

BLUE MOUNTAINS
GRAMMAR SCHOOL
JUNIOR SCHOOL

EVALUATION
OF THE
MATHS WIZ PROGRAM
2012

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Introduction

Blue Mountains Grammar School Junior School was invited to trial a new online mathematics program produced by Kinetic Education. The program involved two distinct online software packages. The first program was called Maths Doctor. This program evaluated students' strengths and weakness in Maths. The second program was called Maths Wiz. Once a student's strengths and weaknesses had been identified, the Maths Wiz program would develop an individual online study program to target his or her identified individual weaknesses.

Blue Mountains Grammar School Junior School was asked to evaluate the effectiveness of the Maths Wiz program. The following criterion was used to evaluate the program' effectiveness:

- Was there a decrease in the areas of weakness from previous years?
- Was there an increase in understanding of students' current year level outcomes?
- Did the students' confidence levels in Mathematics increase?
- Were the students engaged with the Maths Wiz program?

Background Information

The program trial started on the 19th of March and ended on the 21st of May, 2012. This was effectively the last three weeks of Term 1 and the first three weeks of Term 2. 18 students in years 3 and 4 were selected to participate in the trial program. There were eleven year 3 students and seven year 4 students. The students were selected on the basis that their maths teachers believed that they would benefit from participating in the trial. Each of these students had middle to low ability levels in mathematics and were lacking in confidence in mathematics. All 18 students were granted permission by their parents to participate.

In a typical school week these students were timetabled for 5 x 1 hour sessions for mathematics per week. Prior to the trial period, one of these lessons was to use ICT to complete maths. During the trial period the ICT component was increased to two lessons per week. Students used the Maths Wiz program on Mondays and Fridays for a total of 2 hours per week.

Pre-Test Information

On the 19th of March students undertook the pre-test evaluation of their maths knowledge using the Maths Doctor program. The program asked a series of questions to evaluate their knowledge in the following strands: Space, Number, Algebra, Measurement, Probability and Statistics.

On completion of the assessment, the Maths Wiz program generated a tailor made study program designed to address that particular students areas of weakness. The Maths Wiz program would target their earliest weakness first.

The Study Program

In each timetabled lesson the students would access the Maths Wiz program. The student learned via online videos, interactive questions, maths games and auditory learning. Teachers did not actively set tasks on the program, but had the capability to do so if needed. Students completed the activities that were set by the computer targeting their areas of weaknesses. The program did not try to target one specific area of weakness in a lesson. Rather, it kept the students levels of engagement up by generating questions from a number of skill sets which had been previously identified. These questions were revisited in future sessions to reinforce the knowledge and skills gained.

Each student had their own individual learning plan. It allowed students to work at their own pace as opposed to a pace dictated to by their peers. Feedback was provided by the program after each question was answered. At the end of a set of questions, students were able to see their score and a comment about their results. Students were also able to see this information in a visual format. Teachers had the ability to view online reports detailing student participation rates and number of lesson completed.

Post Test Information

On the 21st of May all 18 students completed the post assessment task using Maths Doctor. It had two purposes. The first purpose was to measure individual student growth in their areas of weaknesses targeted by the Maths Wiz Program. The second was to see if there had been a growth in students' level of skill and knowledge in their current year level.

