TOSWRF for Rio Plaza**



Source: Processed from results of pre and post evaluation<sup>2</sup>

**P-value 0.00003      Average Improvement: 0.703448276 (Over seven months)**

The above chart shows consistent improvements for which pre and post data were reported. The values of the p-values and ratios indicate the probability that the difference that we observe is likely to be due to chance. A P-value being close to zero or at zero

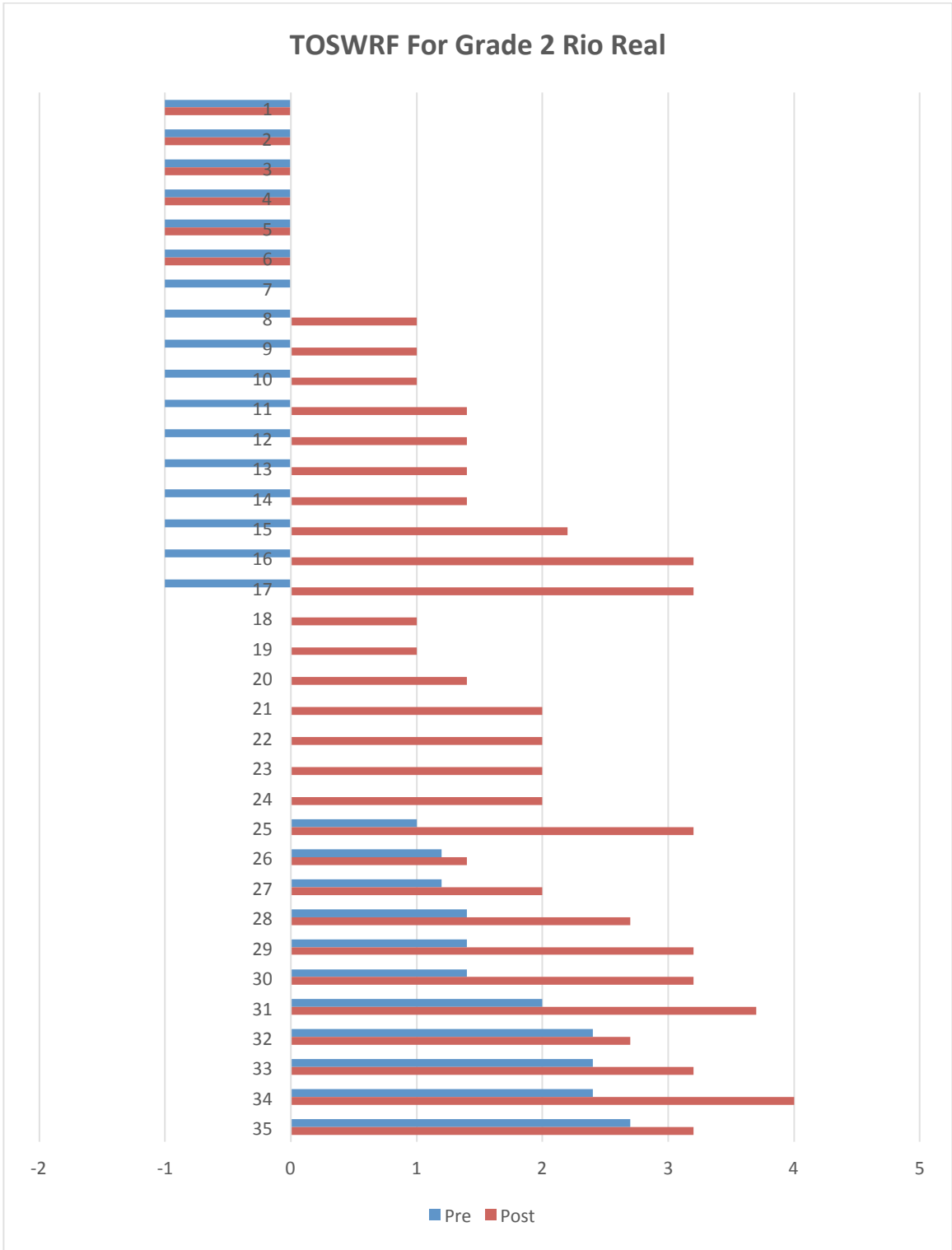
<sup>2</sup> It is important to know that we started with -1 as the value for lowest measure of reading fluency. We also assigned value of zero as the value for K level.



means that it is unlikely for the change to have occurred by chance, and being further away from zero and closer to one means that it is more likely to be due to chance and a random occurrence than a certainty. The P value resulting from our statistical analysis shows that the difference in the pre and post is unlikely to have occurred by chance.

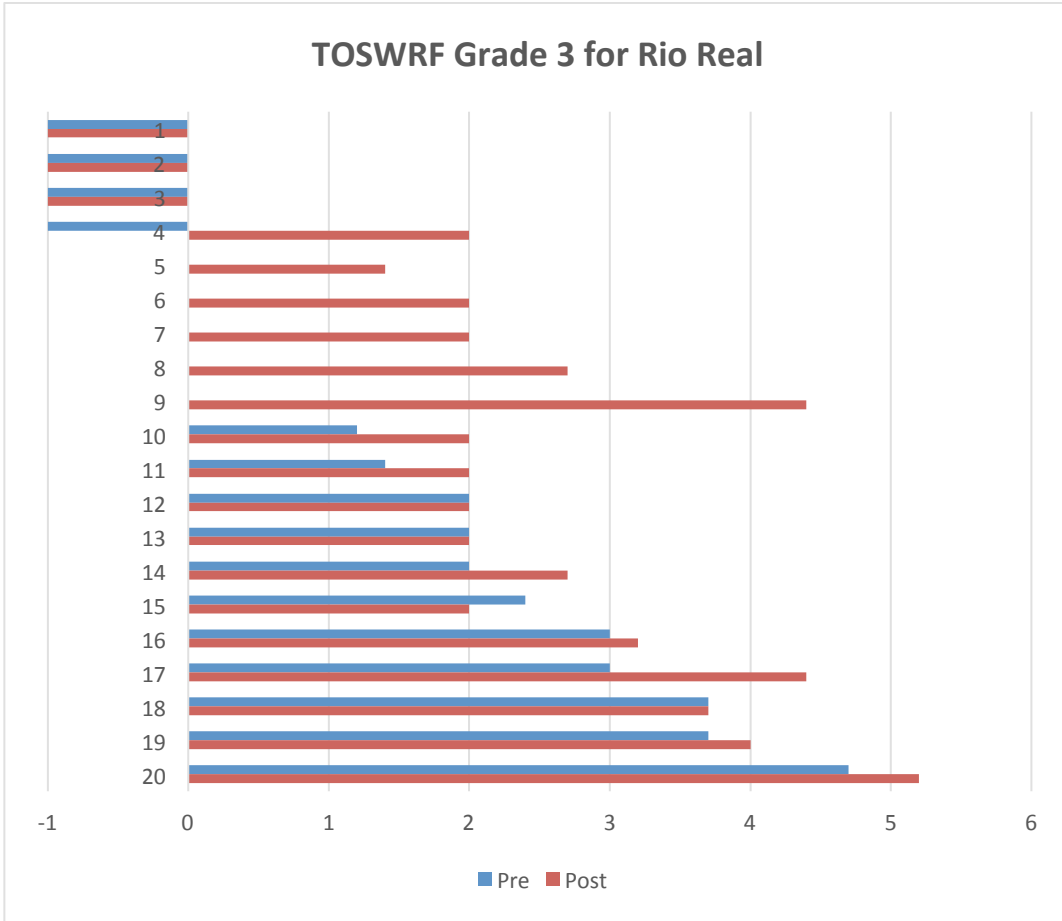
### **3.2.2) TOSWRF for Rio Real**

The following charts show findings from various groups (grades) at Rio Real.



