
FOCUS ON RESEARCH

▶▶▶▶ EFFICACY STUDY

**Evaluation of the Effectiveness of Implementing the
Academy of READING and Academy of MATH
Through Rotary International**

Elliot Loh, Ph.D.,
Manager Research and Field Studies,
AutoSkill International Inc.

AutoSkill[®]

A helping hand for literacy ◀

Executive Summary

The Canadian Computer-Assisted Literacy Solution (CCALS), based on the AutoSkill Academy of READING® and Academy of MATH® program was presented at Rotary International's Centennial Convention in June 2005. Following the convention, discussions were held to determine how CCALS could best be utilized by Rotary to help meet the challenge to improve world-wide literacy. It was believed that Rotary clubs, with access to computers and high speed internet connections, could help individuals using AutoSkill programs to improve their reading and math skills.

In April, 2006, Rotary International's 2007- 2008 President asked that a pilot project be undertaken in three Districts - two in Canada and one in Australia - to test the effectiveness of this approach. In total, 161 students (including 18 Aboriginal students) participated in this pilot project and achieved impressive results. These students were assisted by 41 facilitators and 3 District Coordinators.

In the reading program, 71 students completed both a pre test and post test on the program. These 71 students averaged 4.3 hours of focused training and achieved average gains of 0.9 grade levels on the reading test. In the math program, 44 students with pre and post test results averaged 3.9 hours of focused training and achieved average gains of 0.6 grade levels.

Evaluations from students and facilitators were extremely positive. The following report outlines the findings of this pilot project.

"CCALS has the potential to contribute to raise reading and math levels of millions. CCALS provides Rotary with an opportunity to bring technology to the teaching and learning situation."

-- Facilitator's comment

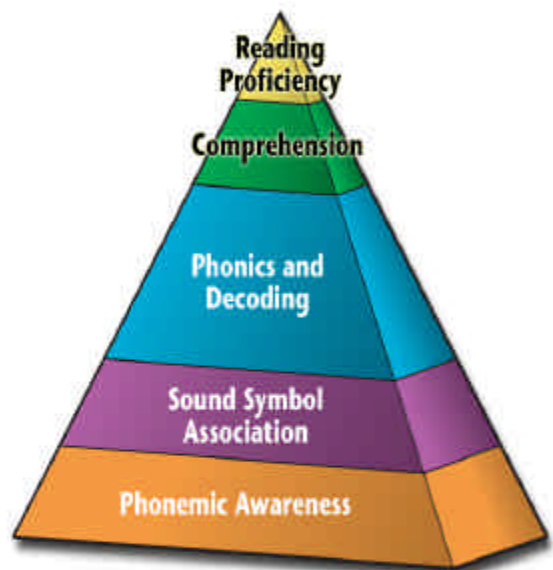
Academy of READING

Background on Academy of READING

The AutoSkill Academy of READING program is a research-based intervention software program designed to supplement a reading curriculum by developing essential foundation reading skills in English. The Academy of READING promotes the acquisition of basic reading skills through a rigorous training program that is based on extensive research in the areas of neuroscience, neuro-psychology and educational psychology. Students receive extensive training in order to master a range of basic reading skills to a level of becoming automatic, a concept known as “automaticity.” Automaticity frees up one’s attention resources which in turn enables better decoding and allows one to focus on extracting meaning from written text.

Automaticity and Reading Sub Skill Acquisition

Initially, basic reading tasks require a high degree of cognitive effort to perform. However, once learned, these tasks become automatic and require fewer cognitive resources. Automaticity is established through repeated trials that strengthen the neural connections that are involved in mediating basic reading skills. To master an exercise that teaches reading skills in the Academy of READING, students must not only meet an accuracy criterion (percent correct), but must also achieve a consistent and rapid response pattern, which is the hallmark of a task that has been learned to an automatic level. Once a task has become automatic, the student has more cognitive resources available to devote to other higher-level components of the reading process such as comprehension. The Academy of READING also provides training that promotes reading comprehension once a number of basic reading skills have been mastered.

