The background features a complex, abstract design. On the right side, there is a dense grid of thin, curved lines in various colors (blue, green, yellow, red, purple) that create a sense of depth and perspective, resembling a warped grid or a funnel shape. On the left side, several thin lines extend from the top towards the center, each ending in a small, solid-colored dot (blue, green, yellow, red).

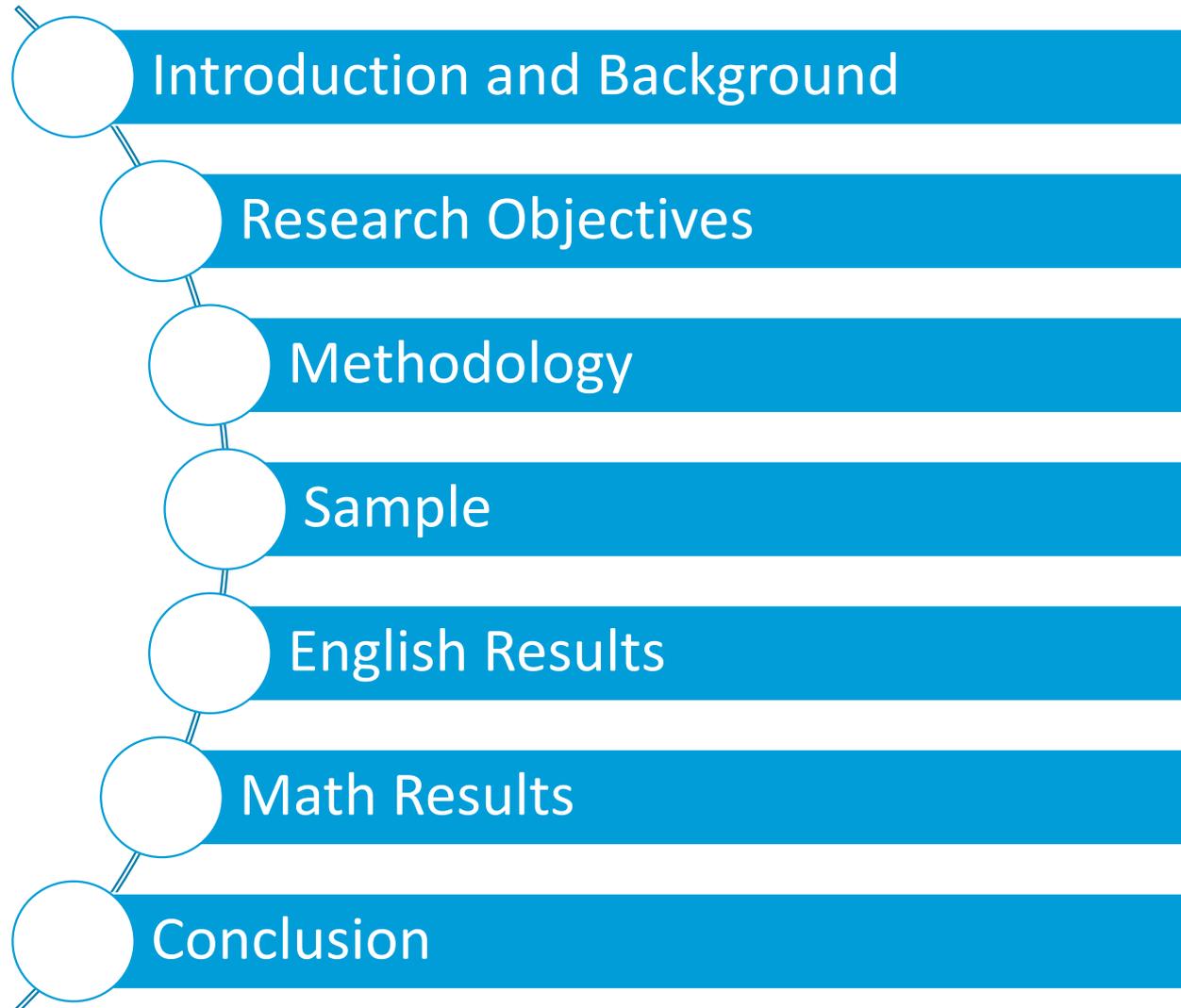
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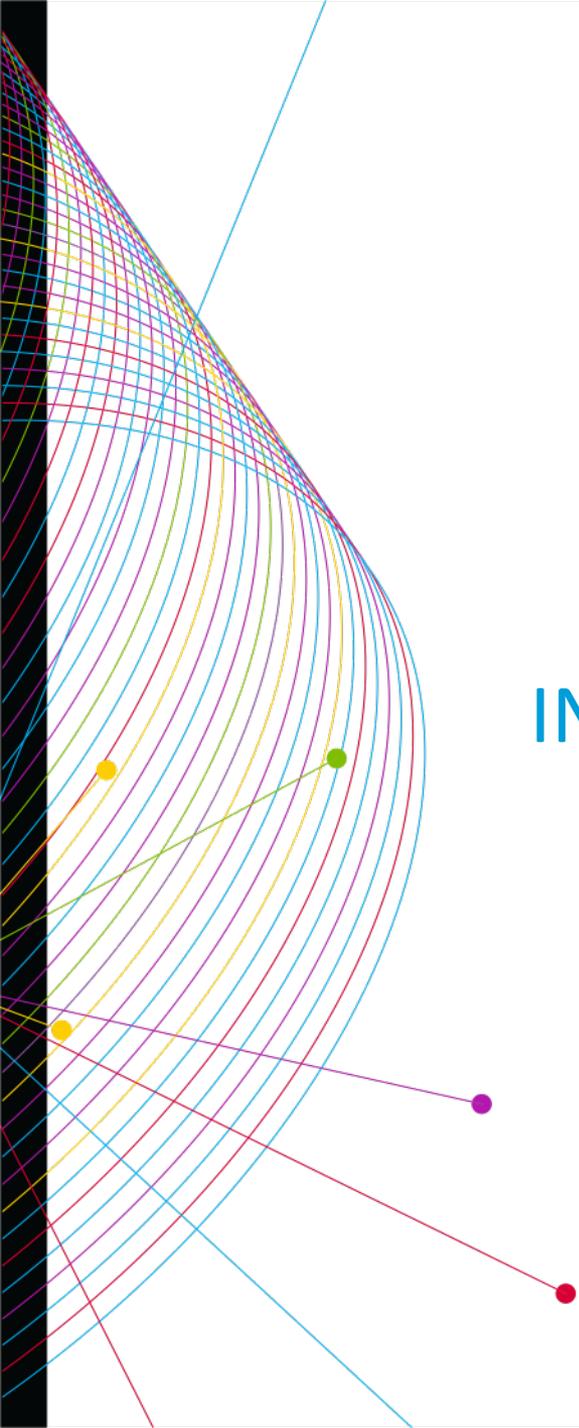
PROOF OF CONCEPT TEST PRESENTATION

PREPARED FOR TEACH THE WORLD FOUNDATION

Friday March 10, 2017

AGENDA





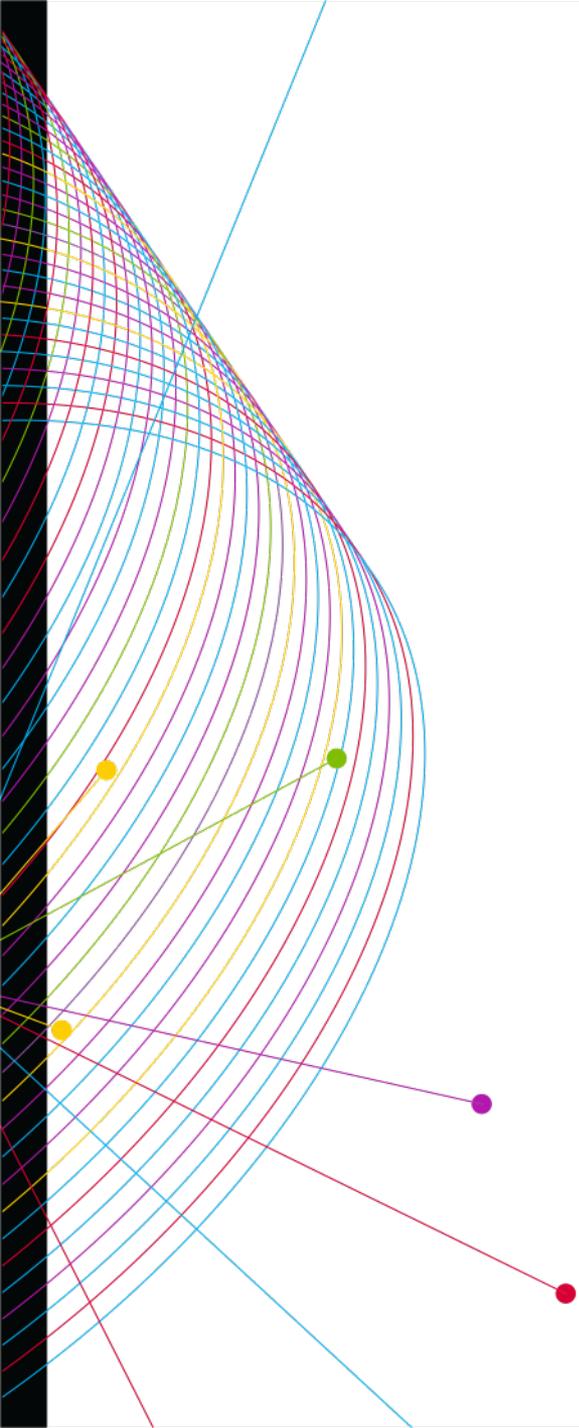
INTRODUCTION AND BACKGROUND

INTRODUCTION

- Pakistan's education sector faces many challenges.
- According to the "State of Education in Pakistan" report by Alif Ailaan, 47% of children between ages 5 and 16 are out of school. The same report highlights that learning outcomes of children are weak across the country in reading and math.
- Pakistan's literacy rate is 58% which ranks 101 out of 123 countries by UNESCO.
- The Government of Pakistan invests a very low amount in education as a percentage of GDP (2% of GDP)
- A report by the Academy of Education Planning and Management in collaboration with UNICEF and Ministry of Education recommends i) targeting children in poor neighborhoods, ii) providing free education, and iii) tapping into non-formal school networks as ways of improving education standards.

