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**TEACHING
ETHICS:
FROM
REASONING TO
RESPONSIBILITY**

**Trends
Influencing
Enrollment
in Adventist
K-12 Schools**

THE
“WOW”
OF TEACHING
**Space
Science
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**CREATING A
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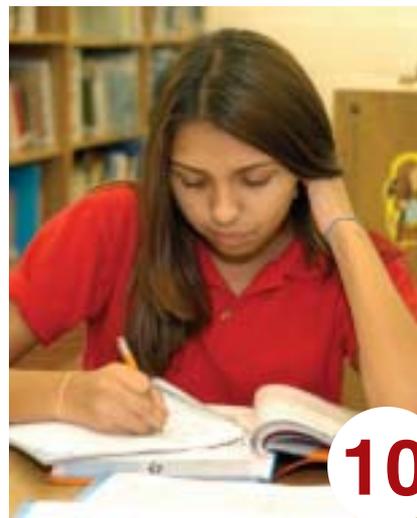
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Why Support Christian Education?

A Personal Testimony

I squeezed myself into the overcrowded bus. With one hand holding a briefcase and the other hanging onto the railing, I was not exactly enjoying the ride that summer afternoon in Bangalore, India, not far from my native town. The driver did a Jehu and swung the bus around a sharp corner. I spun with the bus, making a 360-degree turn.

In that moment, I saw a face that seemed familiar. Could it be my childhood friend, Jaya? I had not seen him for years, ever since we parted ways, he to a local school, I to a distant Adventist school. I was about to call him by name, but time has a way of playing tricks, and I wondered if the man on the bus was indeed my old friend.

As my mind reviewed the distant past, a memory surfaced that solved the identity puzzle. While returning home after a long day of school and a soccer game, I had urged the group to walk faster. "I'm so hungry," I said. Soon after, we heard Jaya's screams. Rushing over, we found him with a bloody face. After hearing my cry of hunger, he had decided to do something about it. After sneaking into a roadside bungalow, he climbed a guava tree and stuffed as many guavas as he could in his pockets. As he was returning to the group with the smile of a mission accomplished, the guard spotted him and gave chase. Running as fast as he could, Jaya jumped over the fence but fell on the barbed wire and cut his cheek. He paid for his adventure with 16 stitches and a permanent scar.

That's it. The scar. I leaned across and spotted the scar on his right cheek. "Jaya," I called out excitedly, but there was no response. I identified myself, but he stood like a frozen statue—looking cold and mean. No smile, no sign of joy in seeing a childhood friend after decades of separation.

The bus was signaling a halt. I told Jaya to get off at the next stop so we could go to a restaurant, share a fine meal, and let all the years gone by set the agenda for our talk. But Jaya shook his head and rushed toward the exit. Suddenly he returned, thrust something in my hand, got off the bus, and vanished into the crowd. I looked into my hand, and to my amazement and wonder, I saw my wallet. Sometime between the moment I boarded the bus and my 360-degree turn, Jaya had picked my pocket.

That was years ago, but the question still lingers: Why? Both of us had much in common—the same environment, the same misfortunes, and the same opportunities. But one becomes a pickpocket, the other a pastor?

I could say, "But for the grace of God, there go I." That would be answer enough, but I had the greatest fortune in my life—God taking me in my mid-teens, as unshaped, wobbly clay, and molding me according to His will. And that took place in the Adventist school I attended as a teenager.

What did my Adventist education give me? Three things:

First, Adventist education made me conscious that I am not an accident in space and time. I learned at the Adventist school that there is a God who loves me intensely, who has made me in His image, and who wants me to be His own. The reality of God overwhelmed me in the classroom, in the hostels, and in the poultry farm where I worked to earn my fees. When God grasps an individual, He holds him or her for good with tender chords of love and care. Life takes a new turn.

Second, Adventist education made me aware that life has a meaning and a destiny. Within the campus of the Adventist school, I learned that education is more than the mastery of information—be it Bible, English, history, math, or science. Education means being like Jesus, walking like Him, relating like Him, working like Him—and above

Continued on page 47



John M. Fowler

Teaching Ethics: From Reasoning to Responsibility

Ethical dilemmas occur daily in classrooms, corporate boardrooms, and legislatures.