**Source: Processed from results of pre and post evaluation**

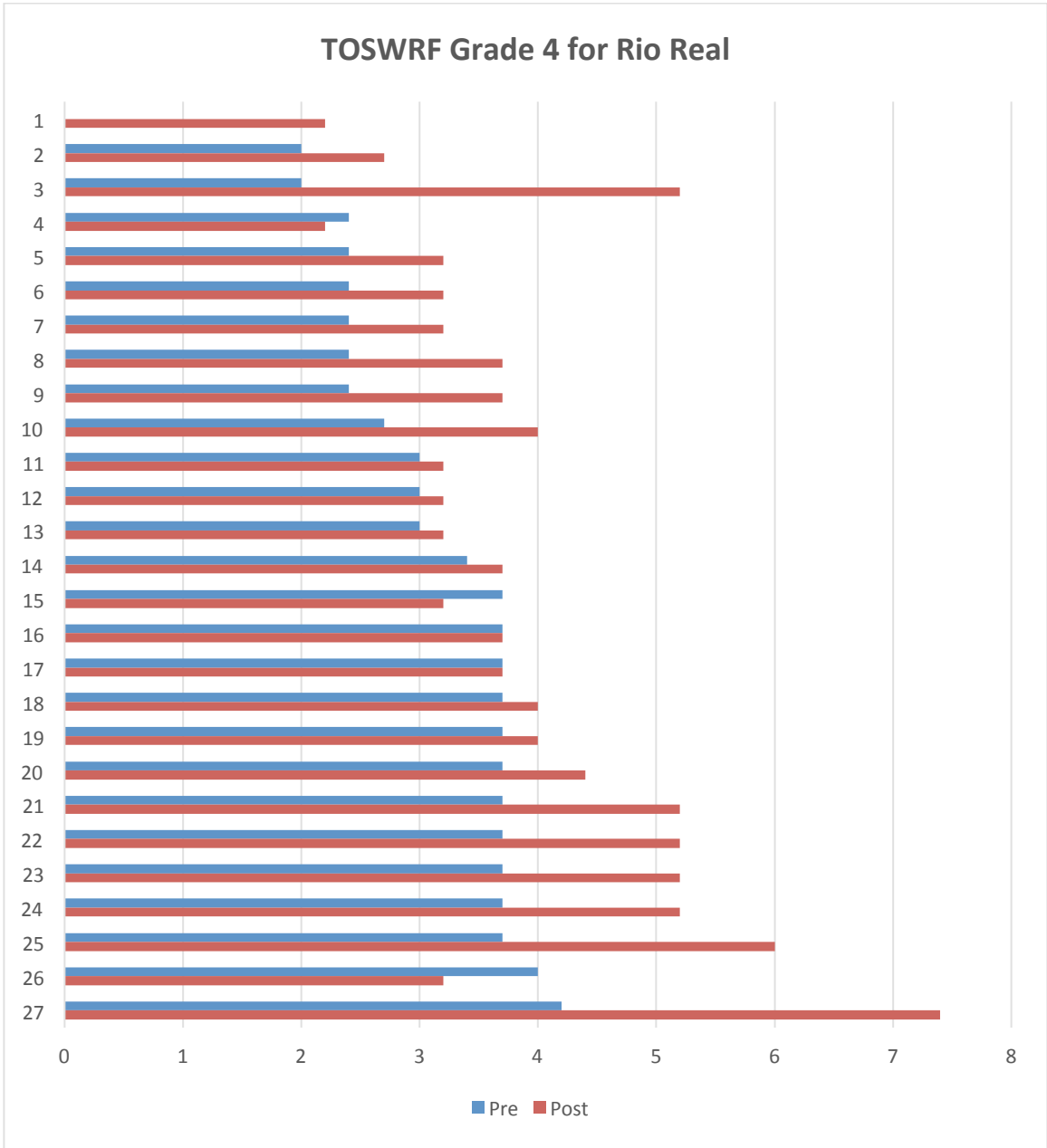
**P value 0.000000003 Average Improvement: 1.502857143 (One year and five month)**



**Source: Processed from results of pre and post evaluation**

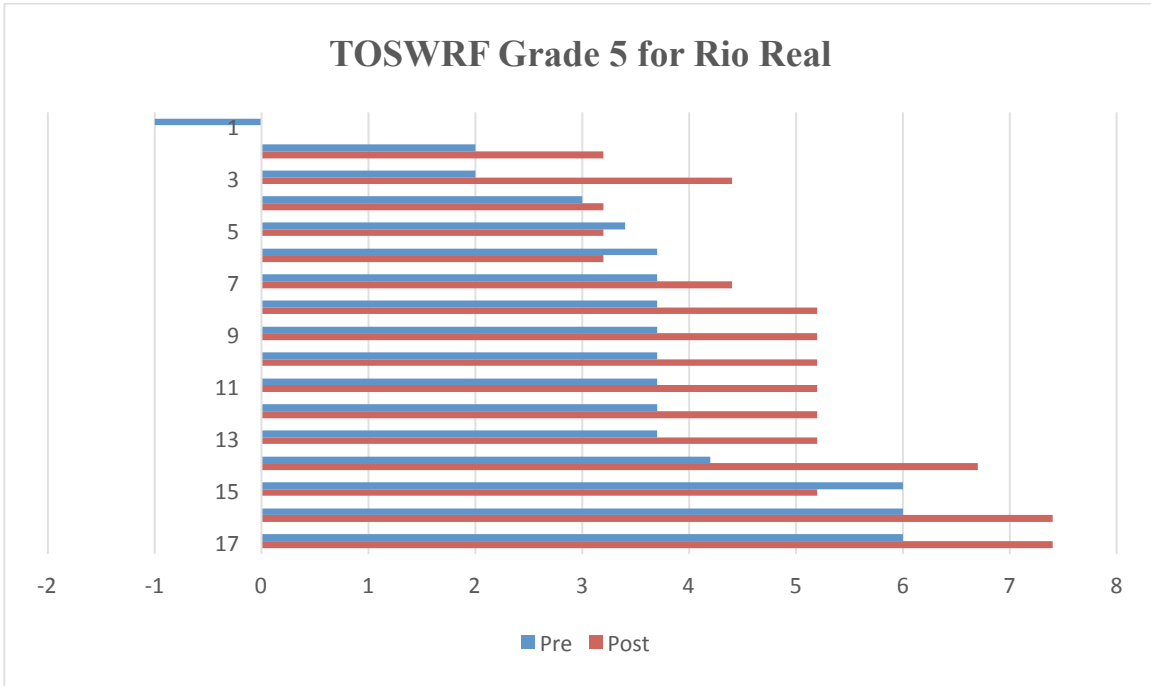
**P value 0.003**

**Average Improvement: 0.98 (About a year)**



**Source: Processed from results of pre and post evaluation**

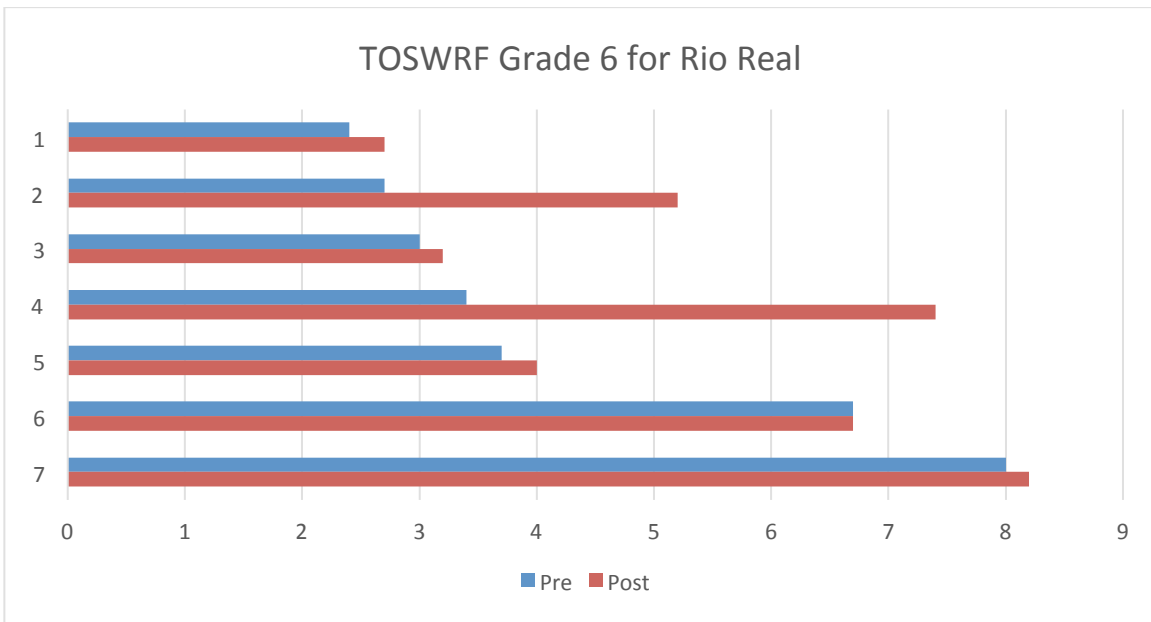
**P value 0.00008      Average Improvement: 0.911111111 (About a year)**