TEACH THE WORLD FOUNDATION

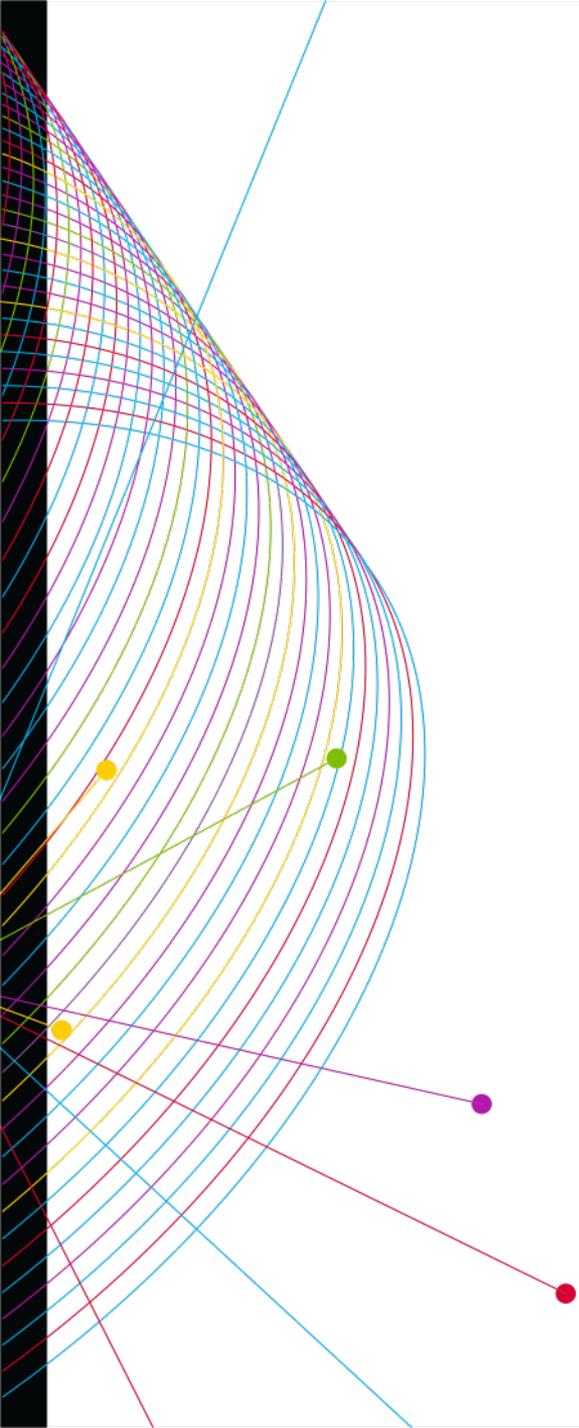
- Educating young children is vital so that they are able to think for themselves and live longer and happier lives. In this context, Teach The World Foundation (TTWF) was launched with the purpose of developing a new approach to combating illiteracy.
- The Teach-the-World Foundation's (TTWF) mission is to establish and deploy effective and scalable models of literacy and learning by leveraging the power of digital technology.



RESEARCH OBJECTIVES

RESEARCH OBJECTIVES

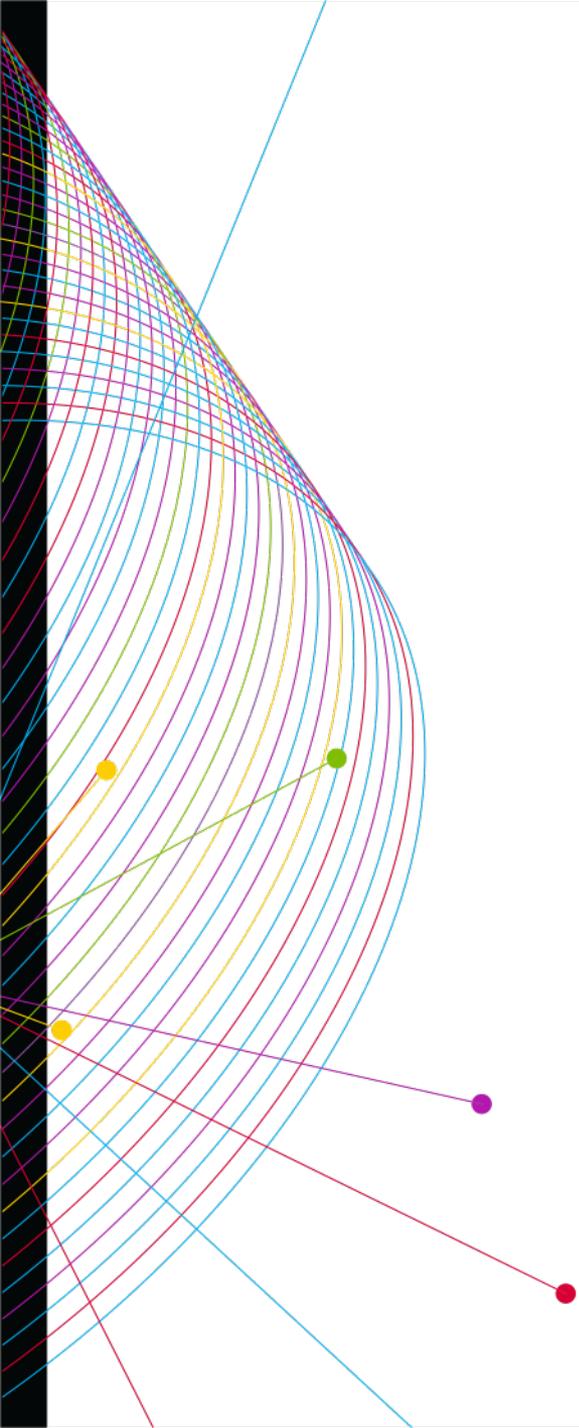
- One of the methods TTWF is using to reduce illiteracy is through gamification of learning.
- Specifically, Teach the World Foundation uses applications on tablets which have the purpose of increasing the knowledge level of children. The focus of TTWF's program/application is to improve basic literacy and numeracy skills such as improving English language skills with emphasis on listening, speaking, reading, and writing and on improving Math skill with emphasis on numbers, shapes, and concepts.
- Therefore, Teach The World Foundation hired Nielsen to conduct a Proof Of Concept Test Study to determine the impact of gamification on the learning of children in the absence of teachers.



METHODOLOGY

METHODOLOGY

- To assess the impact of the intervention by TTWF, a quasi-experimental study design was used with a control and intervention group. A baseline study was conducted with both the groups and a post intervention impact assessment end-line study was conducted with both the groups after a period of three months. The study was designed to measure the learning outcomes of students before and after the intervention.
- **Intervention Group-** This group comprised of 23 children from low income backgrounds with little to no prior education. These children were brought to a central location at Railway Colony School Karachi and were given the intervention. The children were given access to one tablet each and were allowed to use the tablet for up to 3 hours, 5 days a week, over a period of 3 months.
- **Control Group-** This group comprised of 20 children from low income backgrounds. All the children were students at a Government School located at Railway Colony Karachi. These children were not given access to the tablet. All Control Group children were students at the Government School and attending classes, completed assignments and homework.
- The same group of children were tested in the baseline and end-line phase with the exception of a few dropouts.

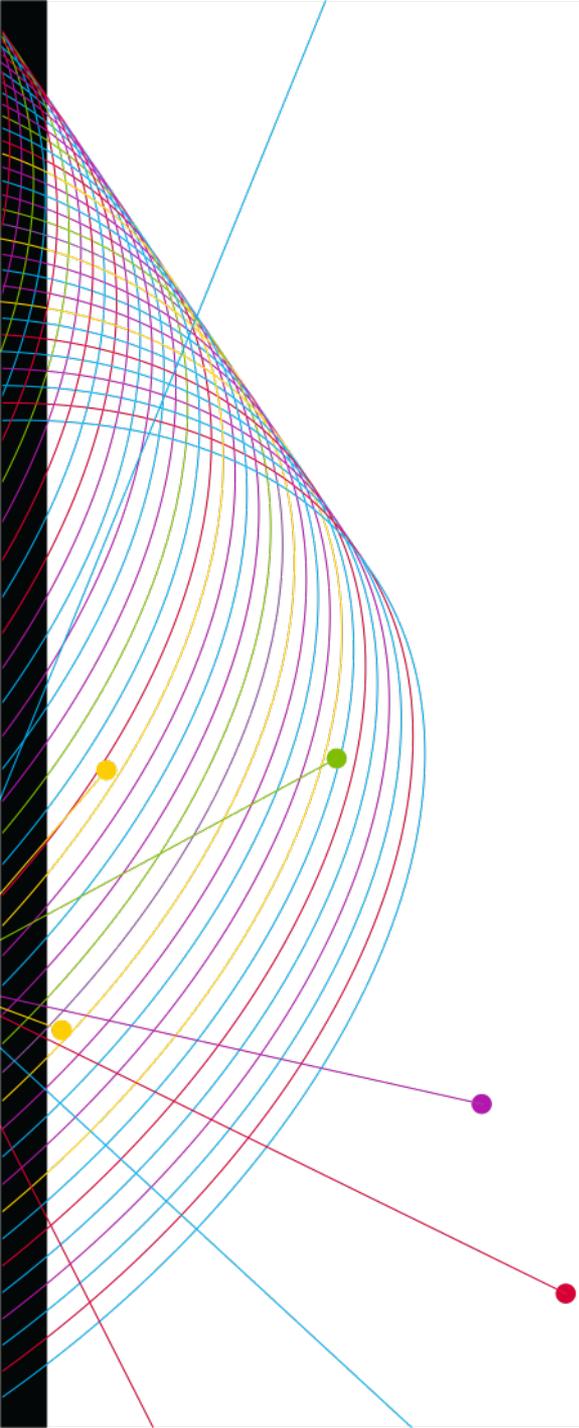


SAMPLE

SAMPLE

	Baseline Test	Post Intervention Test	Total
Age	Age 5-9	Age 5-9	Total
Intervention Group	23	20	43
Control Group	20	20	40
Total	43	40	83