Results

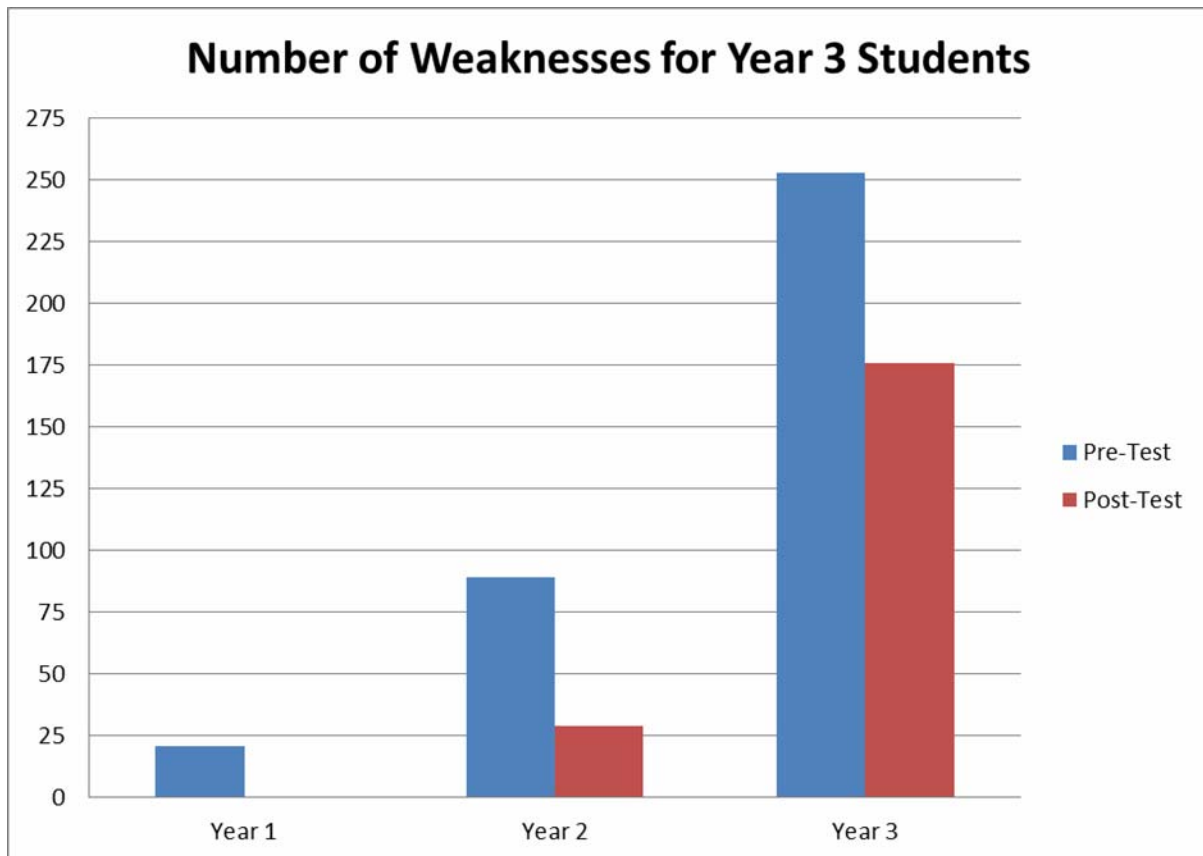


Figure 1 – Number of Weaknesses for Year 3 Students

Figure 1 measures the difference between the pre and post-test results for Year 3 students. Each column represents the combined number of weaknesses that all Year 3 students had in Years 1, 2 and 3.

Year 3 students had 21 areas of weaknesses in year 1 maths at the beginning of the trial. At the end of the trial, there were no gaps in year 1 skills and knowledge. There were 89 weaknesses in year 2 knowledge pre-test and 29 weaknesses in year 2 knowledge post-test. This represents consolidation of 81 areas of weaknesses across years 1 and 2. In year 3 there were 253 weaknesses identified and there were 176 weaknesses identified post-test. This represents a reduction of 77 weaknesses.