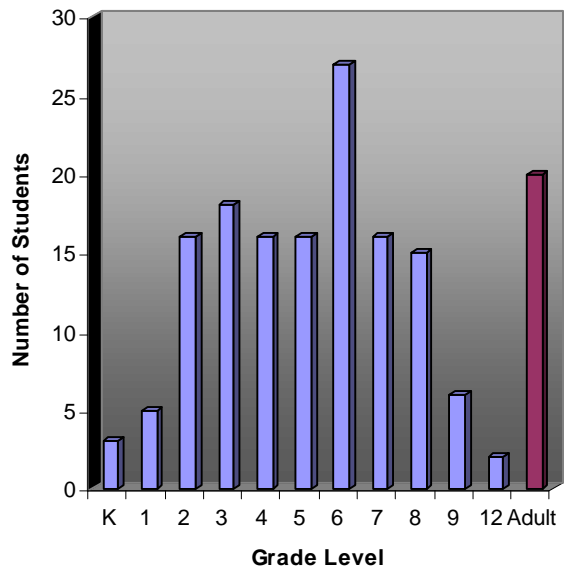


Students

Through the Rotary Pilot project, a total of 160 students started using the Academy of READING between June 30 and December 3rd, 2006. The level of students ranged from Kindergarten to Adult (Figure 1) with the greatest number of students (n=27) registered at the sixth grade followed by students registered as adults (n=20).

The Academy of READING precisely monitors the amount of time students spend actively engaged in completing their reading skills training and practice exercises; this is referred to as Time on Task. As students continued to register for training up until the date the data were taken for this report, a cut-off had to be established to remove the bias from newly registered students; the new students would not have had enough time to demonstrate any training achievements. In order for data from students to be included in this report, the student must have achieved at least 30 minutes of focused "Time on Task" training. This report on the Academy of READING will focus on the 120 students that were logged into the program for 30 minutes or more.

Figure 1: Registered Grade Level of Students Using the Academy of READING



Training Achievement

The 120 students spent an average of 10.9 weeks training on the Academy of READING program. During this period they attended an average of 1.6 training sessions per week and were logged on to the program for an average of 7.0 hours. Students averaged 4.3 hours of focused training on the program during which time they mastered an average 7.2 reading skills. Given the nature of the implementation which is less formal than the typical school setting, this level of achievement by these students was quite remarkable.

Gains in Reading Proficiency

Prior to the start of training, all students registered in the second grade or higher had to complete the Cloze Paragraph Reading Placement Test which provides an assessment of the student's reading proficiency. During the period of November 8th to November 30th some students completed the test again to assess changes in their level of reading proficiency.

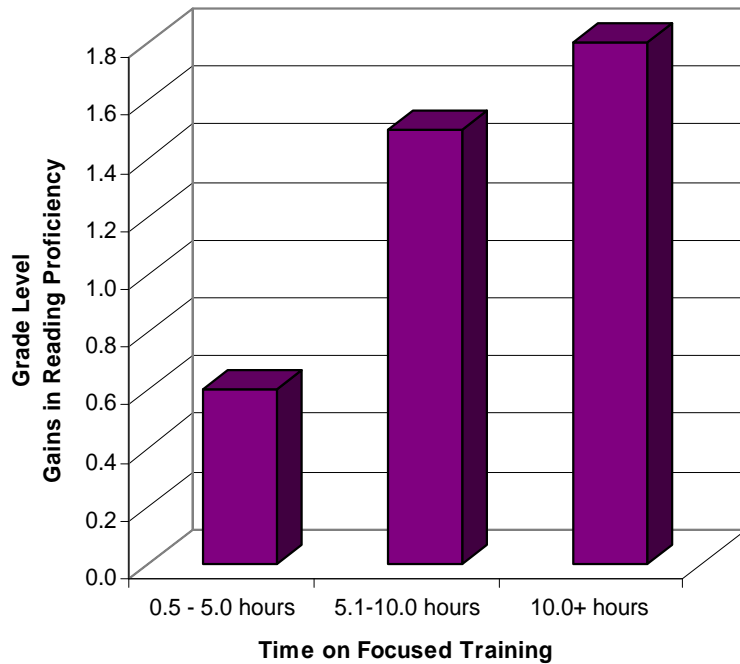
A total of 71 students completed the second Placement Test in November. Gains in students' performance were determined by subtracting their pre-training test score from the November test score. If a student scored lower on the November test than they did on the initial test, their gain score was set at zero.