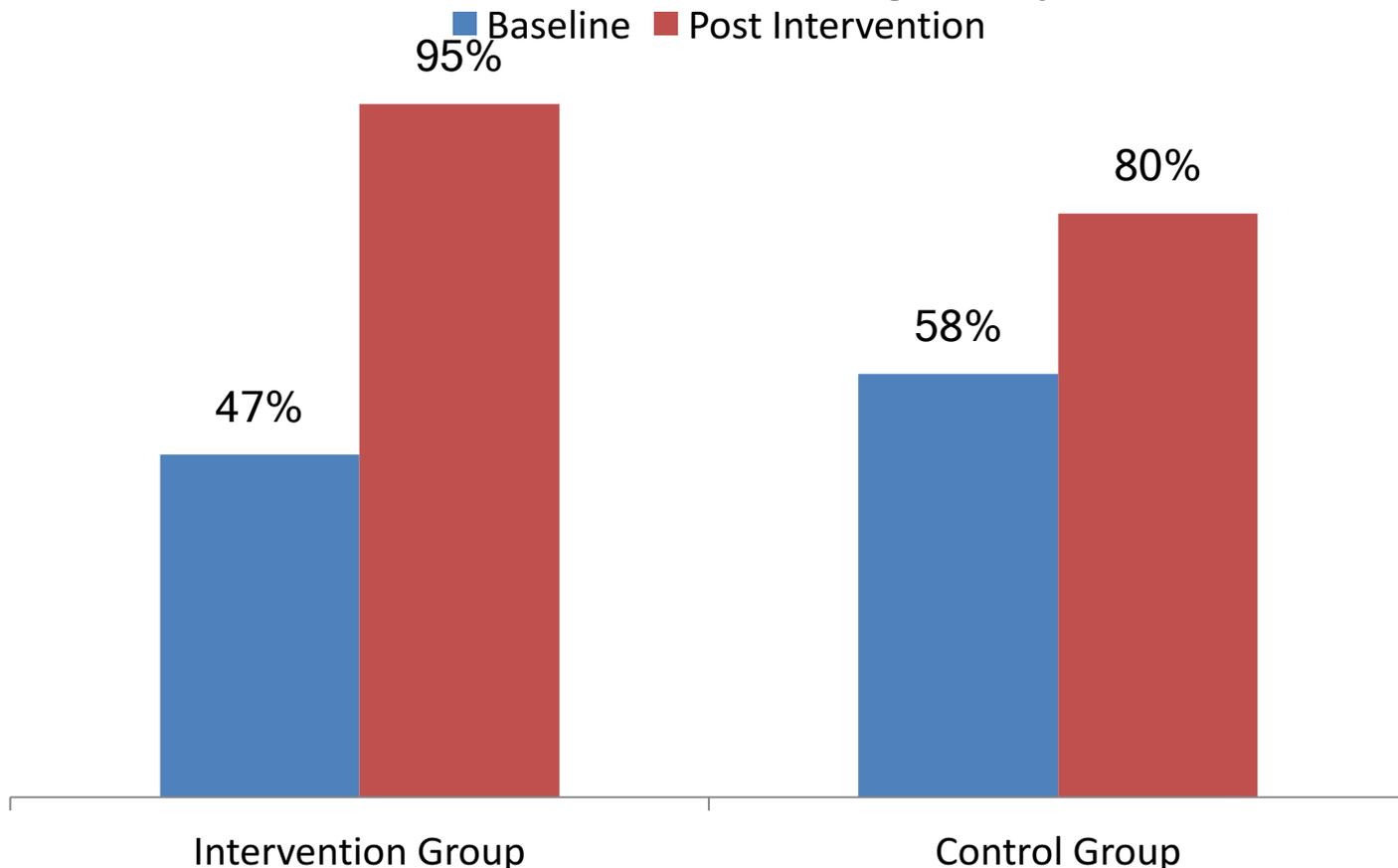
Note: Final sample was determined and approved by Teach The World Foundation

An abstract graphic on the left side of the page. It features a vertical black bar on the far left. From this bar, a series of thin, curved lines in various colors (blue, green, yellow, orange, red, purple) fan out towards the right. Some of these lines terminate in small colored dots. Additionally, several straight lines of different colors extend from the dots back towards the left, some ending in dots of their own color. The overall effect is that of a complex, multi-colored network or data visualization.

ENGLISH RESULTS

ENGLISH READING

Able to Read and Recite the English Alphabet



Intervention Group

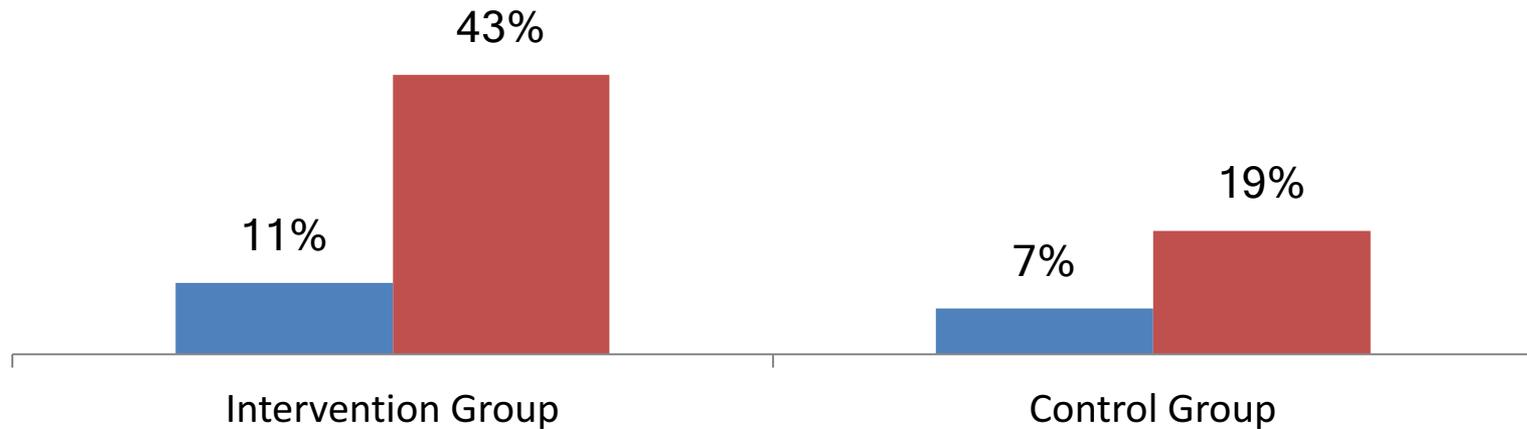
Control Group

 **HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO READ AND RECITE THE ENGLISH ALPHABET. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.**

ENGLISH WRITING

Ability to Write All the Letters of the English Alphabet

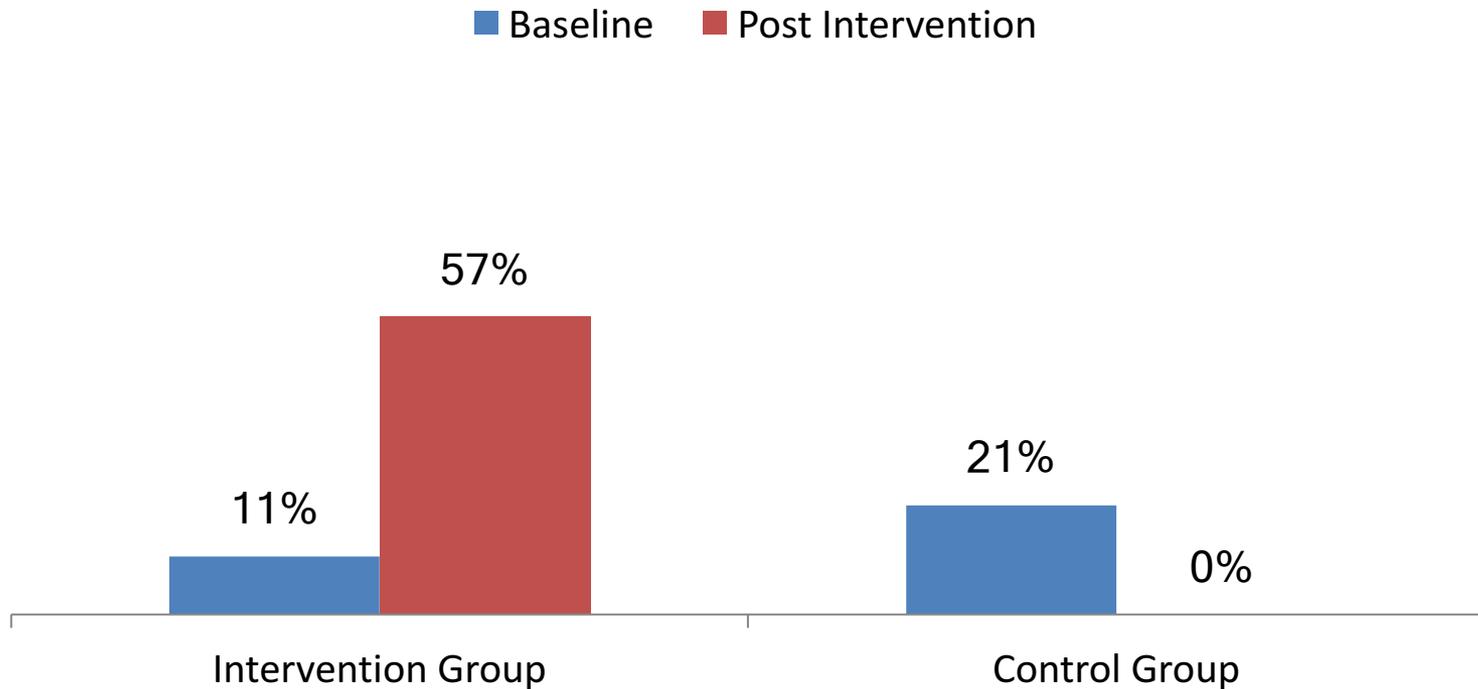
■ Baseline ■ Post Intervention



HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO WRITE ALL LETTERS IN THE ALPHABET. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