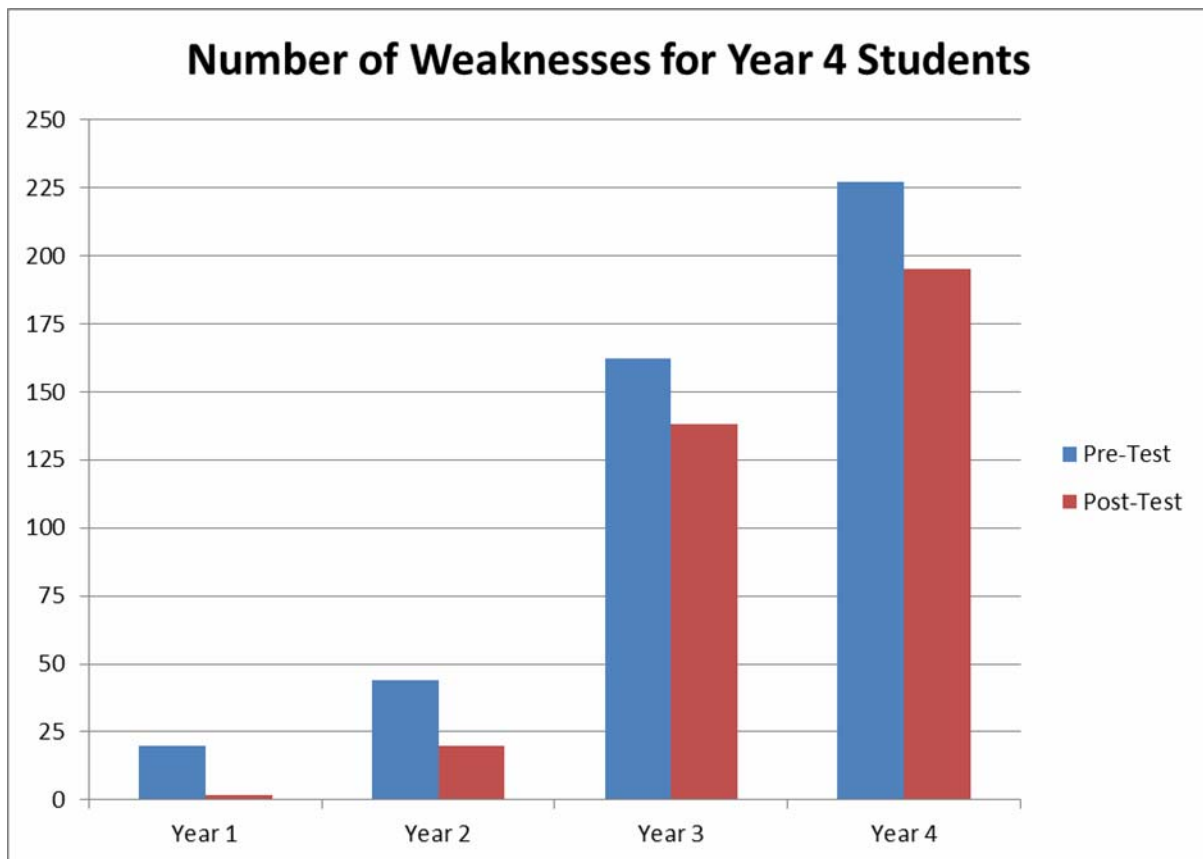


Figure 2 – Number of Weaknesses for Year 4 Students

Figure 2 measures the difference between pre and post-test results for year 4 students. Each column represents the combined number of weaknesses that year 4 students had in years 1, 2, 3 and 4.

Year 4 students had 20 areas of weaknesses in year 1 maths skills and knowledge at the beginning of the trial. At the end of the trial there were 2 knowledge gaps in year 1. There were 44 weaknesses in year 2 knowledge pre-test and there were 20 weaknesses in year 2 knowledge post-test. This represents consolidation of 24 areas of weaknesses. In year 3 there were 162 weaknesses identified and there were 138 weaknesses identified post-test. This represents a reduction of 24 weaknesses. In year 4 there were 227 weaknesses identified and there were 195 weaknesses identified post-test. This represents a reduction of 32 weaknesses.