Analysis of the students' data revealed that students demonstrated impressive average gains of 0.9 grade levels during this relatively brief training period.

As students' achieved higher amounts of focused training time, their average gain scores increased (Figure 2). Students that achieved between 0.5 and 5.0 hours of focused training demonstrated average gains of 0.6 grade levels (n=49); students that achieved between 5.1 and 10.0 hours of focused training achieved gains of 1.5 grade levels (n=10); and students that achieved more than 10 hours of focused training achieved gains of 1.8 grade levels (n=12). These are excellent results for

implementations that did not benefit from the typical resources that are found in the school environments. Moreover, a clear relationship was demonstrated between the amount of training time and the degree of gains exhibited by these students.

Figure 2:
Students' Gains on the Cloze Paragraph Reading Test



Student Experience

In late November, students were asked to complete a brief online survey that allowed them to provide feedback on their training experience with the Academy of READING.

Five Yes/No questions were asked in the survey as well as one question that asked the students to rate their experience.

The students' responses were exceptionally positive. **100% of the students indicated that they thought training on the Academy of READING improved their reading skills!**

88% the students indicated that they enjoyed using the training program and 81% indicated they would like to keep using it. **94% of students indicated that they would recommend the program to their friends.**

Overall, 87% of students rated their experience with using the Academy of READING program as either good or excellent.

Academy of READING Survey Questions	Response
Did you enjoy working on the Academy of READING?	88% YES
Were the instructions clear and easy to follow?	94% YES
Do you think working on the Academy of READING has improved your reading skills?	100% YES
Would you like to keep using the program?	81% YES
Would you recommend the Academy of READING to your friends?	94% YES
Please rate your overall experience with using Academy of READING.	Excellent 31% Good 56% Fair 13% Poor 0%

Academy of MATH

Background of Academy of MATH

The Academy of MATH literacy intervention software utilizes a systematic approach to develop mathematical proficiency in struggling students. The program supplements existing curriculum by helping students build foundation skills in ten areas that align to recognized standards. Using a three-step intervention methodology, the program delivers a dynamic training experience for each student, allowing a wide range of users with varying skills to progress through training at their own pace.

A critical success factor in mathematical proficiency, computational fluency requires students to develop a well-built foundation in three areas:

- ▶ understanding the meaning of operations and their relationships to each other;
- ▶ knowledge of a large repertoire of number relationships; and
- ▶ a thorough understanding of the base 10 number system.

With the Academy of MATH, students can master these concepts through extensive tutorial and practice sessions in a number of skill areas and question types, including terms, operations, and word problems.

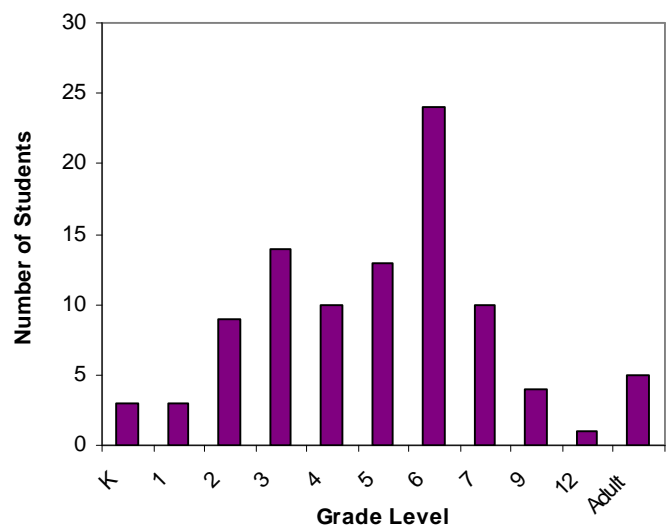
Students

A total of 96 students started to work on the Academy of MATH training program between June 30th and December 4th, 2006. The grade levels of these students using the program ranged for Kindergarten to Adult (Figure 3) with the greatest number of students (n=24) registered at the sixth grade followed by students registered in the third grade (n=14). Of the 96 students training on the Academy of MATH, 95 of the students also trained on the Academy of READING.