BY JANE SABES

Ethical issues appear in nearly every daily newspaper and network news show. Of the global news reported in the September 2006 issue of the *Economist* magazine, nearly all the stories presented serious ethical dilemmas:

- Disagreements about the permissible use of frozen embryos;
- Allegations that athletes in many different sports have used illegal performance-enhancing drugs;
- Crime and murder rates up significantly in Houston, Texas, since the city welcomed Hurricane Katrina evacuees;
- Severe restrictions put on American grain by Germany and other foreign countries, due to the crops being genetically altered, in violation of trade agreements;
- Canada embroiled in land-claim disputes with its aboriginal populations; and
- Chile's health minister, confronted by the fact that 15 percent of all babies in the country are born to teenage mothers, recommending that the national health service prescribe

the morning-after pill to girls over 14 years of age.¹

Major moral dilemmas!

Ethics—A Universal Dilemma

Ethical dilemmas occur daily in classrooms, corporate boardrooms, and legislatures. On January 1, 2006, amidst allegations that his son improperly managed the Iraqi “Oil for Food” program, the United Nations secretary-general established an Ethics Office, charged with fostering “a culture of ethics,” “developing and disseminating standards for appropriate professional conduct,” and providing “leadership, management and oversight of the United Nations ethics infrastructure.”² Similarly, the National Science Foundation, along with the U.S. National Institutes of Health, recently applied considerable pressure on colleges re-



ceiving grant funding, demanding that the recipient organizations establish and enforce policies requiring ethical conduct.

Perhaps the conclusion reached by the editorial staff of *Reader's Digest* is



correct: “It’s becoming clear that everyone cheats—the government (Homeland Security rip-offs in the Gulf Coast), the media (plagiarism), sports (steroids), and the CEOs who rake in millions of stockholder dollars as they float away in their golden parachutes. The message to our kids is that cheating is a perfectly acceptable practice because ‘everyone does it.’”³

The Decline of Ethics

Why the seeming vacuum of morality in society today? J. P. Moreland places the blame squarely at the feet of the religious community. He argues that around the turn of the 19th century, fundamentalists withdrew from society, starting their own Bible institutes. “This withdrawal from the broader, intellectual culture and public discourse contributed to the isolation of the church, the marginalization of Christian ideas from the public arena, and the shallowness and trivialization of Christian living, thought, and activism. In short, the culture became saltless.”⁴

In his book, *Community, State,*

and Church, Karl Barth portrays the civil community as spiritually blind. “It has neither faith, nor love, nor hope. It has no creed and no gospel. Prayer is not part of its life, and its members are not brothers and sisters.”⁵ Barth and Foy Valentine argue on behalf of Christians filling that void. Valentine asserts that “this whole world of citizenship, it is crystal clear, should be entered by the people of God with Christian courage, Christian convictions, and Christian commitment. The alternative is to leave the running of the land to the wisdom of unbelievers, and this alternative is un-

Ethical dilemmas occur daily in classrooms, corporate boardrooms, and legislatures.

acceptable to the people of God.”⁶

Moreland makes additional accusations against the Christian world—not

only its withdrawal from society but also dumbing-down, becoming anti-intellectual in its response to issues. But this is not the inevitable outcome of religious faith. Solomon proved that one could be both godly and wise. The Queen of Sheba extolled Israel’s king when she said, “In wisdom and wealth you have far exceeded the report I heard. Because of the Lord’s eternal love for Israel, he has made you king, to maintain justice and righteousness” (1 Kings 10:3-9, NIV). Neither could allegations of anti-intellectualism be made against Daniel, Hananiah, Mishael, and Azariah, whom King Nebuchadnezzar judged to be 10 times wiser than their cohorts, all of whom had completed a three-year intensive course in Babylonian languages and laws (Daniel 1:20). And we find the Apostle Paul engaging legislators and leading scholars of his day, demonstrating his familiarity with for-



Karl Barth

eign philosophers (Acts 17:28). From these examples, we can conclude that it is possible to equip Christian youth intellectually and ethically for the world today.