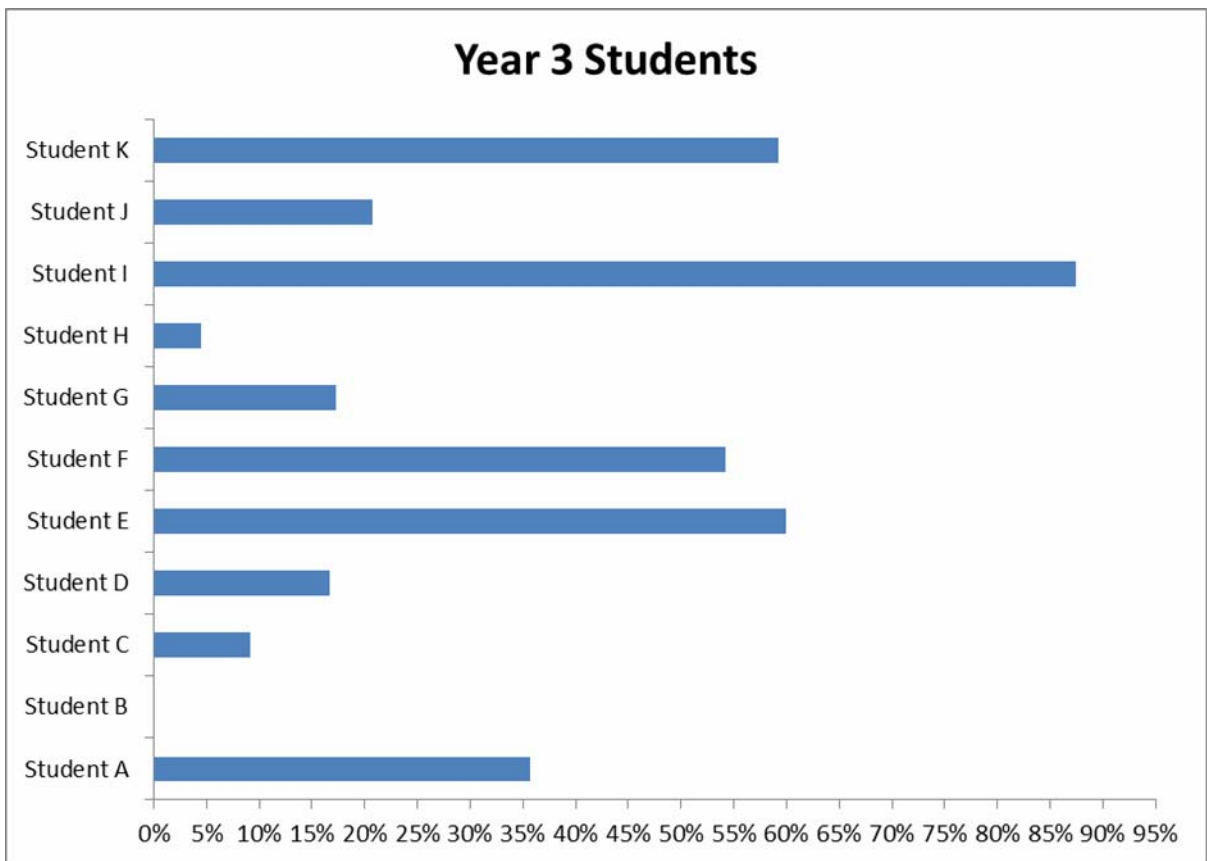


Figure 3 – Percentage change in understanding of year 3 curriculum content

Figure 3 represents the change in knowledge and skills of year 3 in their current year level. The data shown is the difference between the pre and post-test results. On average Year 3 students achieved a 33% increase in understanding of the year three maths content.