The Academy of MATH also monitors the amount of time students spend actively engaged in completing their math skills training and practice; this is referred to as Time on Task. In order for data from students to be included in this report,

they must have achieved at least 30 minutes of Time on Task. This report on the Academy of MATH will focus on the 63 students that were logged into the program for 30 minutes or more.

Figure 3: Grade Level of Students using the Academy of MATH



Math Skills Training Achievement

Sixty-three students worked on the math skills training program for an average of 10.6 weeks. During this period, they attended an average of 1.6 training sessions per week to achieve an average of 6.2 hours of time logged into the application.

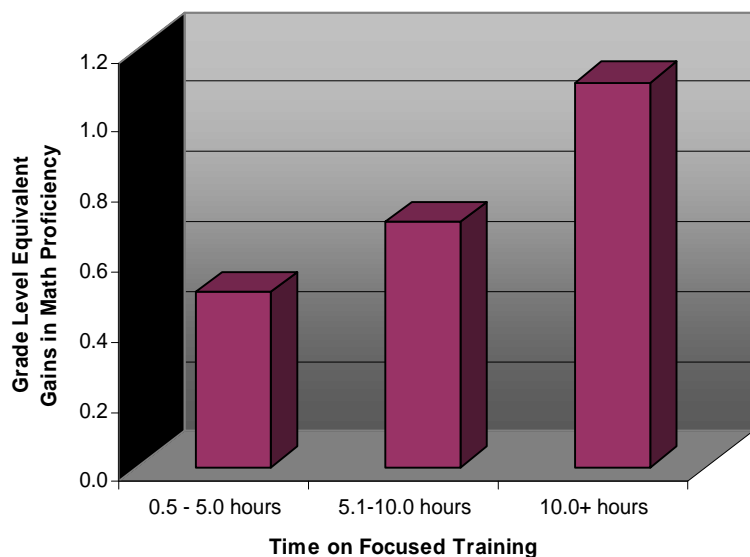
Students averaged 3.9 hours of focused training time where they were able to master an average of 8.7 math subjects (or 2.3 math subjects per hour). This rate of mastery is consistent with well managed implementations as it shows that the students were fully engaged in the training program and were well motivated to master the subjects.

Similar to students training on the Academy of READING, students completed a Math Placement test prior to the start of their training on the Academy of MATH. A total of 44 students completed the placement test again in November to establish their gains in math skill proficiency.

On average, these students achieved gains of 0.6 grade levels as a result of training on the Academy of MATH.

Once again, a positive relationship was shown between the amount of focused Time on Task training and gains demonstrated on the math test (Figure 4). Students that achieved between 0.5 and 5.0 hours of focused training demonstrated gains of 0.5 grade levels (n=33); students that achieved between 5.1 and 10.0 hours of focused training demonstrated average gains of 0.7 grade levels (n=6); and students that achieved more than 10 hours of time on task training demonstrated average gains of 1.1 grade levels (n=5). These results are consistent with and in some cases superior to school based implementations.

Figure 4:
Students' Gains on the Math Test



Student Experience

In late November, students were asked to complete a brief online survey that allowed them to provide feedback on their training experience with the Academy of MATH.

Five Yes/No questions were asked in the survey as well as one question that asked the students to rate their experience.

The students' responses were exceptionally positive. 90% of the students provided positive responses to all of the yes/no questions.

100 % of students rated their experience with the using the program as either good or excellent!

Academy of MATH Survey Questions	Response
Did you enjoy working on the Academy of MATH?	90% YES
Were the instructions clear and easy to follow?	90% YES
Do you think working on the Academy of MATH has improved your math skills?	90% YES
Would you like to keep using the program?	90% YES
Would you recommend the Academy of MATH to your friends?	90% YES
Please rate your overall experience with using Academy of MATH	Excellent 40% Good 60% Fair 0% Poor 0%

Facilitators' Experience

The Rotary facilitators participating in the project were also asked to complete a survey on their experience using AutoSkill programs. A number of questions were asked about the facilitators themselves to get a better understanding their range of experience.

About the Facilitators

A total of 22 facilitators responded to the survey. Twelve facilitators (54%) rated themselves as "casual users" or having "little or no experience with computers" Ten facilitators (46%) rated themselves as "Advanced" or "Avid" users of computer technology. In total 82% of the facilitators reported have "extensive teaching experience" or helped teach reading or math in structured environments (See table below).