ENGLISH ALPHABET LETTER SOUNDS

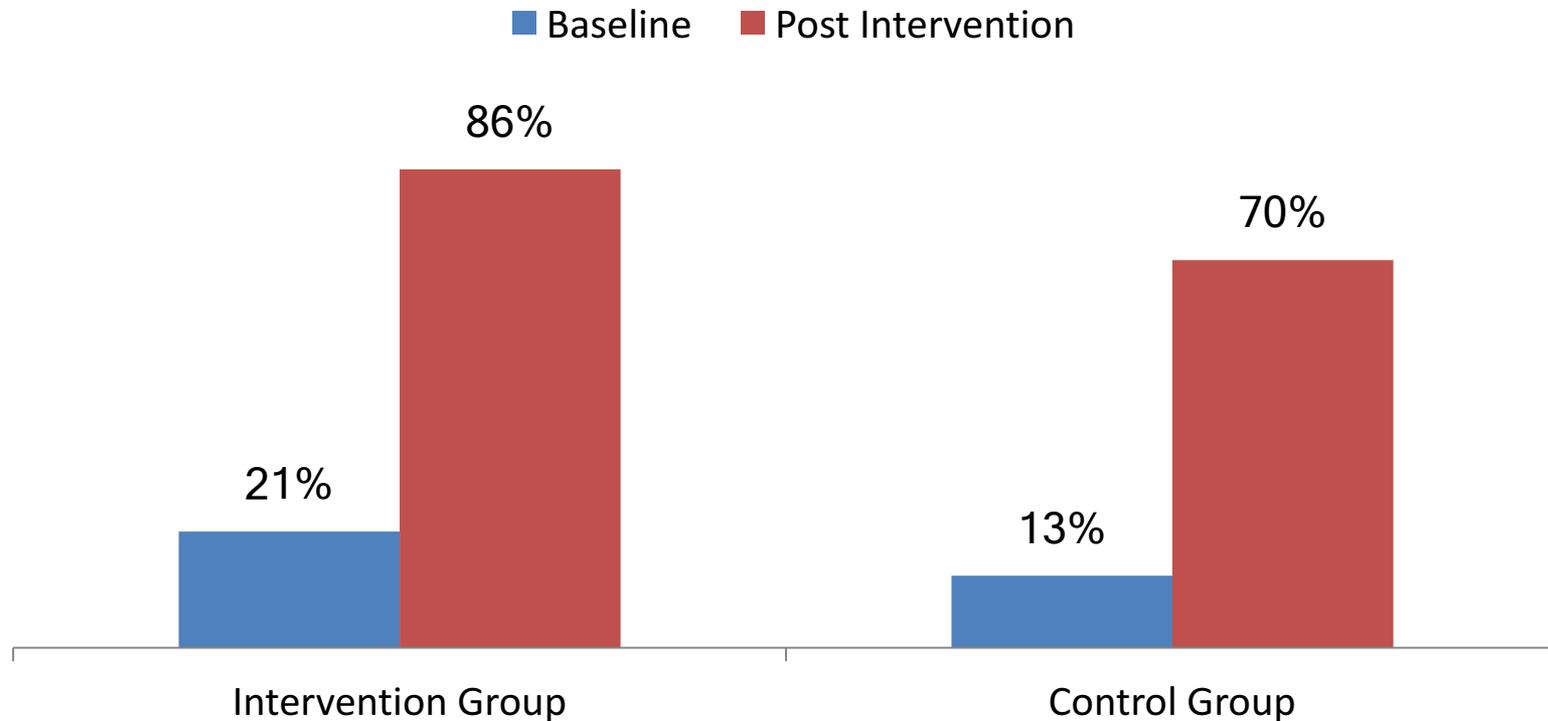
Ability to say English Alphabet Letter Sounds in English



HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE LETTER SOUND OF AT LEAST ONE LETTER IN THE ENGLISH ALPHABET. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

ANIMAL NAMES

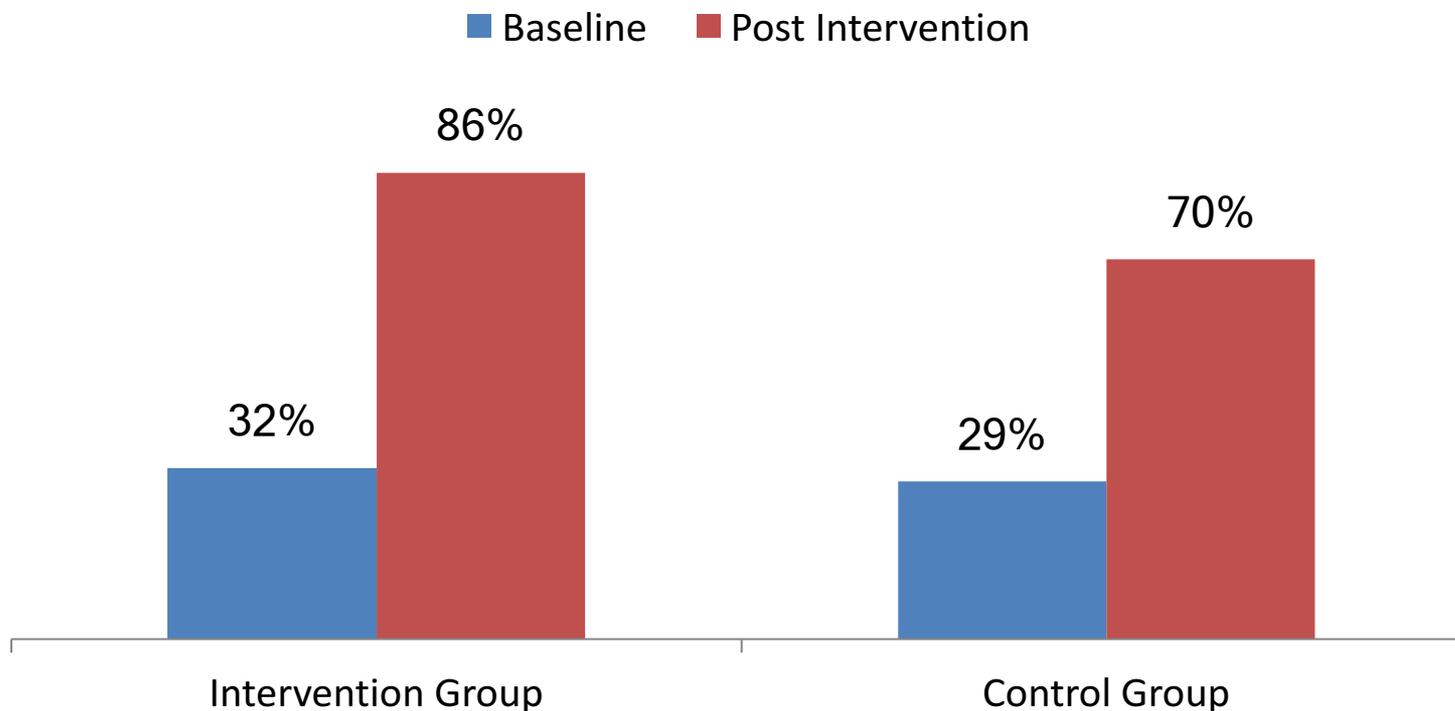
Ability to say Animal Names in English



 **HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE NAME OF ONE ANIMAL IN ENGLISH. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.**

FRUIT NAMES

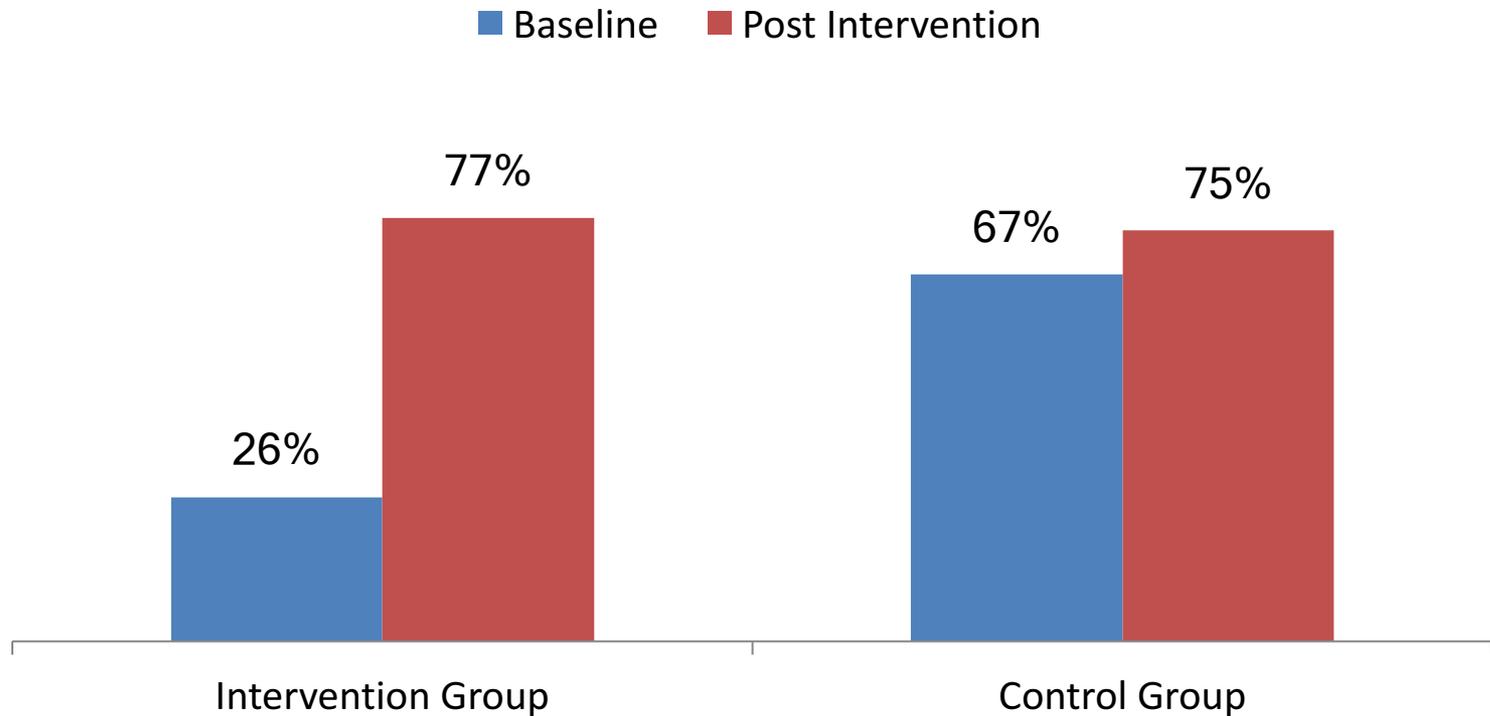
Ability to say Fruit Names in English



HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE NAME OF ONE FRUIT IN ENGLISH. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

