

Pilot Implementation of BrainWare SAFARI at Pierceton Woods Academy

Executive Summary

During the spring of 2017, eight 9th and 10th grade students at Pierceton Woods Academy¹ in Pierceton, IN, used BrainWare SAFARI (BWS) as part of their academic program. The students used BWS 5 days a week for at least 30 minutes a day over the 8-week term. It should be noted that the typical recommended usage of BWS is 3 to 5 times per week over 12 weeks. While the duration of usage was somewhat shorter in this implementation than generally recommended, it was felt that the frequency of usage and the number of sessions that would be completed would result in significant cognitive growth for the students.

The students' cognitive skills were measured before and after their use of BWS with the Mindprint cognitive assessment. The Mindprint subtests evaluate some but not all areas developed in BWS, including some of the most important skills that are predictive of academic performance.

While cognitive skills are predictive of academic performance in general, other factors are also important, including the quality of curriculum, the quality of instruction and student motivation. In a variety of peer-reviewed and field research studies, cognitive growth following use of BWS has been shown to be correlated with improved performance on a variety of academic measures (reading and math), including state standardized test scores. It is typically expected that improvement in academic measures will lag cognitive growth, since academic material must still be learned; improved cognitive skills should enable students to gain ground more quickly as they apply their enhanced cognitive skills to academic learning tasks. Since each student has a unique combination of cognitive strengths and weaknesses, the areas of greatest cognitive growth and academic acceleration are also expected to be student-specific.

During the 8-week period of BrainWare SAFARI usage, one student withdrew from the school and another student refused to continue in BWS when he reached the point where it was challenging for him. The other six students completed the number of sessions that would be expected to result in significant changes in some underlying cognitive functions.

Because of the small sample size, it is not useful to look at average cognitive test scores. The following table summarizes improvements in cognitive ability for the six students:

¹ Pierceton Woods Academy a residential facility operated by Lifeline Youth and Family Services for youth who have been removed from their home and placed with Lifeline through placing agencies such as the Department of Correction, Department of Child Services or Probation.

Student ID	Areas of Significant Improvement²	Areas of Very Significant Improvement	Implications/Recommendations
3926 28 BWS sessions Completed all 168 levels	Visual Motor Speed	Working Memory Visual Memory	Strong visual processing skills can support somewhat less strong verbal skills. Support variable attention skills and strong general learning skills with personalized Toolbox resources.
3928 29 BWS sessions Completed all 168 levels		Processing Speed Attention Verbal Memory Visual Memory	The improvement in attention skills means that all of this student's cognitive skills range from average to exceptional. Extremely capable learner with exceptional strengths in visual memory and reasoning/thinking skills.
3930 37 BWS sessions Completed 144 of 168 levels	Abstract Reasoning	Working Memory Verbal Reasoning Visual Memory	Other than Attention where the student's scores were invalid, all skills are now within the expected range or above. Strengths in visual processing areas can support less strong verbal skills with personalized Toolbox resources. May want to continue BrainWare SAFARI to further develop attention skills.
3931 36 BWS sessions Completed 152 of 168 levels	Processing Speed Working Memory Abstract Reasoning	Attention Verbal Reasoning Visual Memory Verbal Memory	This student's attention skills improved from the bottom 5% of the population to the middle of the normal/expected range. His excellent improvement across the board would suggest the potential for near-term improvements in academic performance
3932 38 BWS sessions Completed 167 of 168 levels	Verbal Memory	Attention Working Memory Verbal Reasoning	This student's attention skills improved from the bottom 5% of the population to the middle of the normal/expected range. All skills are now within the expected range.
3933 34 BWS sessions Completed 89 of 169 levels	Visual Motor Speed Processing Speed Working Memory	Spatial Reasoning Visual Memory	This student's weaknesses in Attention, Verbal Reasoning and Verbal Memory would benefit from further cognitive training and support using resources from his personalized Toolbox. (Student has left the school.)

² Significant improvement required at least 0.5 SD (Standard Deviation). Very Significant Improvement required at least 1.0 SD.

At the time of this report, academic measures are not available for these students. Performance on reading and math measures would be expected to reflect enhanced cognitive capacity over time (i.e., ensuing terms and the next school year). Other measures, such as credits completed or discipline-related incidents, are more difficult to correlate with cognitive growth, because so many confounding factors come into play.

Conclusions

Students at Pierceton Woods were able to complete the targeted number of sessions of BrainWare SAFARI within the eight-week term. All six students who completed a sufficient number of sessions in BrainWare SAFARI experienced significant improvements in multiple areas of cognitive processing. Five of the six students exhibited very low Attention skills on the pre-test. Three of them improved their Attention Skills to a very significant degree (from the bottom 5% of the general population to the middle of the normal/expected range).

Improvements in Working Memory, a skill highly correlated with overall academic performance, problem-solving, decision-making and life success, were achieved by five of the six students.

The Learning Profiles generated for these students from the Mindprint testing provide targeted recommendations and a personalized toolbox of resources for each student which can help the school support ongoing cognitive and academic progress.

About the Mindprint Cognitive Assessment

The Mindprint Assessment is a scientifically valid and reliable battery of cognitive tests suitable for ages 8 through 21. Developed by neuroscientists at the Brain Behavior Laboratory at the Perelman School of Medicine at the University of Pennsylvania, the tests have been normed on over 10,000 children and 100,000 adults via an NIH-sponsored study. The assessment has been used by NASA, the U.S. Army, in clinical trials and is now available in K-12 education. The battery measures each individual's performance against national norms in the following areas.

Speed

Visual Motor Speed

Processing Speed

Executive Functions

Attention

Flexible Thinking

Working Memory

Complex Reasoning

Abstract Reasoning

Verbal Reasoning

Spatial Perception

Memory

Verbal Memory

Visual Memory

A unique Learning Profile is developed for each individual, which serves as a guide to providing the optimal supports for individualized learning.

About BrainWare SAFARI

BrainWare SAFARI is an award-winning software program that incorporates decades of proven multidisciplinary clinical approaches to cognitive skills training into an engaging video-game format. The program can be used from ages 6 and up through adult.

The program contains 20 exercises comprising 168 progressively challenging levels that develop and strengthen 41 cognitive skills (mental processes). The 41 skills fall into six categories: Attention, Memory, Visual Processing, Auditory Processing, Sensory Integration and Reasoning/Logic.

- It incorporates multidisciplinary clinical therapy techniques, refined over 40+ years in a clinical setting with thousands of patients/clients.
- It is supported by peer-reviewed published research and field studies demonstrating significant cognitive gains that translate to improved academic and workplace performance.
- It challenges multiple skills in a highly integrated and progressively challenging way, like cross-training for the brain.
- It delivers a fun and engaging video-game experience.
- It covers a broader scope of cognitive processes to comprehensively improve the skills most critical for learning.