**Source: Processed from results of pre and post evaluation**

**P value 0.0002**

**Average Improvement: 1.076470 (More than a year)**



**Source: Processed from results of pre and post evaluation**

**P value 0.12 (not significant) Average Improvement: 1.07142857 (more than a year)**

Findings from all grade levels show that word identification and speed (i.e. reading fluency), word comprehension, and general reading ability improved in all levels among

the children who received Wordquest training. Furthermore the low level of p value measured in every case shows that such improvements were not results of a chance but real improvements experienced by those who participated.<sup>3</sup>

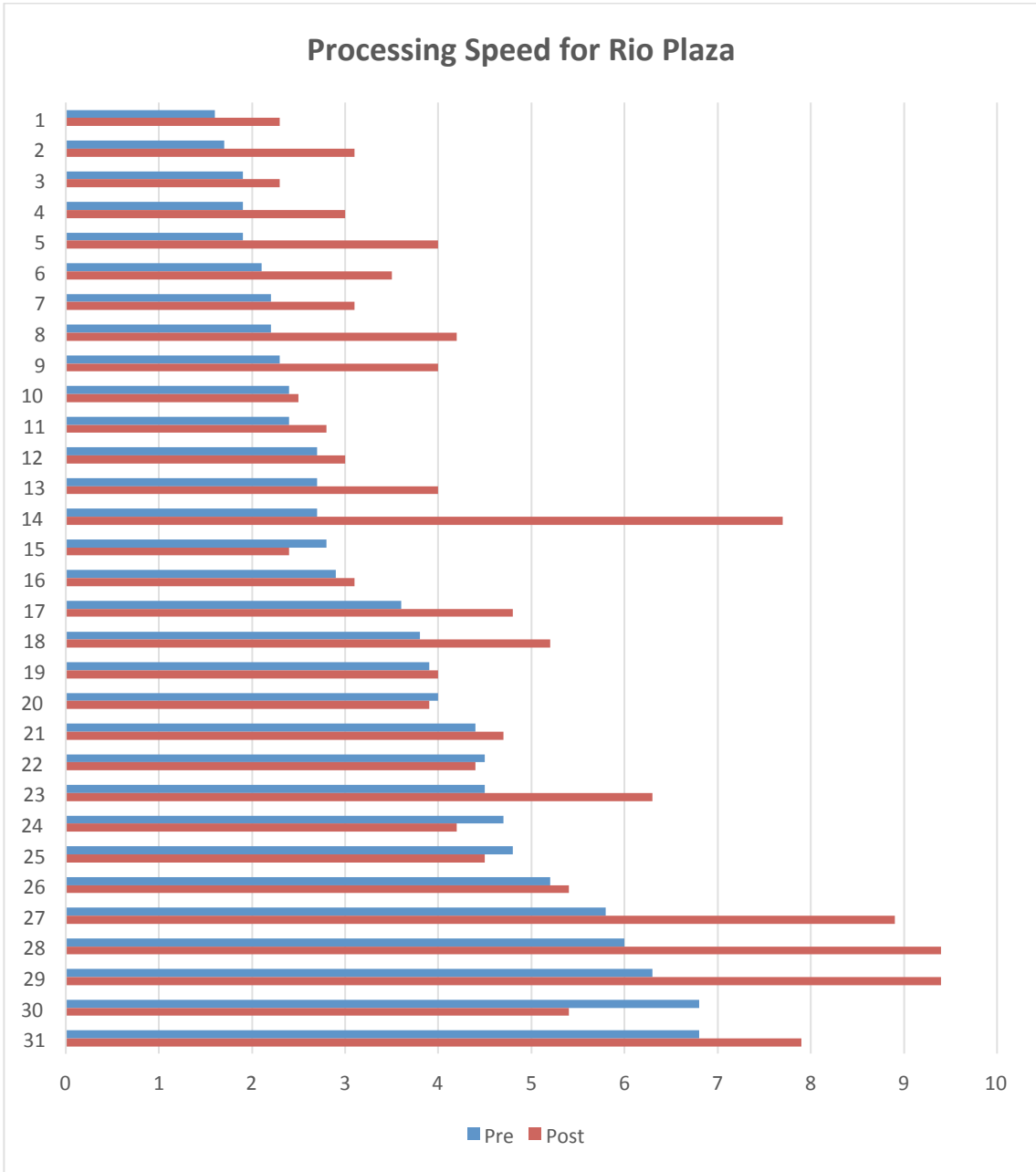
### **3.3) Improvement in Processing Speed**

Again in this section of the report we present the findings for the group in Rio Plaza for the entire group of children and then provide the findings for the Rio Real based on each class of participant.

#### **3.3.1) Improvement in Processing Speed for Rio Plaza**

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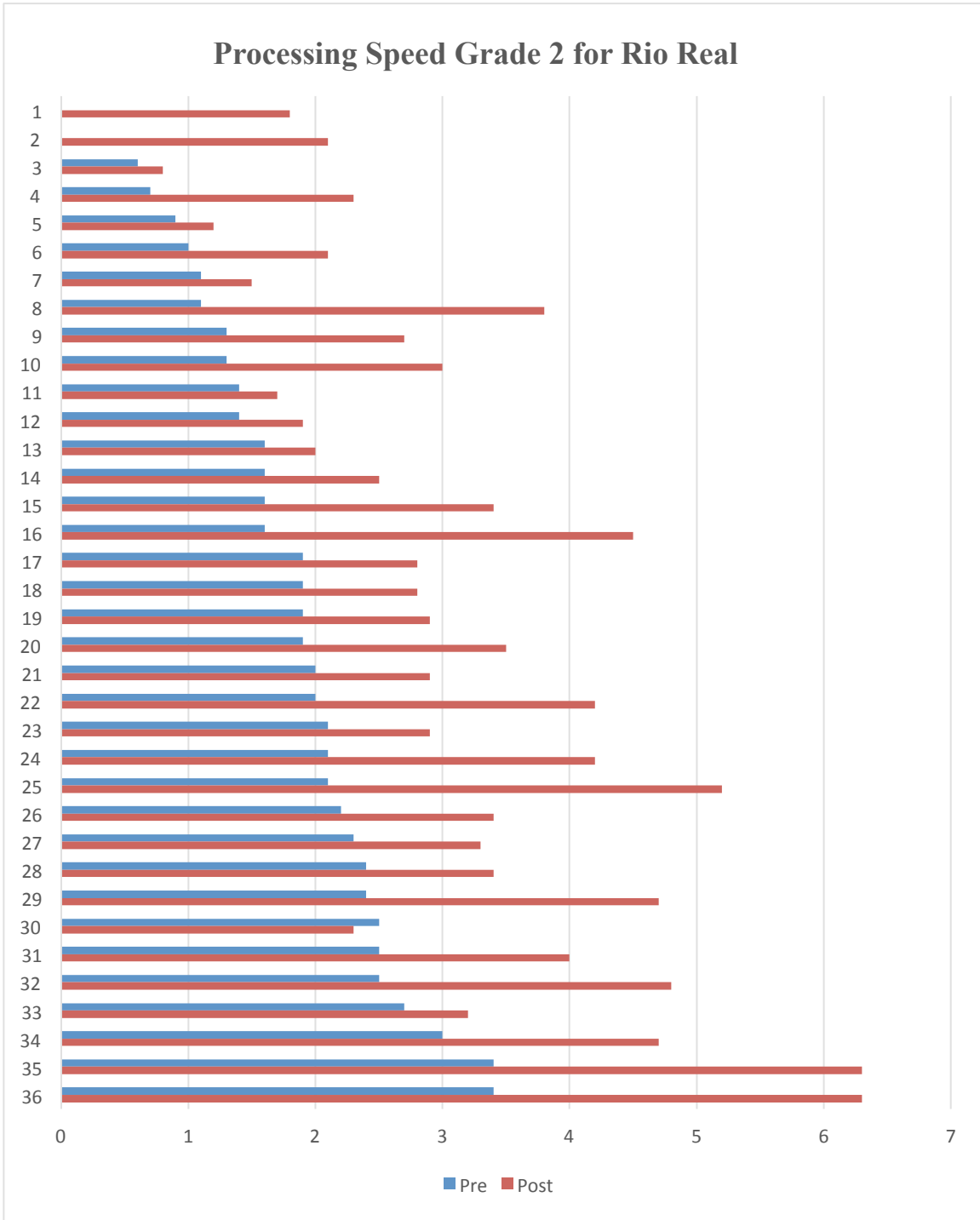
<sup>3</sup> There is only one case for the 6 graders in where the p value is about 10% and therefore in this case one can suggest that there might be a very small probability (around 10%) that the positive differences could be due to chance.



