



# COGNITIVE GENESIS:

## Cognitive and Non-cognitive Factors Contributing to Academic Success in Adventist Education

*Following is an adaptation of Dr. Elissa Kido's oral presentation to attendees at the LEAD Conference held October 5-7, 2016, in Silver Spring, Maryland, U.S.A. Her presentation explained the results of the CognitiveGenesis project—a longitudinal study conducted from 2006-2009—and highlighted specific key findings that were shown to contribute to the academic success of students attending Adventist schools in North America.*

**C**ognitiveGenesis,<sup>1</sup> subtitled “Moving Hearts and Minds Upward,” an independent research study initiated by researchers at La Sierra University (Riverside, California, U.S.A.) and Andrews University (Berrien Springs, Michigan, U.S.A.), was designed to provide answers to three vital questions:

- What is the academic achievement of students in NAD K-12 Adventist schools?
- How do students in NAD Adventist schools compare to the national norms?

• What student, home, and school factors are associated with achievement?<sup>2</sup>

Given that no such empirical study of this length and magnitude had ever been done on Adventist education, this was quite a significant undertaking. By its conclusion, the *CognitiveGenesis* researchers had gathered four years' worth of data from more than 51,000 students, the parents of those students, and the teachers and principals of some 800 participating schools.

*CognitiveGenesis* analyzed the standardized achievement test scores of students in Adventist schools in the

U.S. (the Iowa Test of Basic Skills for grades 3-8 and the Iowa Test of Educational Development for grades 9 and 11) and their scores on the Cognitive Abilities Test. This allowed researchers to identify differences between students' aptitude (their predicted academic achievement based on ability) and their actual level of achievement.

### Key Findings

- *Students in the Adventist schools studied outperformed the national average on standardized tests.*

BY ELISSA KIDO

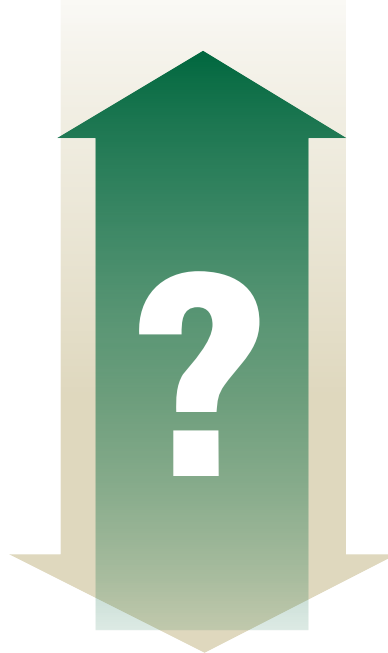
In 2014, the high school graduation rate in the United States was 82 percent.<sup>3</sup> In the same year, the high school graduation rate for Adventist academies in the United States was 98.4 percent.<sup>4</sup> That statistic alone speaks volumes for the quality of education in Adventist schools. However, *CognitiveGenesis* dug much deeper in its analysis and, by comparing test scores, revealed that students in Adventist schools in the United States consistently performed well above the national average. Regardless of subject, grade level, or school size, students in these schools came out ahead. Two significant factors need to be noted with these results. One, the Iowa Tests are achievement tests taken all over the United States by more than three million students annually.<sup>5</sup> This was not an Adventist test or a test created by the research team for *CognitiveGenesis*; it was a standardized, national test.

Second, it is worth a reminder that the Adventist educational system in the North American Division is an open admission system. Any child who wants to attend an Adventist school can—regardless of ability or previous test scores. Unlike other college preparatory schools, Adventist schools do not have high admissions criteria. They are open to everybody, resulting in a highly diverse community of learners.

- *Students in Adventist schools “overachieved” beyond what their ability predicted.*

In the best sense of the word, *CognitiveGenesis* found that students in U.S. Adventist schools were over-achievers. They scored above their predicted achievement or expected achievement in all subjects, in all grades, for all school sizes, regardless of ability level. Let’s take an example of a hypothetical student named Joe. Joe’s parents know that he is a bright child; they see it in his interactions, his conversations, and his curiosity. However, Joe’s teacher tells a different story. Joe is often disruptive in class,

he forgets to turn in his homework, and he has a hard time staying on task. Joe would most likely score lower on the achievement tests than his aptitude tests (which measure ability) would suggest. Sadly, this is the case for many students in schools around the world. For a myriad of reasons—including poor learning environments at home and school, disengaged parents and teachers, convoluted policies—students’ achievement scores often do not accurately reflect their ability. Therefore, a *good* situation would have students’ achievement scores being approximately equivalent



to their ability (or aptitude) scores. This understanding makes the results from *CognitiveGenesis* even more astounding: Students in U.S. Adventist schools achieved *more* or higher than their aptitude scores predicted.

This finding was so remarkable that it left the two statisticians working for *CognitiveGenesis* shaking their heads and double checking the numbers. “The higher achievement scores than expected . . . that’s not the usual thing that happens,” one remarked. But not only did they see that difference the first year; but also, achievement scores were higher than aptitude scores for all four years of the study.

- *Students in U.S. Adventist schools increased in ability.*

Ellen G. White states: “It is the work of true education to train the youth to be thinkers and not mere reflectors of other people’s thoughts.”<sup>6</sup> In essence, one of the underlying goals of Adventist education is to increase students’ ability, not simply their test-taking skills. The results from *CognitiveGenesis* substantiated their success by giving evidence to increases not only in achievement scores, but also in ability scores.

- *The longer students were in Adventist schools, the more their scores increased.*

Dubbed the “the Adventist School Effect,” *CognitiveGenesis* researchers found that the longer students stayed in Adventist schools, the greater the increase in *both* achievement and ability.