Teachers' report of their experience in teaching in the literacy domain	Number	%
I have extensive teaching experience in the literacy domain.	13	59
I have helped people improve their reading or math skills in structured programs.	5	23
I have helped other people improve their reading or math skills on a casual basis.	2	9
No experience; first time helping others in this capacity.	2	9

Students Assisted

The number of students each facilitator assisted ranged from 1 to 42. Two facilitators assisted 40 and 42 students and 11 facilitators reported helping only one student. On average, the facilitators helped 6.6 students each.

Student Profiles

Facilitators also gave their impressions of the initial reading and math proficiency of their students (see Tables below). There was a considerable range in initial skill. However, it would appear that the typical reading or math student was somewhat behind in their proficiency, but not severely behind. This indicates that the training program was a good fit for the literacy demographics of these students.

Initial Proficiency in English Reading	Number of Facilitators Responding Affirmatively*
Functionally illiterate in reading in English	2
Very limited English proficiency in reading	9
Some English proficiency in reading	15
Just a bit behind in reading English	9
No English reading difficulties	1
Initial Proficiency in Math Skills	
Little or no math skills	1
Very limited math proficiency	6
Some math proficiency	11
Just a bit behind in math	5
No difficulties in math	8

*NOTE: Facilitators could respond affirmatively to more than one category

Facilitators' Feedback on Program Effectiveness

The facilitators were also asked to rate the effectiveness of each program and provide recommendations on whether Rotary should continue to use the training programs.

The feedback was overwhelmingly positive:

- ▶ 91% of facilitators indicated that they believed that training on the Academy of READING or Academy of MATH benefited their students.
- ▶ 96% indicated they would refer a friend to Academy of READING training.
- ▶ 94% indicated they would refer a friend to Academy of MATH training.
- ▶ 96% said Rotary should continue using the Academy of READING.
- ▶ 94% said Rotary should continue using the Academy of MATH.

Summary of Findings

The results clearly show that the CCALS pilot program was a resounding success. A large number of students were recruited for training on the Academy of READING and the Academy of MATH programs. The students achieved levels of training that were consistent with school-based implementations.

Many students achieved significant amounts of focused training time and mastered many reading and math skills. The students' training success was reflected by their gains on the reading and math tests completed. A positive relationship was found between students' training achievement and their gains in reading and math proficiency. This relationship shows that training on the Academy of READING and Academy of MATH directly improves proficiency in these subject areas.

The students' feedback on the training programs was also very positive. One hundred percent of the students responding to the survey on the Academy of READING indicated that they felt the program helped improve their reading skills. Likewise, 90% of the students responding to the survey on the Academy of MATH reported that the program improved their math skills. Moreover, 90% or more of students training on either program indicated they would recommend the program to a friend. Finally, 87% of all students rated their experience with the Academy of READING as "Good" to "Excellent"; 100% of the students rated their experience with the Academy of MATH as "Good" to "Excellent".

A survey of the facilitators' impressions of the effectiveness of the training programs was equally positive: 91% of facilitators indicated that they believed that training on the Academy of READING or Academy of MATH benefited their students. Ninety-six percent of the facilitators indicated that they would refer Academy of READING training to a friend and the same percentage: 96% recommended that Rotary should continue using the Academy of READING.

These recommendations were echoed for the Academy of MATH, where 94% of the facilitators indicated that they would recommend the Math program to a friend and 94% also indicated that Rotary should continue using the Academy of MATH.

The facilitators also provided a number of comments on the CCALS program. The vast majority of the comments were very complimentary. All comments are listed in the Appendix to this document.

Conclusions

The pilot project has established the feasibility of helping one person at a time with their literacy challenges consistent with Rotary's aims. The results of the pilot program demonstrate that the Academy of READING and the Academy of MATH programs can be effectively implemented through Rotary Clubs with exceptionally positive results. CCALS can augment Rotary's world-wide initiative to help reduce illiteracy in the world.