**Source: Processed from results of pre and post evaluation**  
**P value 0.0002      Average Improvement: 1.029032258 (Over one year)**

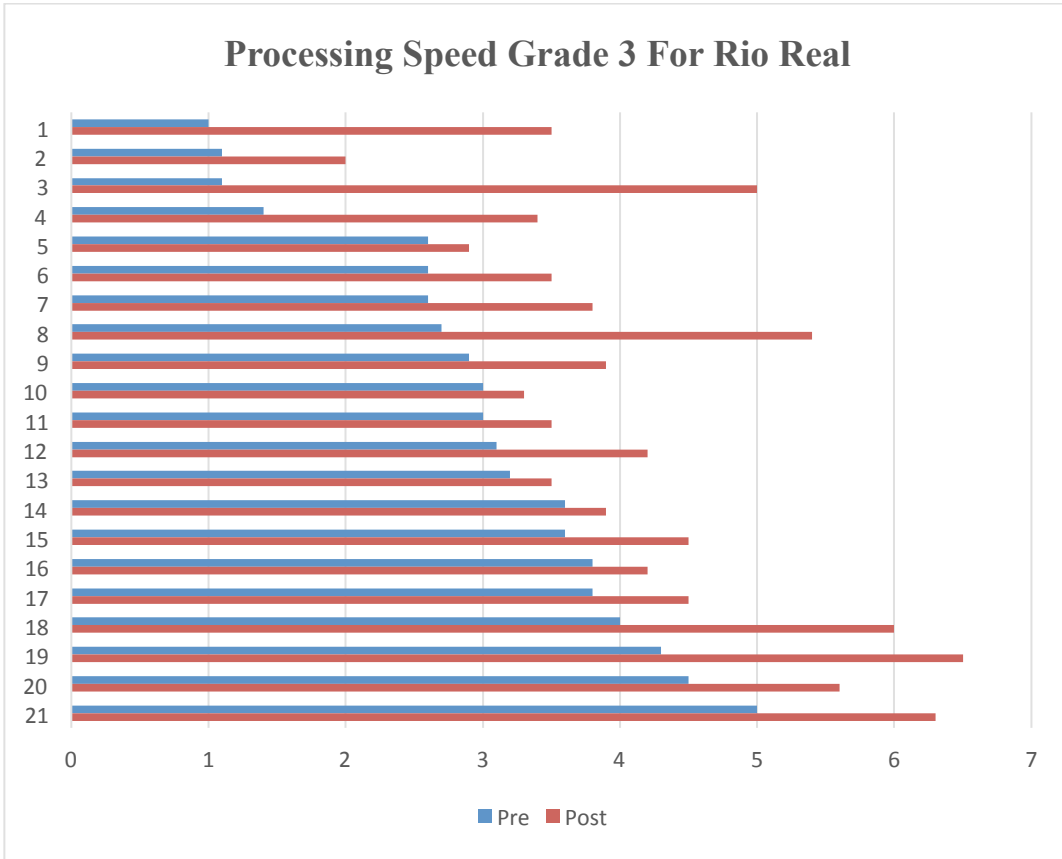
The above chart presents the pre and post scores for all those who participated in the Wordquest program at Rio Plaza over the mentioned period of time. The near zero value of the p value shows that such improvement did not occur due chance but present real improvement.

### 3.3.2) Improvement in Processing Speed for Rio Real

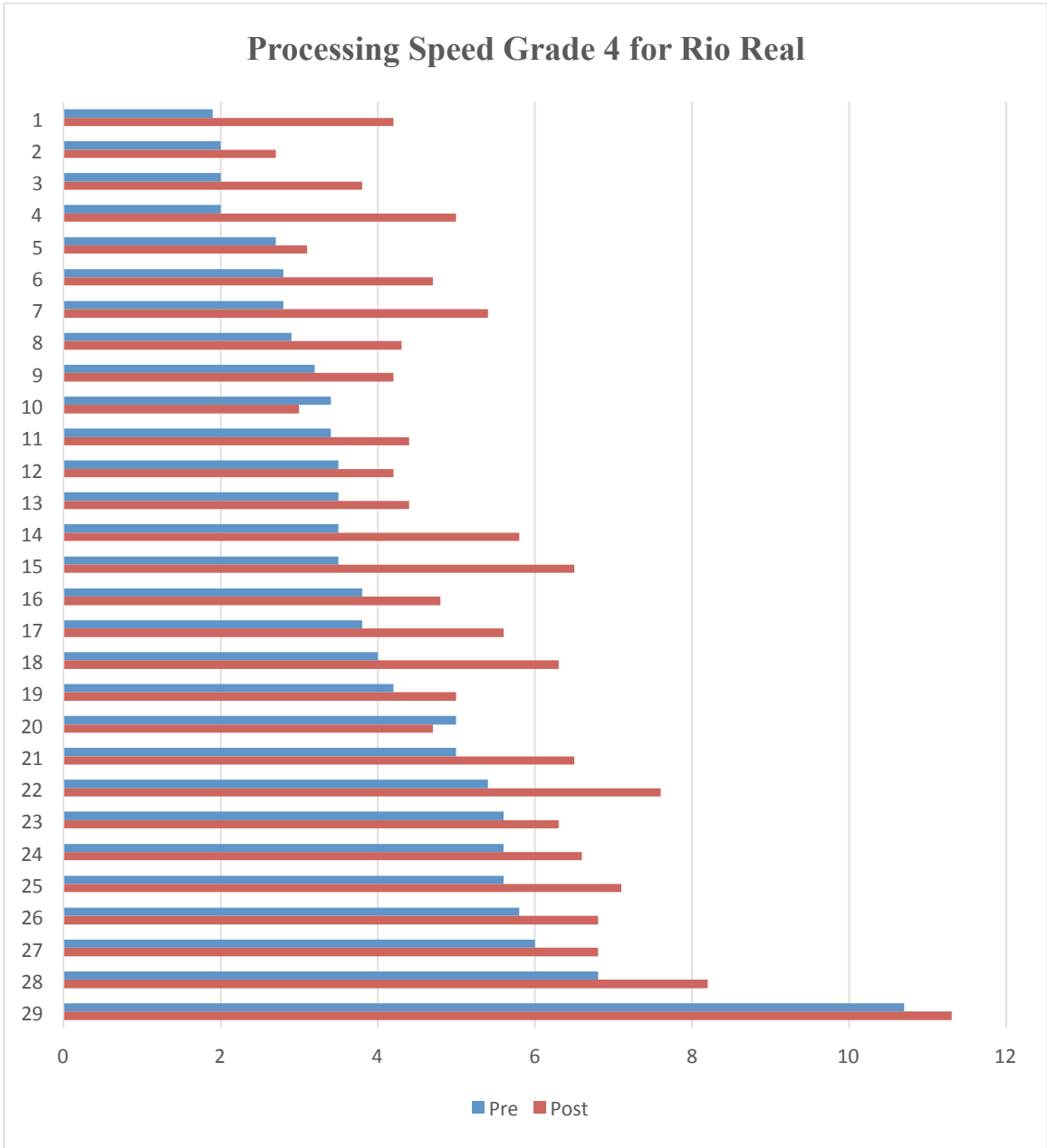


Source: Processed from results of pre and post evaluation  
**P value 0.00000000013      Average Improvement: 1.451351351 (One year and four & half months)**