COLOR NAMES

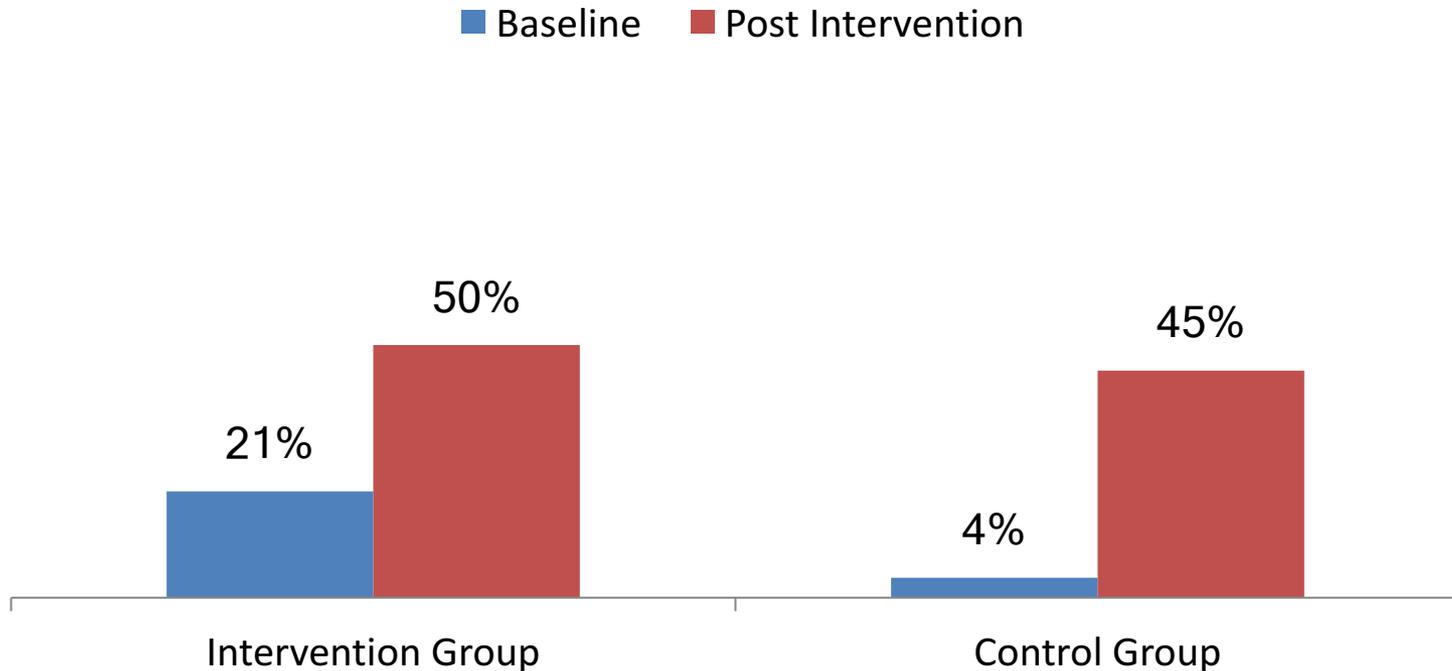
Ability to say Color Names in English



 **HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE NAME OF ONE COLOR IN ENGLISH. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.**

VEGETABLE NAMES

Ability to say Vegetable Names in English

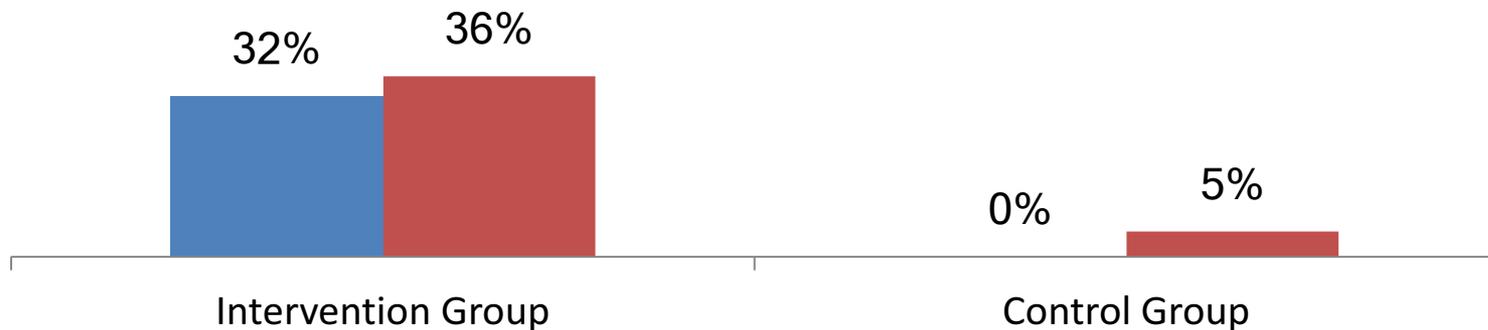


HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE NAME OF ONE VEGETABLE IN ENGLISH. HOWEVER, CONTROL GROUP STUDENTS DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

TRANSPORT OPTION NAMES

Ability to say Names of At Least Four Transport Options in English

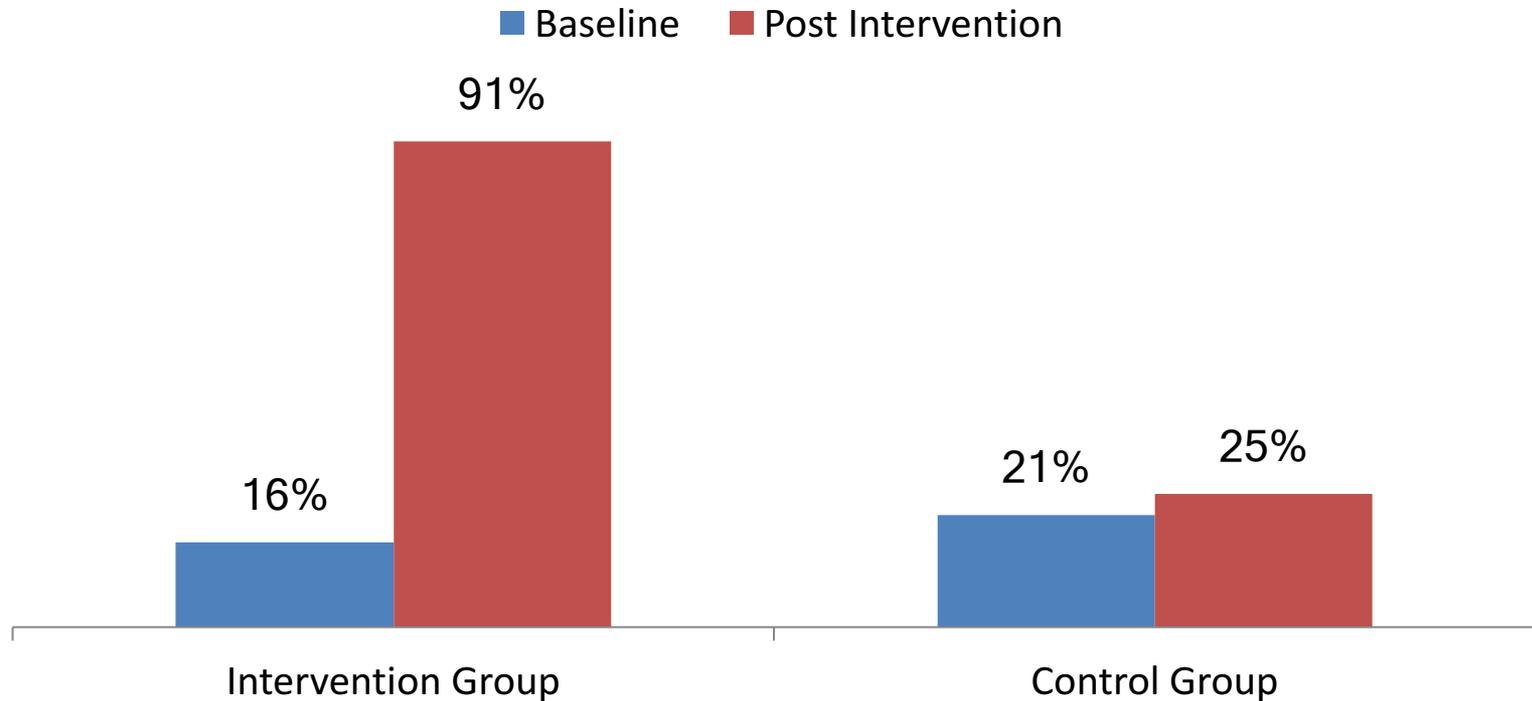
■ Baseline ■ Post Intervention



 HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SAY THE NAME OF FOUR TRANSPORT OPTIONS IN ENGLISH. MOST OF THE CONTROL GROUP STUDENTS WERE UNABLE TO SAY THE NAMES OF FOUR TRANSPORT OPTIONS IN ENGLISH.

SING NURSERY RHYMES

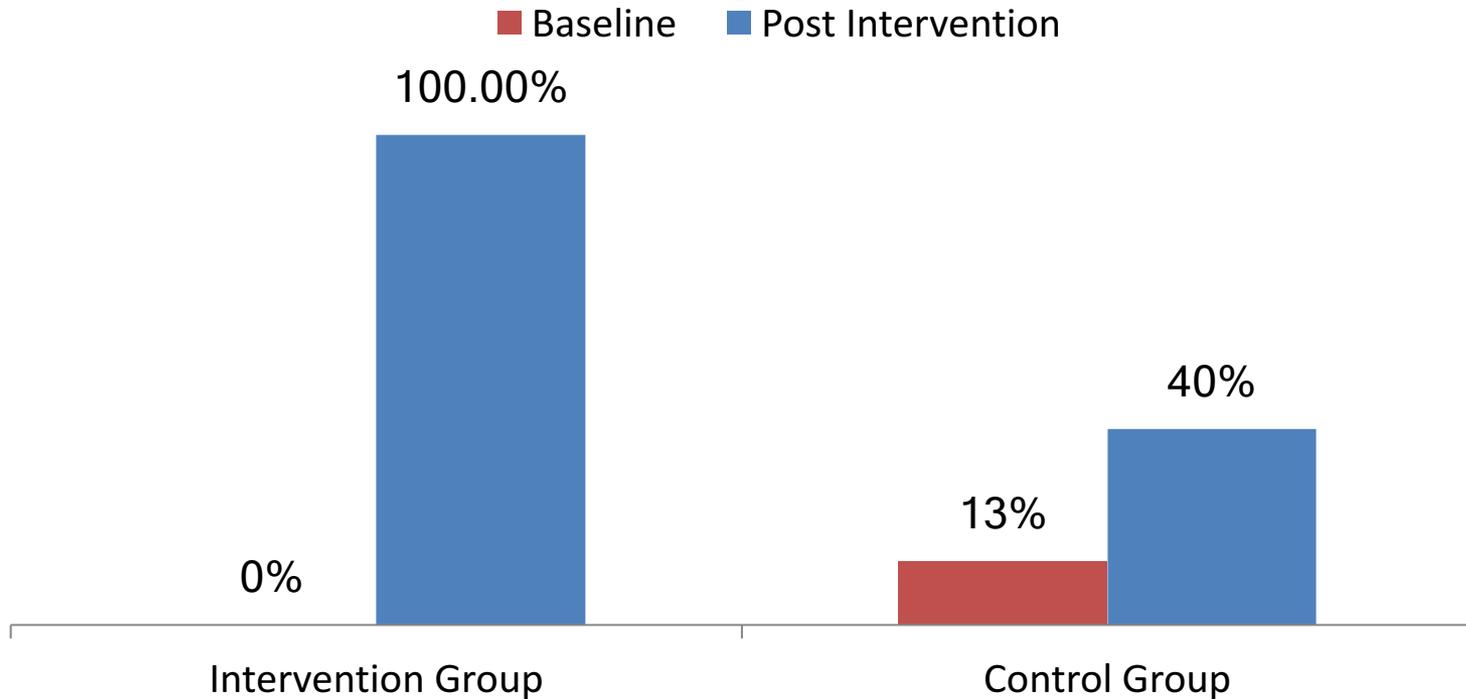
Ability to Sing Nursery Rhymes in English