- *School size had negligible effects.*

Now, what about school size?

Many Adventists in the U.S. are concerned about school size because 60 percent of our schools are considered small. What do we think of as small? Three or fewer teachers. That’s small. OK, so what about school size? Well, guess what? *CognitiveGenesis* revealed small differences between smaller and larger schools in both achievement and ability, but when there was a difference, it was consistently in favor of the smaller school.

### Non-cognitive Findings

One of the foundational beliefs in Adventist education is the commitment to a wholistic education. This means that rather than “teaching to the test” or doing away with fine-arts programs in order to dedicate more time to core subjects, Adventist education combines the physical, the mental, the spiritual, the social, and the emotional. Secular educational systems may subscribe to this idea of wholistic education, but Adventist education takes it a step further by infusing a spiritual component into every aspect of the curriculum and climate.

Few researchers have tackled the topic of religion and its correlation with academic achievement, but Marianne Gilbert, an Adventist doctoral student, did just that. She used *CognitiveGenesis* data for her dissertation, which was titled *An Analysis of Spiritual Factors and Academic Achievement in Seventh-day Adventist Schools*.<sup>7</sup>

By identifying several factors that involve spirituality, including religion or spirituality emphasized at school, teachers' spirituality, and mothers' spirituality, Gilbert divided students' academic gains into months and found small gains, moderate gains, and large gains in academic achievement. That means when all three factors are aligned, students were up to 8.5 months ahead of where standardized tests predicted they should be.

In his latest book, *Outliers*, renowned sociologist Malcolm Gladwell<sup>8</sup> studied the phenomenon of success by looking for patterns and themes in individuals who had achieved great success. He defined success as a group project—noting that extraordinary people always had help along the way.

As Gilbert's study demonstrated, Adventist education is indeed also a group project—one that can achieve tremendous success with the support and collaboration of three key partners—the school, the church, and the home.

*CognitiveGenesis* data also sheds light on non-cognitive factors such as the church and the home, both of which can also contribute to higher academic achievement. For instance, it found that higher achievement was associated with harmonious and spiritual homes where there was good family communications as well as discipline. Parents were actively involved with the school and had high expectations for their children. In regard to the church's contribution, higher-achieving schools had pastors and church members who provided good support. When pastors had a visible presence on campus, played basketball with the students, and provided chapels and weeks of prayer, this connection correlated with higher-achieving schools.

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#### **Other Significant Factors**

But the mission of Adventist education wouldn't be complete if it simply produced high-achieving students. Rather, additional significant factors result from having students in an Adventist school—factors that actually have far more value than test scores and ability levels. Ellen G. White wrote that “in the highest sense, the work of education and the work of redemption are one.”<sup>9</sup> Where these two tasks intersect, we find our worldview. A worldview is like a set of glasses that allows a person to look at reality or life in a way that governs thoughts, decisions, and actions. Would you not say that worldview is important?

The story of the Prodigal Son pro-

vides an excellent example of three basic and distinct worldviews—those of the father and the two sons (Luke 15:11-32).<sup>10</sup> Primarily concerned with his own desires and needs, the prodigal son has a “me first” worldview. The elder son, on the other hand, clings to a “rules” worldview. Rules come first, which makes it difficult for him to understand why—since he stayed home and followed all the rules and did all the right things—his father did not kill a fatted calf for him. Finally, there is the father. He is not concerned about himself at all, but rather about his sons and their growth and development and well-being—an “others first” worldview.

Research has shown that by age 13, young persons have already developed their worldview.<sup>11</sup> It may not be fully formed, but the foundation is set.

Which worldview do you want your child, your grandchild, your niece, your nephew, the children in our church to have? “Me first,” “rules first,” or “others first”? Eighty-one percent of the students surveyed by ValueGenesis<sup>3</sup> said that attending an Adventist school was the most important thing that had helped them develop their religious faith.<sup>12</sup> In contrast, a survey of 10,000 middle and high school students in the United States over 10 years found that only 22 percent thought that caring for others was more important than their own personal happiness or individual achievement.<sup>13</sup>

The development of a child’s worldview is critical because it helps determine the kind of character children will develop and the type of God they will worship and proclaim. This worldview, this character, is developed and molded by what children see, what they hear, what they are exposed to every day.

A discovery in the field of neuroscience really underlines the importance of this daily exposure in a child’s life. Mirror neurons are neurons in the brain that fire when they observe someone doing something. They fire in a way that creates a mirror in the brain of the observation that has been made, which allows the observer to re-create or imitate that behavior later. For example, as a toddler sees her parents walking around in the house, mirror neurons fire. This lays the groundwork for the toddler to eventually pull herself up and start walking, too.<sup>14</sup>

With this context, one has an even greater realization of the importance of our children’s environment, the behaviors they see, and the words they hear. A teacher in an Adventist school recently said: “Teaching in an Adventist school is participating in the longest evangelistic event that the church holds every year.” When that is the belief of our teachers, when that is the mission of our teachers,

parents can be confident that the mirror neurons in their children’s brains are firing likenesses of Jesus.

Do Adventist schools do a good job of educating our students academically? Absolutely! But they also do so, so much more than that. They educate children for eternity—developing characters fit for heaven. ✍

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*Adaptation of oral presentation at the 2016 LEAD Conference held October 5-7, 2016, at Silver Spring, Maryland, U.S.A.*

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**Elissa Kido, EdD**, is the Director of the Center for Research on Adventist Education K-12 (CRAE) and also serves as a Professor of

Education at La Sierra University in Riverside, California, U.S.A. The CognitiveGenesis Project was launched during Dr. Kido’s tenure as Dean of the School of Education at La Sierra University, and she served as the Project Director.

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