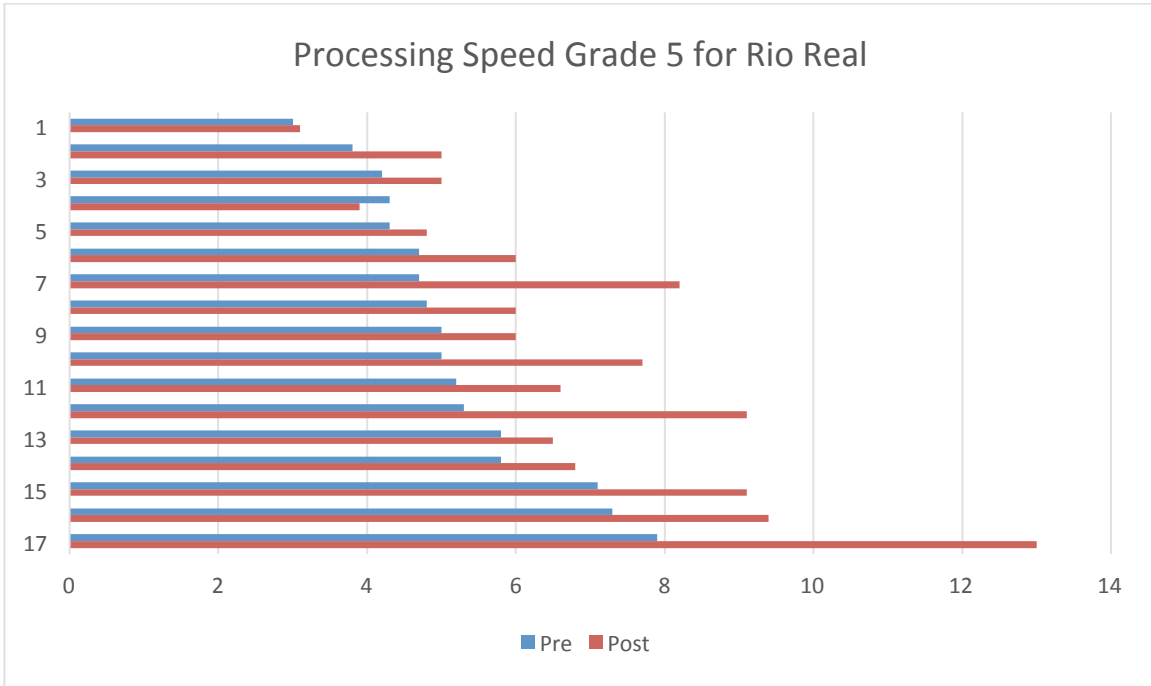




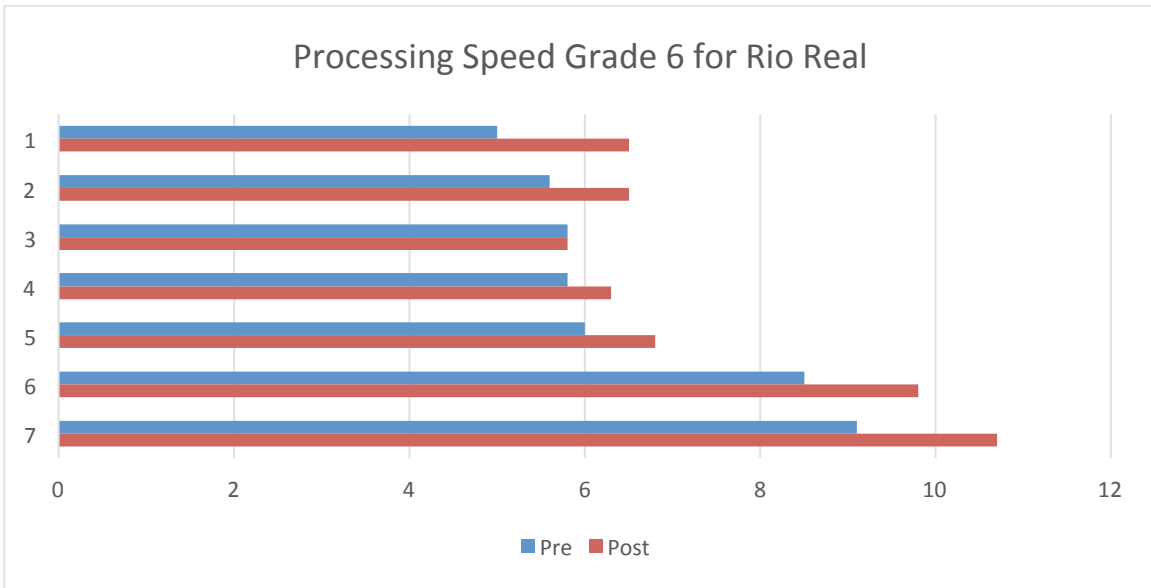
**Source: Processed from results of pre and post evaluation**  
**P value 0.000007 Average Improvement: 1.261904762 (One year and two and half months)**



**Source: Processed from results of pre and post evaluation**  
**P value 0.000000005      Average Improvement: 1.296666667 (One year and three months)**



**Source: Processed from results of pre and post evaluation**  
**P value 0.0002      Average Improvement: 1.647058824 (One year and Six & a half months)**



**Source: Processed from results of pre and post evaluation**  
**P value 0.005      Average Improvement: 0.942857143 (About a year)**

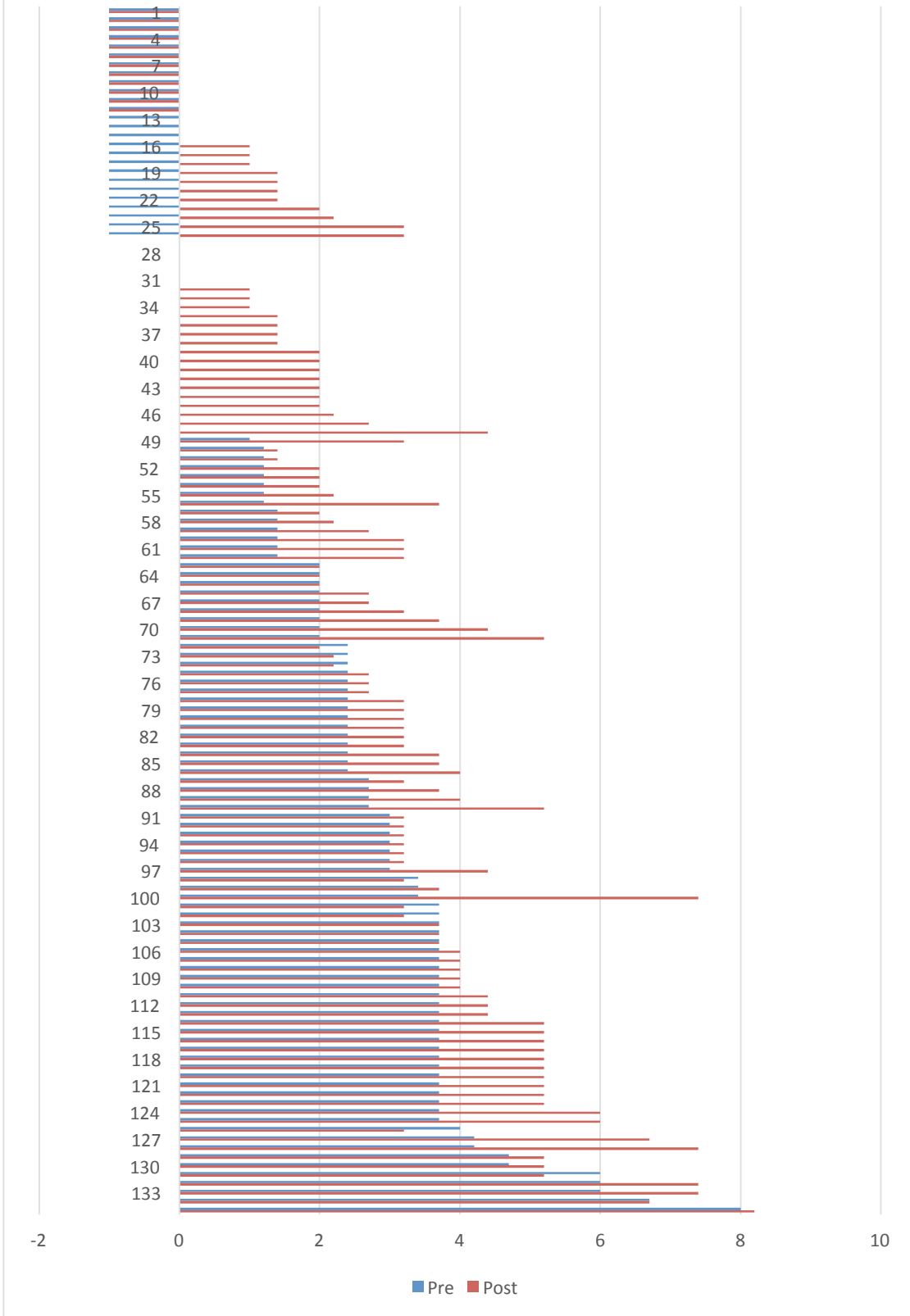
A quick review of the findings presented in various charts show that in every single grade

there was a significant improvement shown by the positive value of differences. The near zero value of p value in every case shows that such positive improvements were not result of chance but improvement in performance of those who attended the Wordquest program during the period mentioned earlier in this report.