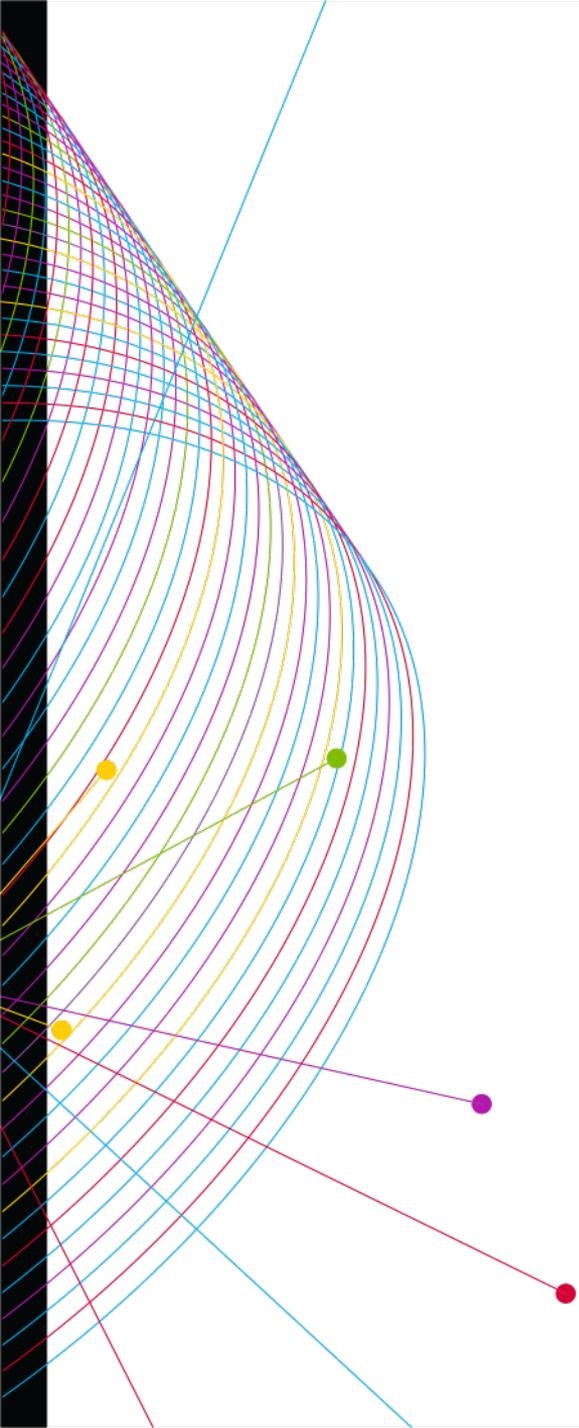
HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO SING AT LEAST ONE NURSERY RHYME IN ENGLISH. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

DIRECTION OF ENGLISH READING

Student Recognizes that English is Read from Left to Right



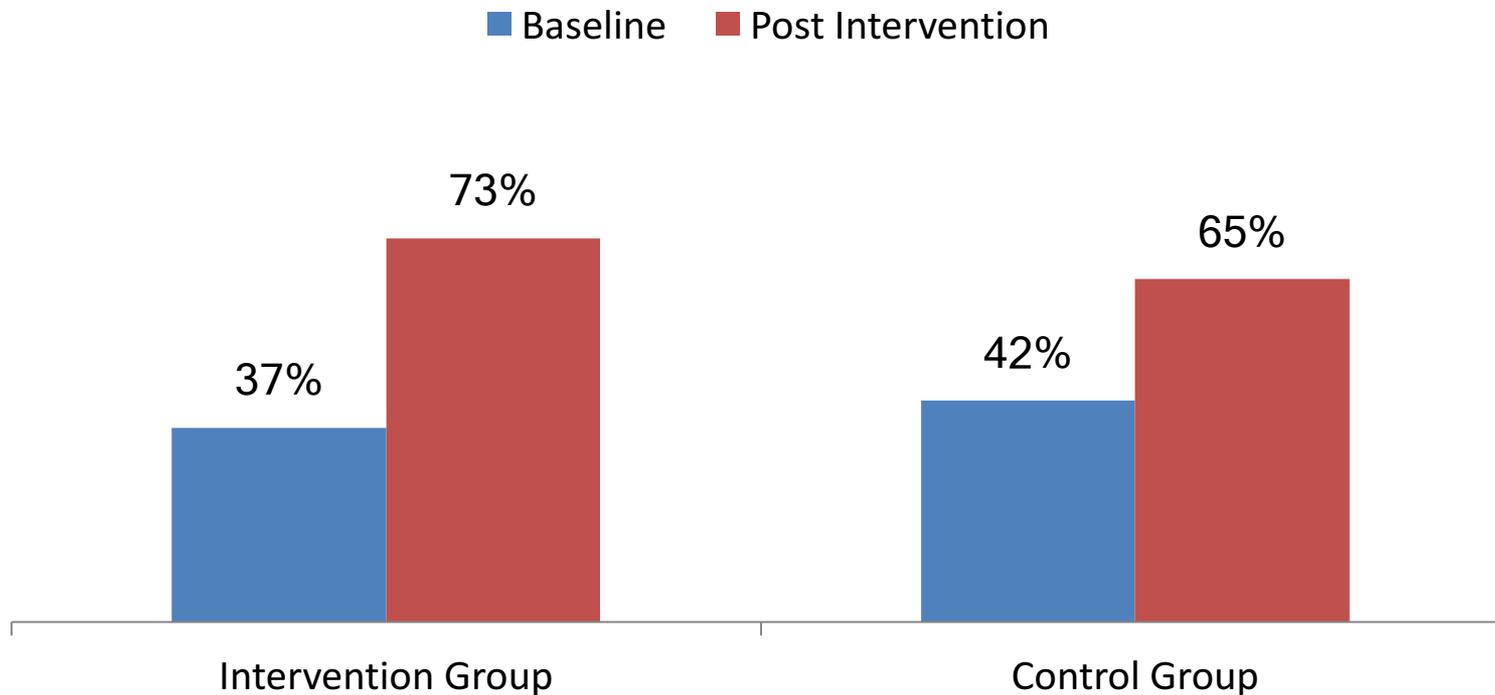
HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO RECOGNIZE THAT THE DIRECTION OF ENGLISH READING IS FROM LEFT TO RIGHT. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.



MATH RESULTS

RECOGNIZE NUMBERS 1-10

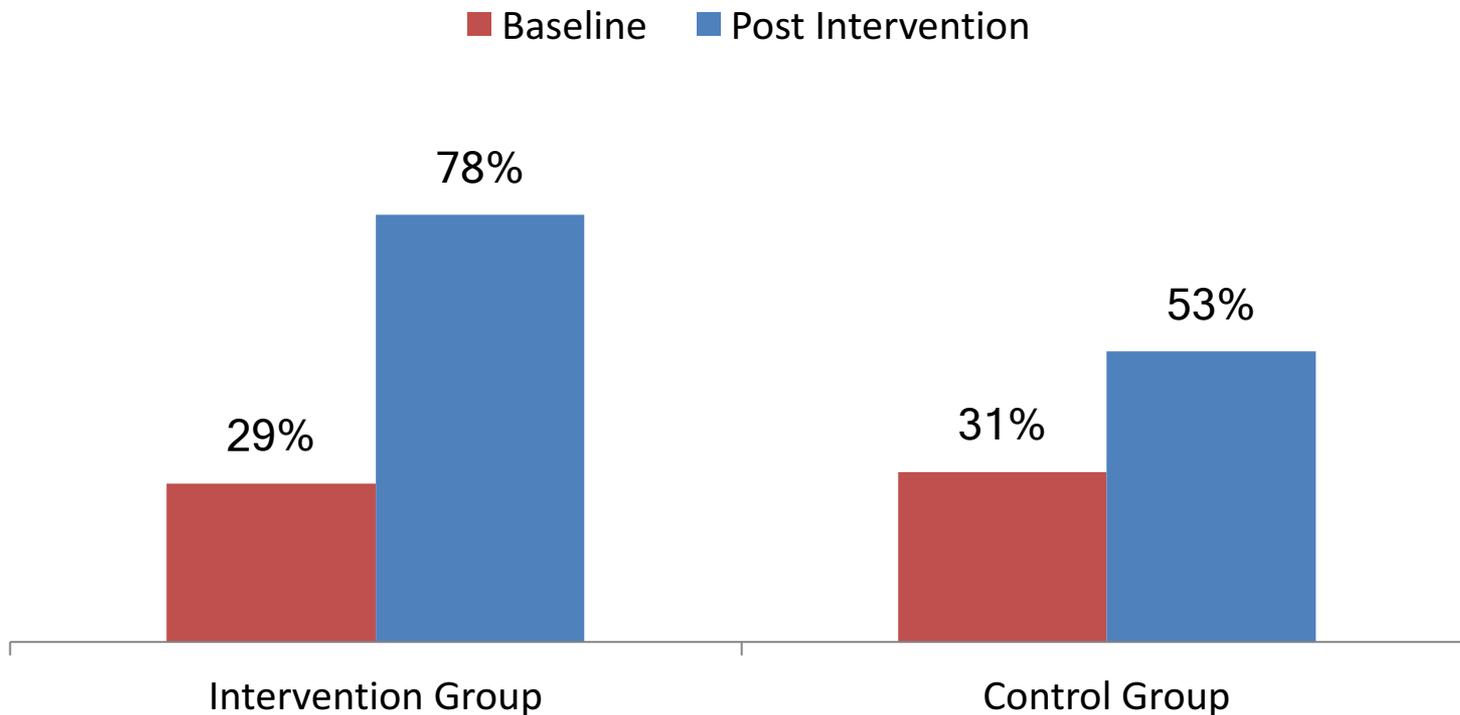
Ability to Recognize Numbers 1-10



HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO READ AND RECOGNIZE THE NUMBERS 1 TO 10. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