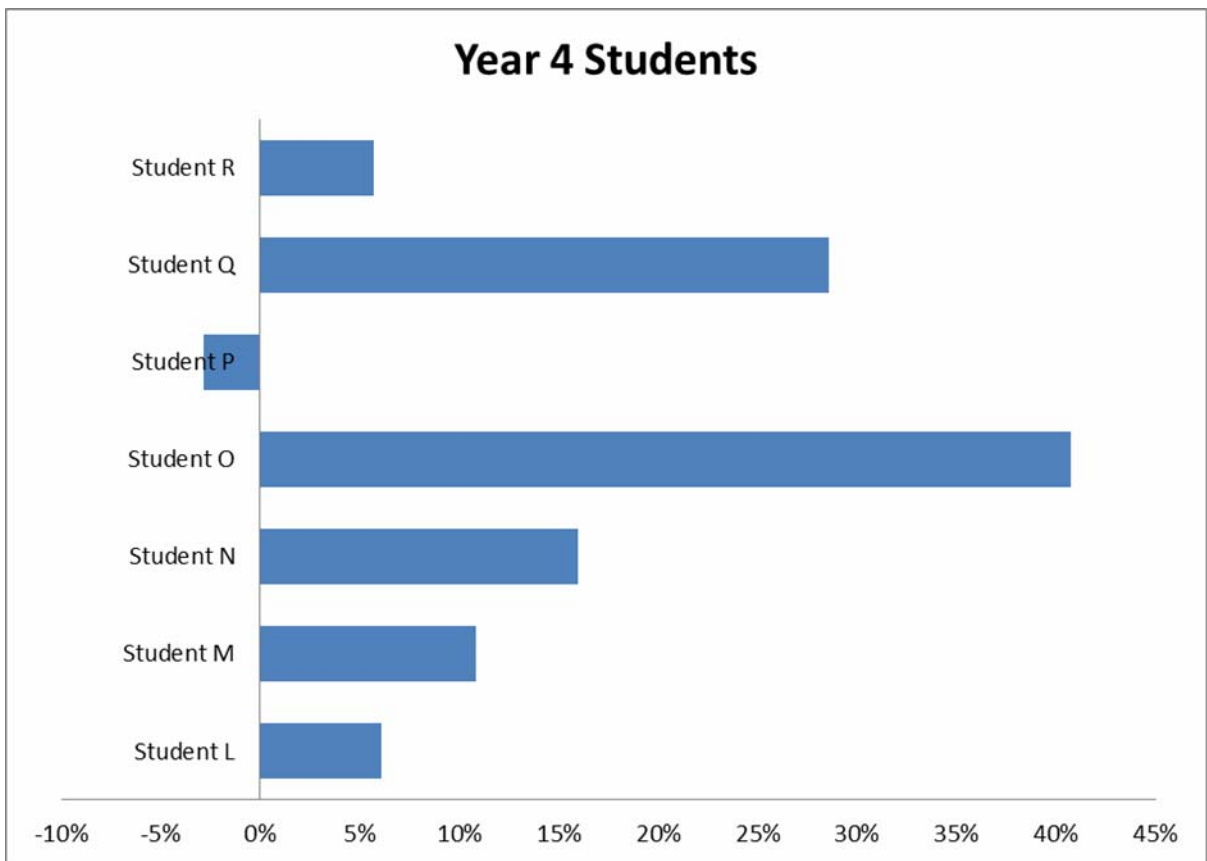


Figure 4 – Percentage change in understanding of year 4 curriculum content

Figure 4 represents the change in knowledge and skills of year 4 students in year 4 maths content. The data shown is the difference between the pre and post-test results. On average, Year 4 students achieved a 15% increase in their current year four maths content.

Students’ confidence levels in Mathematics

Students’ initial confidence levels in mathematics were low. During the six week trial period teachers noted that students’ engagement and confidence levels steadily increased. Classroom evidence included:

- 1) Completion of work at a faster pace with less student errors.
- 2) More students participating in class discussions.
- 3) Increased number of students responding too class questions.

Student's engagement in Maths Wiz

Students were actively completing Maths Wiz activities. There was minimal teacher prompting to keep students on task or redirecting them to the set task. It was also noted that students focused on their tasks as opposed to trying to communicate with their peers.

Teachers noted an increased interest in using the Maths Wiz program outside of their scheduled sessions. An example of this is that students would ask teachers in their maths lessons if they were going to use the Maths Wiz program on that day.

Conclusion

This trial looked at the following targeted areas:

- Was there a decrease in the areas of weakness from previous years?
- Was there an increase in understanding of students' current year level outcomes?
- Did the students' confidence levels in Mathematics increase?
- Were the students engaged with the Maths Wiz program?

Was there a decrease in the areas of weakness from previous years?