#### **4) Overall Findings and Conclusion**

Finally in this segment of the report we present the overall and combined outcome of this evaluation for word identification and speed (i.e. reading fluency), word comprehension, and general reading ability through TOSWRF and processing speed. The following two charts bring them together.

### Combined Results for TOSWRF



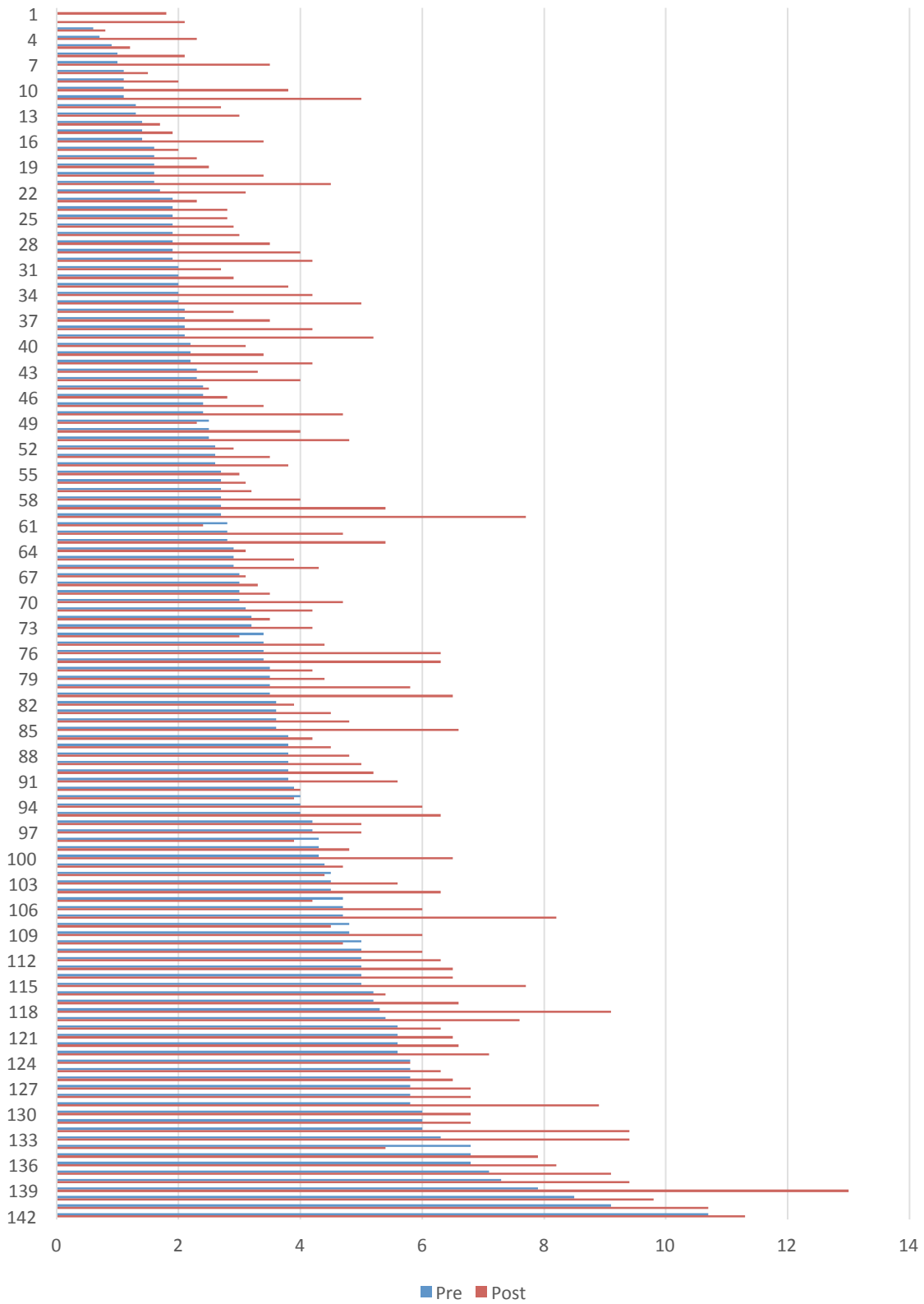
**Source: Processed from results of pre and post evaluation**

**P value 0.0000000000000000000013      Average Improvement: 1.059259259  
(Over a year)**

The above chart shows that in almost every case attending the Wordquest program resulted in a visible improvement. The result shows an average overall improvement of more than a year. The zero value of p value indicates that the improvements were not due to chance.

The following chart presents the combined results for all those who participated in the program, who were tested before and after participation, for their processing speed. The result shows improvement in nearly every case and the p value proves that improvements were not due to chance.

### Combined Results for Processing Speed



**Source: Processed from results of pre and post evaluation**

**P value 0.000000000000000000000000000010 Average Improvement: 1.297902098  
(One year and three months)**



## APPENDIX A

The following tables present the raw data and the calculation of differences between pre and post-tests for all the participants and clubs. We are not reporting the names or birthdate of the participants for respecting their privacy.

| <b>Rio Plaza: The Entire Group</b> |             |              |               |             |                         |             | <b>P Value</b> | <b>P value</b>          |
|------------------------------------|-------------|--------------|---------------|-------------|-------------------------|-------------|----------------|-------------------------|
|                                    |             |              | <b>TOSWRF</b> |             | <b>Processing Speed</b> |             |                |                         |
| <b>Grade</b>                       | <b>Name</b> | <b>D.O.B</b> | <b>Pre</b>    | <b>Post</b> | <b>Pre</b>              | <b>Post</b> | <b>TOSWRF</b>  | <b>Processing Speed</b> |
| 2                                  |             | 2007         | 0             | 0           | 2.9                     | 3.1         | 0              | 0.2                     |
| 2                                  |             | 2007         | 2.4           | 2.2         | 1.9                     | 2.3         | -0.2           | 0.4                     |
| 4                                  |             | 2005         | 1.4           | 2.2         | 2.3                     | 4           | 0.8            | 1.7                     |
| 3                                  |             | 2005         | 0             | 1           | 2.8                     | 2.4         | 1              | -0.4                    |
| 2                                  |             | 2007         | 2.7           | 3.7         | 3.6                     | 4.8         | 1              | 1.2                     |
| 2                                  |             | 2007         | 0             | 0           | 2.4                     | 2.5         | 0              | 0.1                     |
| 3                                  |             | 2007         | -1            | -1          | 1.6                     | 2.3         | 0              | 0.7                     |
| 3                                  |             | 2005         | 2.4           | 2.7         | 4.8                     | 4.5         | 0.3            | -0.3                    |
| 5                                  |             | 2003         | 3.7           | 6           | 6.8                     | 7.9         | 2.3            | 1.1                     |
| 4                                  |             | 2005         | 0             | 0           | 4                       | 3.9         | 0              | -0.1                    |
| 4                                  |             | 2005         | 2.4           | 3.2         | 4.5                     | 6.3         | 0.8            | 1.8                     |
| 3                                  |             | 2005         | 1.2           | 3.7         | 6.8                     | 5.4         | 2.5            | -1.4                    |
| 2                                  |             | 2007         | 1.2           | 1.4         | 1.9                     | 3           | 0.2            | 1.1                     |
| 2                                  |             | 2007         | 0             | 0           | 2.2                     | 3.1         | 0              | 0.9                     |
| 3                                  |             | 2005         | 1.4           | 3.2         | 4.7                     | 4.2         | 1.8            | -0.5                    |
| 3                                  |             | 2006         | 0             | 1.4         | 3.9                     | 4           | 1.4            | 0.1                     |
| 4                                  |             | 2005         | -1            | 0           | 2.7                     | 7.7         | 1              | 5                       |
| 4                                  |             | 2004         | 4.7           | 5.2         | 6                       | 9.4         | 0.5            | 3.4                     |
| 4                                  |             | 2004         | 2.4           | 3.2         | 5.8                     | 8.9         | 0.8            | 3.1                     |
| 3                                  |             | 2005         | not<br>1.4    | valid       | 1.9                     | 4           |                | 2.1                     |
| 3                                  |             | 2005         | 3.7           | 4.4         | 4.5                     | 4.4         | 0.7            | -0.1                    |
| 4                                  |             | 2004         | -1            | -1          | 2.1                     | 3.5         | 0              | 1.4                     |
| 4                                  |             | 2005         | 1.2           | 2.2         | 5.2                     | 5.4         | 1              | 0.2                     |
| 2                                  |             | 2007         | 0             | 2           | 2.7                     | 3           | 2              | 0.3                     |
| 4                                  |             | 2004         | 2             | 2           | 6.3                     | 9.4         | 0              | 3.1                     |
| 2                                  |             | 2007         | 0             | 0           | 2.2                     | 4.2         | 0              | 2                       |
| 2                                  |             | 2007         | not           | valid       | 1.7                     | 3.1         |                | 1.4                     |
| 3                                  |             | 2005         | 1.2           | 2           | 4.4                     | 4.7         | 0.8            | 0.3                     |
| 2                                  |             | 2006         | 3.7           | 4           | 3.8                     | 5.2         | 0.3            | 1.4                     |
| 2                                  |             | 2007         | -1            | -1          | 2.4                     | 2.8         | 0              | 0.4                     |
| 3                                  |             | 2005         | 0             | 1.4         | 2.7                     | 4           | 1.4            | 1.3                     |