RECOGNIZE NUMBERS 11-20

Ability to Recognize Numbers 11-20

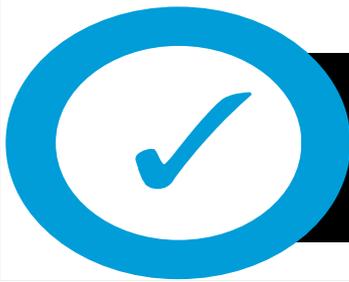
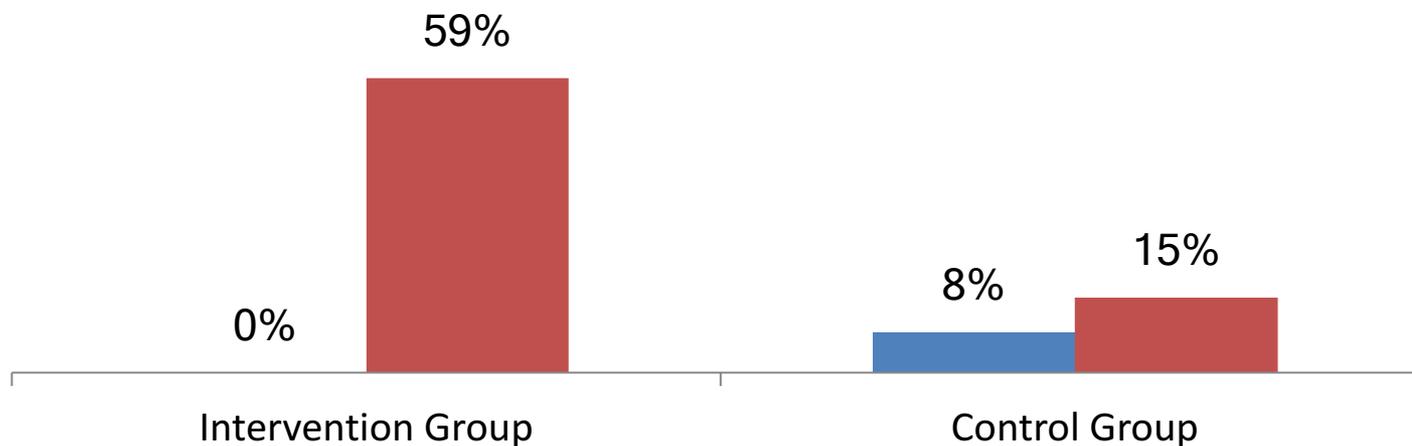


HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO READ AND RECOGNIZE THE NUMBERS 11 TO 20. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

ABILITY TO RECOGNIZE NUMBERS IN A PATTERN

Ability to Recognize Numbers in a Pattern

■ Baseline ■ Post Intervention

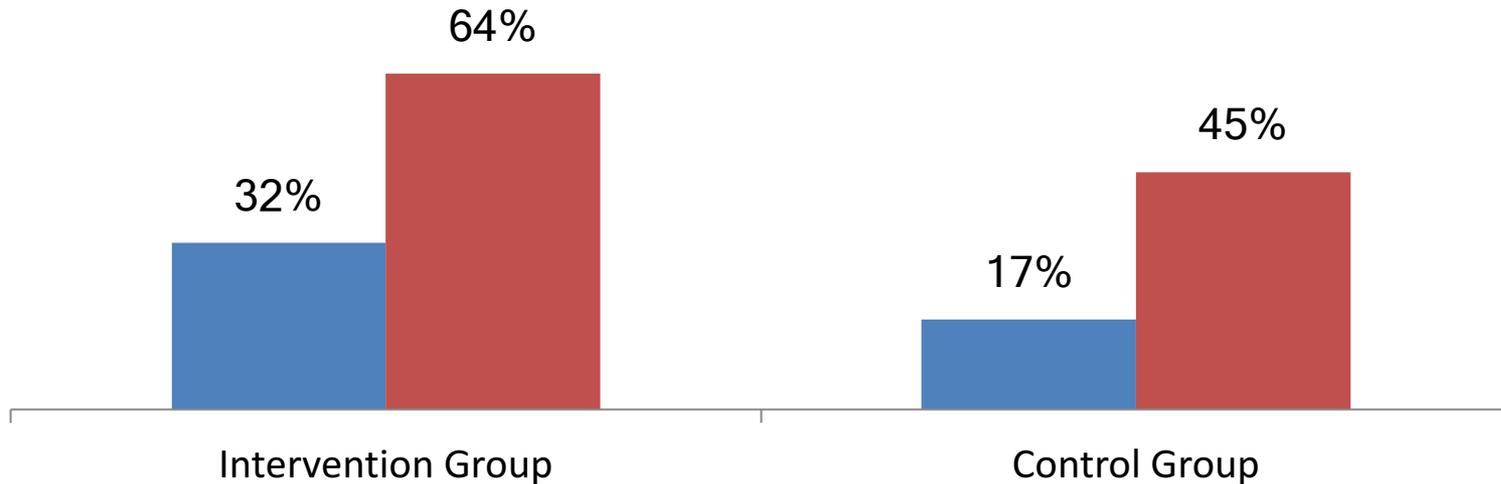


HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO RECOGNIZE NUMBERS IN A PATTERN AND SAY THE NEXT NUMBER. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

ABILITY TO RECOGNIZE DIFFERENCE BETWEEN NUMBERS

Ability to Recognize Difference Between Numbers

■ Baseline ■ Post Intervention

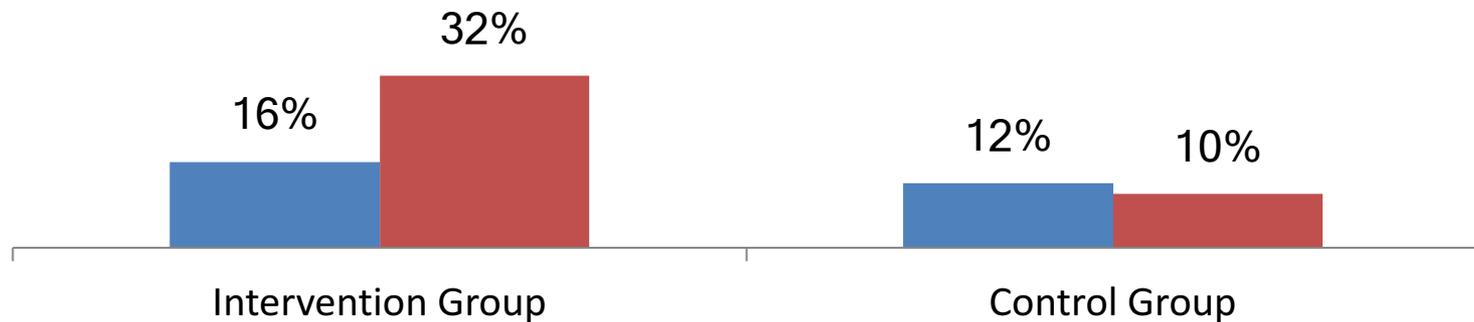


 HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO RECOGNIZE THE DIFFERENCE BETWEEN NUMBERS. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

ADDITION QUESTION

Answer to At Least One Addition Question is Correct

■ Baseline ■ Post Test

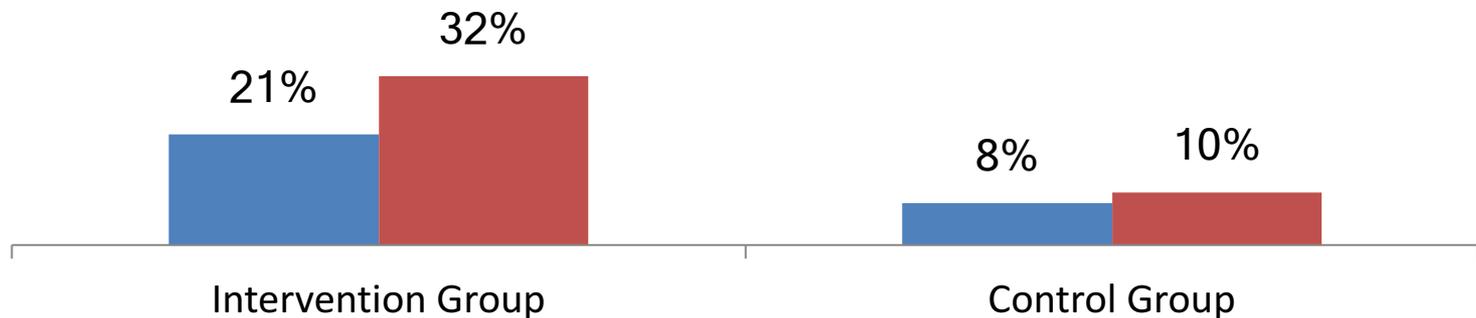


 HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO ANSWER AN ADDITION QUESTION CORRECTLY. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

SUBTRACTION QUESTION

Answer to At Least Once Subtraction Question is Correct

■ Baseline % ■ Post Intervention %



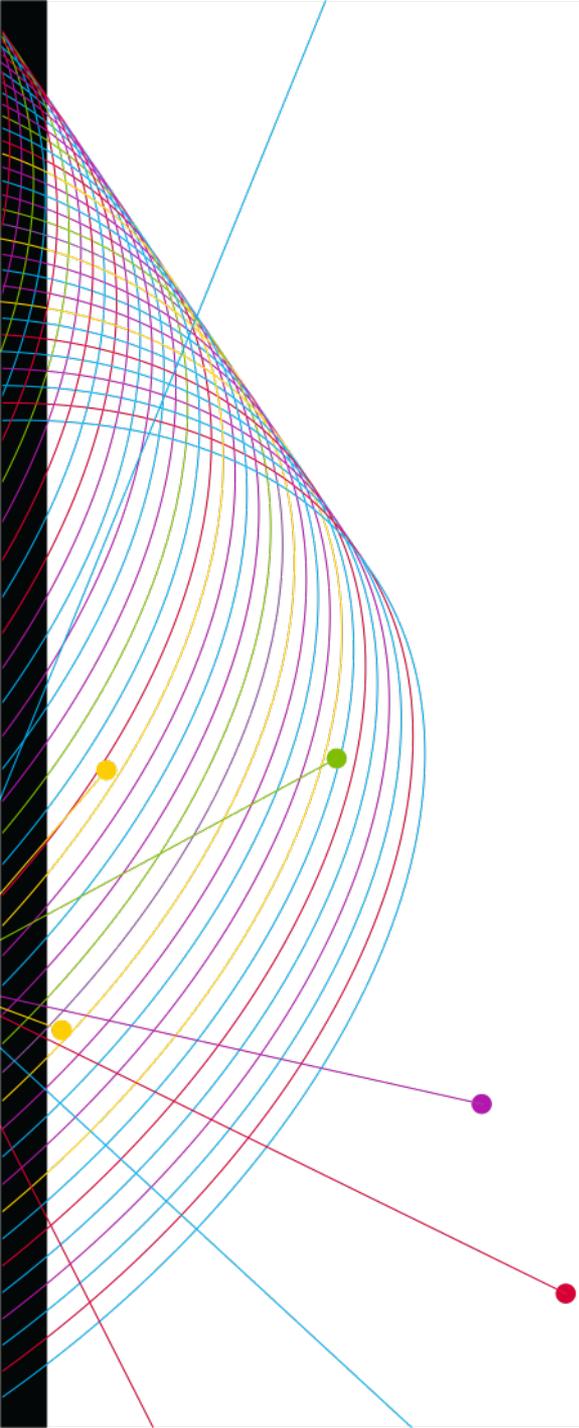
 HIGHER PERCENTAGE OF INTERVENTION GROUP STUDENTS WERE ABLE TO ANSWER A SUBTRACTION QUESTION CORRECTLY. INTERVENTION GROUP STUDENTS ALSO DEMONSTRATED A HIGHER LEVEL OF IMPROVEMENT OVER TIME.