Appendix: Facilitator's Comments

"Congratulations to AutoSkill and Rotary for teaming up to provide the reading and math programs. The effect of success for a student is far reaching, it affects the whole family. The self management aspect of the program is a confidence builder. Students who use the program at home and at school have the added advantage of increasing the partnership between home and school. Parents appreciate the input of Rotarians who make their time available to encourage students by email and phone calls. CCALS provides an opportunity for the community to be aware of 'hands-on action' by Rotarians. CCALS provides the opportunity for non-Rotarians to actively work alongside Rotarians in a community project. CCALS has the potential to contribute to raise reading and math levels of millions. CCALS provides Rotary with an opportunity to bring technology to the teaching and learning situation. The accountability factor is provided through detailed and useful feedback. The partnership between Rotary and CCALS provides opportunities for success for people of all ages and from all walks of life. "

"A very valuable program that I hope will continue to run. Students love getting the certificates. My student has especially been attracted by the movement on the screen because he is autistic. As long as he works in short bursts he goes really well and has stuck to the program even though he has been locked out by time restraints. I now know how to alter times and percentage success rates to cater for this student when he is frustrated. This helps him to keep on track and stay motivated because he is a visual learner."

"We have not been as regular in our use of the program as I would have liked. Maybe because of the time of year we have been trying to start. I would like to see it more formally timetabled from the beginning of next year."

"Great program. As a Year 2 primary school teacher it was great to see a student learn on such a direct program. I could see that I could teach a similar style, but would have to reinvent the wheel, and may not be so good with the diagnosis or as patient. It seems some of learning potential of the computer world and the internet are fulfilled by this program."

"My students got a bit frustrated trying to meet the criteria for visual matching but have persevered nevertheless. I have enjoyed working on the programs with the students. I found that my students got tired of doing the same thing over numerous sessions."

"The programs should be made so that if there is a part of the program that the child is unable to complete there should be some way of going onto the next step and leave that part; please try and help the children with disabilities as well as they need all the help they can get. Most of my students didn't want to do it after the first few times. We had problems with pop ups at first."

"Overall I like the program. Children loved the puzzle concept. Sometimes the children found it a bit boring when they were stuck on one level and had done 20+ trials. It was good to be able to alter the speed and accuracy levels when required. Some of the very lower ability children struggled to maintain interest.

We feel that our students are benefiting from working at their own level. It doesn't make them competitive with each other and they enjoy the challenge of having to master each level. One of our very weak students has persevered and this is the first time in his 6 years at school that we have seen him apply himself to a program. We think this is because he is working at his own level and his own pace. "

"We really appreciate the way our Rotary club has supported the students at our school."

"The maths programme is fantastic. Logical and easy steps are used to understand concepts with prior knowledge used to consolidate the next stage."

"This course has been very good for the student I have been working with. Without it we would still be battling the books in reading and he would still be lacking confidence."

"My two boys have speech and language problems, lack of concentration, and short-term memory loss so a program like this is ideal and I think provides their main hope for the future. Unfortunately, although their parents are very willing, they would be unable to pay for it themselves. Is there any possibility the children will be able to participate for a longer period of time, PLEASE. I have already completed this survey but thought I might make some additional comments."

"The programme has many good features and my student enjoyed the time spent on most of the exercises. However, we both felt that it was a programme that was designed for children. Adults with literacy problems need constant encouragement at their own level and not made to feel that they are tackling children's work. The content of the programme was good, it was the format that was inappropriate."

"My student benefited from this program. She had memorized words. The nonsense words forced her to learn the consonant and vowel sounds. She became a much faster reader and was able to make predictions. She is a much more confident person as a result of the program. Friends and family have noticed a difference. "

About AutoSkill

AutoSkill International Inc. delivers highly effective and scalable reading and math intervention solutions to help struggling elementary, middle and high school students develop fluency in the foundation skills of reading and math. AutoSkill products use a research-based approach that is proven to generate significant and sustainable gains for at-risk students of all ages and abilities. The company's award-winning software provides an individualized and engaging experience for students, and comprehensive set of monitoring, management and reporting tools for teachers and administrators. AutoSkill deploys its reading and math intervention solutions across schools and districts in North America and Europe.

www.autoskill.com

© 2007 AutoSkill International Inc. All rights reserved. AutoSkill, Academy of READING and Academy of MATH are registered trademarks of AutoSkill International Inc. The names of actual companies and products mentioned herein may be the trademarks of their respective owners. Printed in Canada.