| <b>Rio Real: 2<sup>nd</sup> Grade</b> |       |        |       |                  |      |
|---------------------------------------|-------|--------|-------|------------------|------|
| Name                                  | D.O.B | TOSWRF |       | Processing Speed |      |
|                                       |       | Pre    | Post  | Pre              | Post |
|                                       | 2006  | 1      | 3.2   | 1.9              | 2.8  |
|                                       | 2006  | 0      | 1     | 0.9              | 1.2  |
|                                       | 2006  | 2      | 3.7   | 2.3              | 3.3  |
|                                       | 2006  | 0      | 1     | 2.1              | 2.9  |
|                                       | 2006  | -1     | -1    | 2.5              | 4    |
|                                       | 2006  | -1     | 1.4   | 0                | 2.1  |
|                                       | 2006  | 0      | 2     | 1.4              | 1.9  |
|                                       | 2007  | 0      | 2     | 1.6              | 4.5  |
|                                       | 2006  | -1     | 1     | 1.1              | 3.8  |
|                                       | 2006  | -1     | -1    | 0.7              | 2.3  |
|                                       | 2006  | -1     | 0     | 0                | 1.8  |
|                                       | 2006  | -1     | -1    | 3.4              | 6.3  |
|                                       | 2006  | 2.7    | 3.2   | 2.7              | 3.2  |
|                                       | 2006  | -1     | -1    | 1.9              | 2.9  |
|                                       | 2006  | 1.4    | 3.2   | 2.5              | 4.8  |
|                                       | 2006  | 1.4    | 3.2   | 2.1              | 4.2  |
|                                       | 2006  | 1.2    | 2     | 1.9              | 2.8  |
|                                       | 2006  | -1     | -1    | 1.6              | 2.5  |
|                                       | 2006  | -1     | 3.2   | 2.1              | 5.2  |
|                                       | 2006  | -1     | 3.2   | 3.4              | 6.3  |
|                                       | 2006  | -1     | 1     | 2                | 4.2  |
|                                       | 2006  | 2.4    | 3.2   | 2                | 2.9  |
|                                       | 2006  | -1     | 1     | 1.9              | 3.5  |
|                                       | 2006  | -1     | -1    | 2.2              | 3.4  |
|                                       | 2006  | -1     | 1.4   | 2.4              | 4.7  |
|                                       | 2006  | 0      | 1.4   | 2.4              | 3.4  |
|                                       | 2006  | 0      | 2     | 0.6              | 0.8  |
|                                       | 2006  | -      | -     | 1.6              | 2    |
|                                       | 2006  | 2.4    | 4     | 2.5              | 2.3  |
|                                       | 2006  | 0      | 2     | 1.1              | 1.5  |
|                                       | 2006  | not    | valid | 1.3              | 2.7  |
|                                       | 2006  | 1.4    | 2.7   | 1                | 2.1  |
|                                       | 2006  | -1     | 1.4   | 1.3              | 3    |
|                                       | 2006  | 2.4    | 2.7   | 1.6              | 3.4  |
|                                       | 2006  | 1.2    | 1.4   | 1.4              | 1.7  |
|                                       | 2006  | -1     | 1.4   | 3                | 4.7  |
|                                       | 2006  | -1     | 2.2   | 3.6              | 6.6  |
|                                       |       | 1      | 3.2   | 1.9              | 2.8  |

| P Value      |                  |
|--------------|------------------|
| 0.0000000029 | 0.00000000001    |
| 7            | 3                |
| TOSWRF       | Processing Speed |
| 2.2          | 0.9              |
| 1            | 0.3              |
| 1.7          | 1                |
| 1            | 0.8              |
| 0            | 1.5              |
| 2.4          | 2.1              |
| 2            | 0.5              |
| 2            | 2.9              |
| 2            | 2.7              |
| 0            | 1.6              |
| 1            | 1.8              |
| 0            | 2.9              |
| 0.5          | 0.5              |
| 0            | 1                |
| 1.8          | 2.3              |
| 1.8          | 2.1              |
| 0.8          | 0.9              |
| 0            | 0.9              |
| 4.2          | 3.1              |
| 4.2          | 2.9              |
| 2            | 2.2              |
| 0.8          | 0.9              |
| 2            | 1.6              |
| 0            | 1.2              |
| 2.4          | 2.3              |
| 1.4          | 1                |
| 2            | 0.2              |
|              | 0.4              |
| 1.6          | -0.2             |
| 2            | 0.4              |
|              | 1.4              |
| 1.3          | 1.1              |
| 2.4          | 1.7              |
| 0.3          | 1.8              |
| 0.2          | 0.3              |
| 2.4          | 1.7              |
| 3.2          | 3                |
| 2.2          | 0.9              |

| <b>Rio Real: 3rd Grade</b> |       |         |      |                  |      |
|----------------------------|-------|---------|------|------------------|------|
|                            |       | TOSWRF  |      | Processing Speed |      |
| Name                       | D.O.B | Pre     | Post | Pre              | Post |
|                            | 2005  | 1.2     | 2    | 3.6              | 4.5  |
|                            | 2004  | -1      | -1   | 1                | 3.5  |
|                            | 2005  | 0       | 1.4  | 2.7              | 5.4  |
|                            | 2005  | 0       | 2    | 3.8              | 4.5  |
|                            | 2005  | 3       | 4.4  | 3.8              | 4.2  |
|                            | 2005  | 3       | 3.2  | 4                | 6    |
|                            | 2005  | 0       | 2.7  | 2.9              | 3.9  |
|                            | 2005  | 3.7     | 4    | 4.5              | 5.6  |
|                            | 2005  | 0       | 2    | 2.6              | 2.9  |
|                            | age 7 | -1      | -1   | 2.6              | 3.5  |
|                            | 2004  | 4.7     | 5.2  | 3.1              | 4.2  |
|                            | 2004  | 0       | 4.4  | 1.1              | 5    |
|                            | 2005  | 2       | 2.7  | 1.4              | 3.4  |
|                            | 2005  | -1      | -1   | 3                | 3.3  |
|                            | 2005  | 2.4     | 2    | 3.2              | 3.5  |
|                            | 2005  | 3.7     | 3.7  | 4.3              | 6.5  |
|                            | 2005  | 2       | 2    | 3.6              | 3.9  |
|                            | 2005  | Invalid |      | 1.1              | 2    |
|                            | 2004  | -1      | 2    | 2.6              | 3.8  |
|                            | 2005  | 2       | 2    | 3                | 3.5  |
|                            | 2005  | 1.4     | 2    | 5                | 6.3  |