At the beginning of the trial period, Year 3 had a total of 363 identified areas of weaknesses. Year 4 had a total of 453 areas of weaknesses that were identified. By the end of the end of the trial program, Year 3 had 205 identified areas of weakness. This resulted in a 44% decrease in areas of weaknesses. Year 4 had 355 areas of weakness still to be consolidated. This resulted in a 22% decrease.

Was there an increase in understanding of students' current year level outcomes?

Year 3 students had a 33% increase in their skills and knowledge in year 3 mathematics. Year 4 students had a 15% increase in their skills and knowledge in year 4 mathematics.

Did the students' confidence levels in Mathematics increase?

Students' confidence levels in mathematics increased throughout the trial period.

Were the students engaged with the Maths Wiz program?

Students were actively engaged in the Maths Wiz program throughout the trial period.

In conclusion the majority of year three and year four students enjoyed success using the Maths Wiz program. Statistics showed a measurable decrease in student weaknesses and a corresponding increase in students overall maths knowledge in their current year level. During the trial period students showed an increased confidence level in mathematics and actively participated in all Maths Wiz lessons.

All of the targeted areas of this trial were met.

Year 3 Individual Results

Student A	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 8 Year 3 weaknesses = 28	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 3 Year 3 weaknesses = 18
Student B	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 14 Year 3 weaknesses = 27	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 14 Year 3 weaknesses = 27
Student C	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 1 Year 3 weaknesses = 22	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 20
Student D	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 4 Year 3 weaknesses = 12	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 10
Student E	Pre-Test Year 1 weaknesses = 3 Year 2 weaknesses = 11 Year 3 weaknesses = 25	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 10
Student F	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 10 Year 3 weaknesses = 24	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 11
Student G	Pre-Test Year 1 weaknesses = 8 Year 2 weaknesses = 12 Year 3 weaknesses = 29	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 3 Year 3 weaknesses = 24
Student H	Pre-Test Year 1 weaknesses = 1 Year 2 weaknesses = 6 Year 3 weaknesses = 22	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 2 Year 3 weaknesses = 21
Student I	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 8	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 1
Student J	Pre-Test Year 1 weaknesses = 9 Year 2 weaknesses = 15 Year 3 weaknesses = 29	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 5 Year 3 weaknesses = 23
Student K	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 8 Year 3 weaknesses = 27	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 2 Year 3 weaknesses = 11

Year 4 Individual Results

Student L	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 9 Year 3 weaknesses = 21 Year 4 weaknesses = 33	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 25 Year 4 weaknesses = 31
Student M	Pre-Test Year 1 weaknesses = 6 Year 2 weaknesses = 12 Year 3 weaknesses = 32 Year 4 weaknesses = 37	Post-Test Year 1 weaknesses = 1 Year 2 weaknesses = 10 Year 3 weaknesses = 28 Year 4 weaknesses = 33
Student N	Pre-Test Year 1 weaknesses = 1 Year 2 weaknesses = 6 Year 3 weaknesses = 24 Year 4 weaknesses = 25	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 12 Year 4 weaknesses = 21
Student O	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 14 Year 4 weaknesses = 27	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 11 Year 4 weaknesses = 16
Student P	Pre-Test Year 1 weaknesses = 4 Year 2 weaknesses = 7 Year 3 weaknesses = 29 Year 4 weaknesses = 35	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 7 Year 3 weaknesses = 20 Year 4 weaknesses = 36
Student Q	Pre-Test Year 1 weaknesses = 0 Year 2 weaknesses = 5 Year 3 weaknesses = 18 Year 4 weaknesses = 35	Post-Test Year 1 weaknesses = 0 Year 2 weaknesses = 0 Year 3 weaknesses = 15 Year 4 weaknesses = 25
Student R	Pre-Test Year 1 weaknesses = 9 Year 2 weaknesses = 5 Year 3 weaknesses = 24 Year 4 weaknesses = 35	Post-Test Year 1 weaknesses = 1 Year 2 weaknesses = 3 Year 3 weaknesses = 27 Year 4 weaknesses = 33