SHAPES

- During the baseline assessment 37% of the intervention group students and 8% of the control group students were able to say the name of at least one 2-D shape in English.
- However, during the post-intervention assessment stage 73% of the intervention group students and 5% of the control group students were able to say the name of at least one 2-D shape in English.
- Therefore, by the post intervention stage, a higher percentage of the intervention group students were able to say the name of a 2-D shape. Intervention group students also demonstrated a higher level of improvement and double the number of student could answer this question.

MATH PROBLEMS AND CONCEPTS

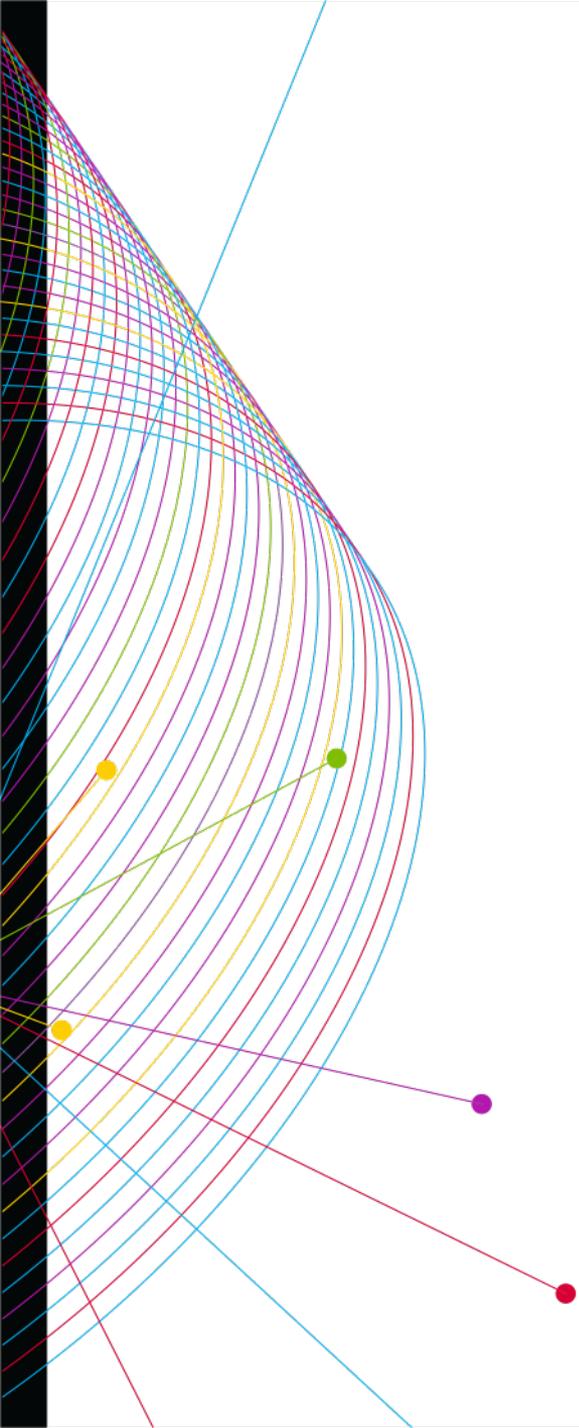
- Students were shown a series of show cards with different visual images with the intention of identifying or comparing basic concepts such as “big vs. small”, “more vs. less”, “long vs. short”, and “before vs. after.”
- Comparison between the baseline and post-intervention assessment results showed no difference or improvement in the intervention group students’ ability to identify concepts.
- However, the reason for this is that the students’ ability to identify concepts was high to begin with (80% or higher) and therefore not much scope for improvement.
- The control group students did demonstrate some improvement in ability to judge “long vs. short” (79% in the baseline and 95% in the post-test) and “big vs. small” (83% in the baseline and 100% in the post-test), however here again the level of knowledge of these concepts is very high to begin with.



QUALITATIVE RESULTS

QUALITATIVE RESULTS FOR INTERVENTION GROUP

- All of the students reported that they enjoyed using the tablet. When probed further, 77% said that they enjoyed using the tablet because they could play games on it while 41% said it was because they could learn the alphabet on it.
- Most of the children had a good grasp on how to use the tablet and the vast majority could turn the tablet on/off, log on to the application, navigate between applications, and plug in their head phone on their own.
- When asked specifically what else did the child learn while using the tablet, 36% reported that they learned ABC, whereas 22% reported that they learned how to count, and read poems.
- When asked specifically what else did the child try to do while using the tablet, 36% reported that they tried to play different games, and 27% reported that they tried to use colours.



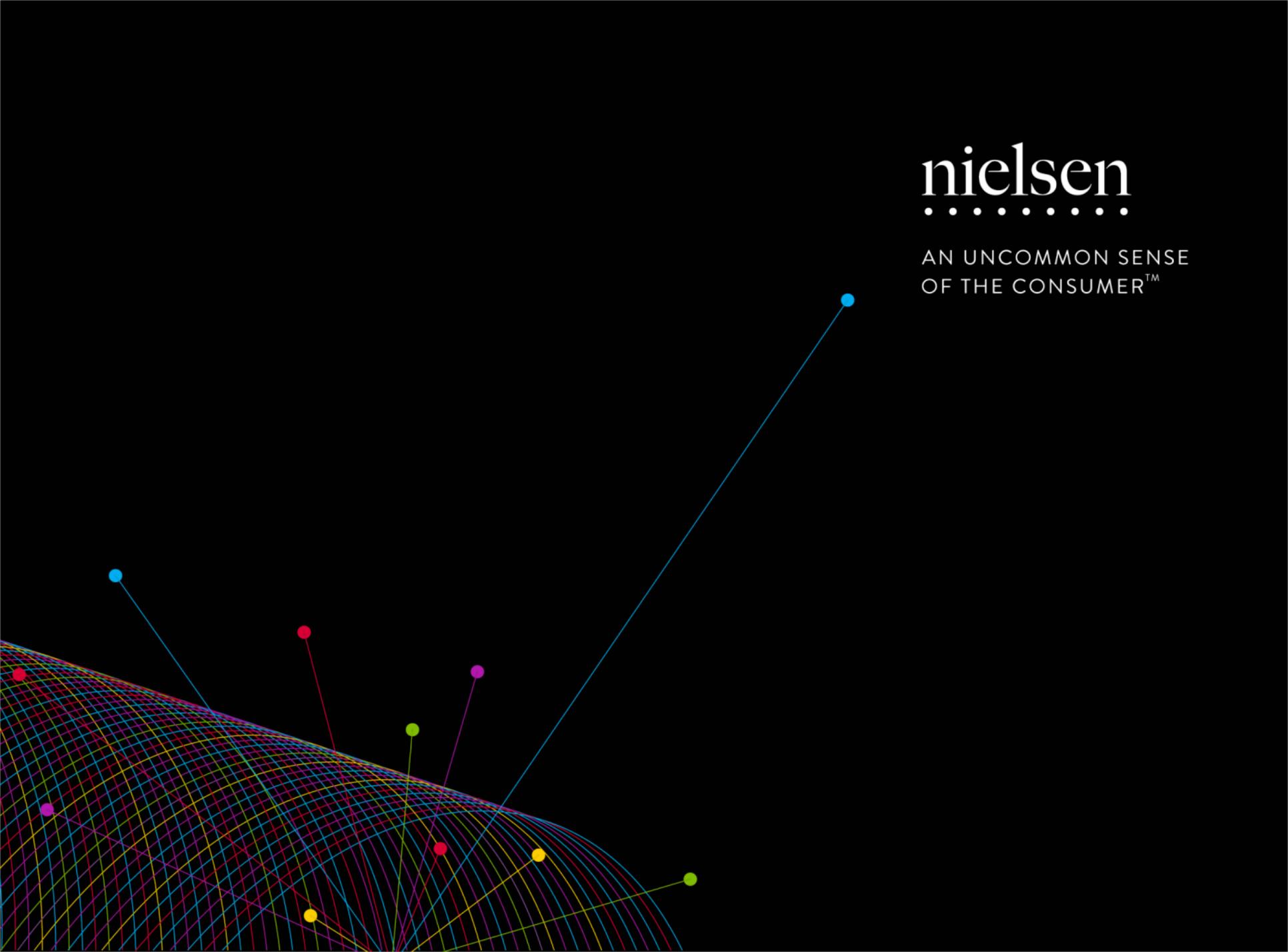
CONCLUSION

CONCLUSION

- Results suggest that there was a significant improvement in the intervention group students' ability to read, write, and speak in English. For example, there was a 48% improvement in the intervention group students' ability to read and recite the English alphabet. Comparatively, the control group students demonstrated a 22% improvement in the same category.
- Both intervention and control group students showed vast improvement in being able to say the names of animals, fruits, vegetables, and colours in English as well as sing English nursery rhymes. However, intervention group students demonstrated higher levels of improvement. For example, there was a 51% improvement in the intervention group students' ability to say the name of at least one colour in English compared to an 8% improvement in the control group.
- Improvement was also observed in the intervention group student's ability to identify shapes, recognize numbers and patterns. There was a 36% improvement in the intervention group students' ability to say the name of at least one two-dimensional shape in English. However, there was no improvement for the control group in this category.

CONCLUSION

- There were also some improvements in the intervention group students' arithmetic ability to do basic number additions and subtractions. For example, there was a 16% increase in the intervention group students' ability to solve an addition problem. Comparatively, there was no improvement for the control group in this category.
- In terms of knowledge of basic concepts, there was little improvement as the baseline results indicated a high degree of understanding for both the intervention and control group.
- Overall, based on the results from the baseline study and post-intervention assessment, the results of this study indicate that there was significant improvement in the intervention group students' ability in reading, writing, and speaking in English as well as identifying shapes, recognizing math numbers, and identifying math patterns. Intervention group students outperformed the control group students across almost all categories. Intervention group students were more likely to answer a question correctly at the post-test. Intervention group students demonstrated a higher level of improvement between the baseline and post-intervention across most of the questions .



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