| P Value | P value          |
|---------|------------------|
| 0.003   | 0.000007         |
| TOSWRF  | Processing Speed |
| 0.8     | 0.9              |
| 0       | 2.5              |
| 1.4     | 2.7              |
| 2       | 0.7              |
| 1.4     | 0.4              |
| 0.2     | 2                |
| 2.7     | 1                |
| 0.3     | 1.1              |
| 2       | 0.3              |
| 0       | 0.9              |
| 0.5     | 1.1              |
| 4.4     | 3.9              |
| 0.7     | 2                |
| 0       | 0.3              |
| -0.4    | 0.3              |
| 0       | 2.2              |
| 0       | 0.3              |
|         |                  |
| 3       | 1.2              |
| 0       | 0.5              |
| 0.6     | 1.3              |

| <b>Rio Real: 4th Grade</b> |       |         |      |                  |      |
|----------------------------|-------|---------|------|------------------|------|
|                            |       | TOSWRF  |      | Processing Speed |      |
| Name                       | D.O.B | Pre     | Post | Pre              | Post |
|                            | 2003  | 2.4     | 3.2  | 5.4              | 7.6  |
|                            | 2003  | 2       | 2.7  | 4.2              | 5    |
|                            | 2004  | 3.7     | 3.7  | 3.5              | 4.4  |
|                            | 2004  | 3.7     | 6    | 5.6              | 7.1  |
|                            | 2004  | 2.4     | 3.2  | 5                | 6.5  |
|                            | 2004  | Invalid |      | 4                | 6.3  |
|                            | 2004  | 4       | 3.2  | 2.8              | 4.7  |
|                            | 2004  | 3.7     | 3.7  | 3.5              | 5.8  |
|                            | 2004  | 3.7     | 5.2  | 6                | 6.8  |
|                            | 2003  | 4.2     | 7.4  | 6.8              | 8.2  |

| P Value | P value          |
|---------|------------------|
| 0.00008 | 0.000000005      |
| TOSWRF  | Processing Speed |
| 0.8     | 2.2              |
| 0.7     | 0.8              |
| 0       | 0.9              |
| 2.3     | 1.5              |
| 0.8     | 1.5              |
|         | 2.3              |
| -0.8    | 1.9              |
| 0       | 2.3              |
| 1.5     | 0.8              |
| 3.2     | 1.4              |

|  |      |         |     |      |      |      |      |
|--|------|---------|-----|------|------|------|------|
|  | 2004 | 2.4     | 3.7 | 3.8  | 4.8  | 1.3  | 1    |
|  | 2004 | 2       | 5.2 | 3.5  | 4.2  | 3.2  | 0.7  |
|  | 2004 | 2.4     | 3.2 | 2    | 5    | 0.8  | 3    |
|  | 2004 | 3       | 3.2 | 1.9  | 4.2  | 0.2  | 2.3  |
|  | 2003 | 3.7     | 5.2 | 2.9  | 4.3  | 1.5  | 1.4  |
|  | 2004 | 3.7     | 4   | 5.6  | 6.3  | 0.3  | 0.7  |
|  | 2004 | 3.7     | 3.2 | 3.8  | 5.6  | -0.5 | 1.8  |
|  | 2003 | 2.4     | 3.7 | 2.8  | 5.4  | 1.3  | 2.6  |
|  | 2004 | 2.4     | 2.2 | 2    | 3.8  | -0.2 | 1.8  |
|  | 2003 | 3.7     | 4.4 | 5    | 4.7  | 0.7  | -0.3 |
|  | 2004 | 3.7     | 5.2 | 10.7 | 11.3 | 1.5  | 0.6  |
|  | 2004 | Invalid |     | 3.4  | 4.4  |      | 1    |
|  | 2003 | Invalid |     | 2    | 2.7  |      | 0.7  |
|  | 2004 | 3       | 3.2 | 5.8  | 6.8  | 0.2  | 1    |
|  | 2004 | 3       | 3.2 | 3.4  | 3    | 0.2  | -0.4 |
|  | 2004 | 3.4     | 3.7 | 2.7  | 3.1  | 0.3  | 0.4  |
|  | 2004 | 0       | 2.2 | 3.5  | 6.5  | 2.2  | 3    |
|  | 2004 | 2.7     | 4   | 3.2  | 4.2  | 1.3  | 1    |
|  | 2004 | 3.7     | 5.2 | 5.6  | 6.6  | 1.5  | 1    |
|  | 2003 | 3.7     | 4   |      |      | 0.3  | 0    |

| <b>Rio Real: Grade 5th</b> |              |               |             |                         |             | <b>P Value</b> | <b>P value</b>          |
|----------------------------|--------------|---------------|-------------|-------------------------|-------------|----------------|-------------------------|
|                            |              |               |             |                         |             | 0.0002         | 0.0002                  |
|                            |              | <b>TOSWRF</b> |             | <b>Processing Speed</b> |             |                |                         |
| <b>Name</b>                | <b>D.O.B</b> | <b>Pre</b>    | <b>Post</b> | <b>Pre</b>              | <b>Post</b> | <b>TOSWRF</b>  | <b>Processing Speed</b> |
|                            | 2003         | -1            | 0           | 3                       | 3.1         | 1              | 0.1                     |
|                            | 2003         | 3.7           | 5.2         | 5                       | 6           | 1.5            | 1                       |
|                            | 2003         | 3.7           | 5.2         | 4.7                     | 6           | 1.5            | 1.3                     |
|                            | 2003         | 3.7           | 5.2         | 5.3                     | 9.1         | 1.5            | 3.8                     |
|                            | 2003         | 2             | 4.4         | 4.7                     | 8.2         | 2.4            | 3.5                     |
|                            | 2003         | 3.7           | 5.2         | 7.3                     | 9.4         | 1.5            | 2.1                     |
|                            | 2002         | 3.7           | 5.2         | 7.9                     | 13          | 1.5            | 5.1                     |
|                            | 2003         | 3.4           | 3.2         | 5.8                     | 6.5         | -0.2           | 0.7                     |
|                            | 2003         | 6             | 7.4         | 7.1                     | 9.1         | 1.4            | 2                       |
|                            | 2003         | 3.7           | 5.2         | 4.3                     | 3.9         | 1.5            | -0.4                    |
|                            | 2002         | 2             | 3.2         | 4.2                     | 5           | 1.2            | 0.8                     |
|                            | 2002         | 6             | 5.2         | 5                       | 7.7         | -0.8           | 2.7                     |
|                            | 2003         | 4.2           | 6.7         | 4.8                     | 6           | 2.5            | 1.2                     |
|                            | 2003         | 3.7           | 3.2         | 5.8                     | 6.8         | -0.5           | 1                       |
|                            | 2002         | 6             | 7.4         | 5.2                     | 6.6         | 1.4            | 1.4                     |

|  |      |     |     |     |     |  |     |     |
|--|------|-----|-----|-----|-----|--|-----|-----|
|  | 2003 | 3   | 3.2 | 4.3 | 4.8 |  | 0.2 | 0.5 |
|  | 2003 | 3.7 | 4.4 | 3.8 | 5   |  | 0.7 | 1.2 |

| <b>Rio Real: 6th Grade</b> |              |               |             |                         |             |
|----------------------------|--------------|---------------|-------------|-------------------------|-------------|
|                            |              | <b>TOSWRF</b> |             | <b>Processing Speed</b> |             |
| <b>Name</b>                | <b>D.O.B</b> | <b>Pre</b>    | <b>Post</b> | <b>Pre</b>              | <b>Post</b> |
|                            | 2002         | 8             | 8.2         | 9.1                     | 10.7        |
|                            | 2002         | 3.7           | 4           | 6                       | 6.8         |
|                            | 2002         | 3             | 3.2         | 8.5                     | 9.8         |
|                            | 2002         | 6.7           | 6.7         | 5.8                     | 5.8         |
|                            | 2001         | 2.7           | 5.2         | 5.6                     | 6.5         |
|                            | 2002         | 2.4           | 2.7         | 5                       | 6.5         |
|                            | 2002         | 3.4           | 7.4         | 5.8                     | 6.3         |

| <b>P Value</b> | <b>P value</b>          |
|----------------|-------------------------|
| <b>0.12</b>    | <b>0.005</b>            |
| <b>TOSWRF</b>  | <b>Processing Speed</b> |
| 0.2            | 1.6                     |
| 0.3            | 0.8                     |
| 0.2            | 1.3                     |
| 0              | 0                       |
| 2.5            | 0.9                     |
| 0.3            | 1.5                     |
| 4              | 0.5                     |