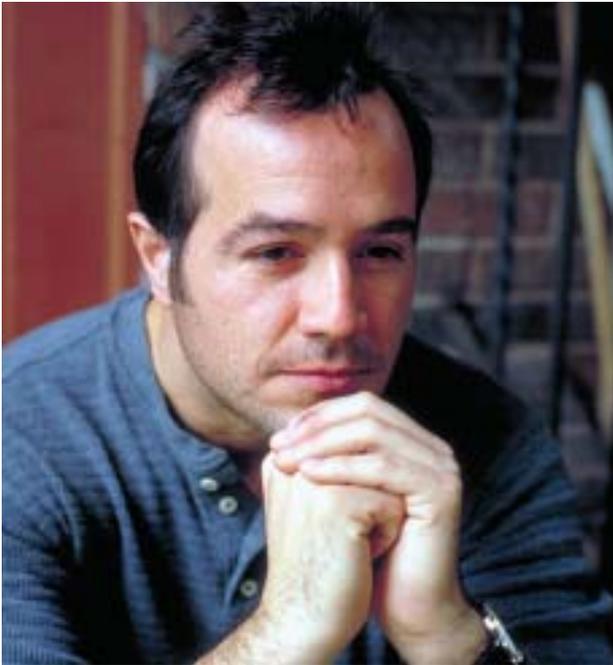
One of the primary purposes of church-sponsored education is to prepare young people to engage the world from the mindset of Christ. If we believe that ethics is integral to the fabric of a civil society, should not Christian education be at the forefront in the search to apply biblical principles to everyday living? Christ regularly modeled ethics quite differently than the secular or religious communities of His day. While others shunned them,

Valentine asserts that “this whole world of citizenship, it is crystal clear, should be entered by the people of God with Christian courage, Christian convictions, and Christian commitment.”

science and moral values in their previous science classes. In fact, Goldfarb found that the vast majority clung tenaciously to the idea that science was value-free. He set out to find ways to introduce moral thinking to students before they entered college. Armed with funding from the National Science Foundation, Goldfarb created summer camps for high school and middle school science teachers to help them determine how best to introduce moral values and ethics in the their classrooms.⁷

Dr. Goldfarb’s initiative was aimed at the high school level, but that is rather late to begin the

proper discussions of an ethical and moral nature. Most behavioralists agree that the clarifying of values, although unconscious, begins around the age of 3—when children are old enough to start to lie. The youngster lies about having peed in his pants, having taken the quarter off the dresser, or having scribbled on the wall. Although the evidence against the child is overwhelming, he or she lies in order to make the adult believe that their value systems agree—and of course, to avoid punishment. Given the early-age formation of personal morals, schools cannot reserve discussions of ethics and moral certainties until the later grades, when young people are deemed to be more mature.



He befriended prostitutes and those with mental illness; while others taught hate, He demonstrated love for one’s enemies; while others demanded retribution of “an eye for an eye,” He spoke of forgiving 70 times seven; and while others proclaimed self-importance, Jesus claimed that only those with childlike humility could enter His kingdom.

Equipping Students to Reason

Dr. Ted Goldfarb, of the State University of New York, Stony Brook, discovered that few of his graduate and undergraduate students had discussed



Teaching Ethics—Establishing a Moral Base

To teach ethics, we must first appreciate the importance of having a moral base from which to make decisions. Reluctance to explore morals, values, ethics, and character development with students can lead to personal and collective harm, present and eternal loss. Make no mistake, students are making moral decisions on a daily basis—inside and outside the classroom (e.g., whether to engage in heavy petting on a date, how best to support a pregnant teenage friend, whether to accept an alcoholic beverage or marijuana cigarette, whether to violate a confidence, whether to cheat on an intensely competitive national exam).

Second, we must present ethics as a dynamic process and a lifelong activity rather than a set of facts to be memorized. As teachers, our approach should be to educate rather than indoctrinate. The benefit of discussing ethics is that it promotes thoughtful reasoning about all aspects of life.

Although there is no specific formula for teaching ethics,

certain definitions prevail. For example, ethical individuals are those who:

1. are well informed, avoiding unwarranted assumptions;
2. work collaboratively with others, in a spirit of honesty and openness, not suppressing but rather sharing relevant information;
3. are open to new evidence that may go against the grain of firmly held beliefs;
4. apply the standards of logical argument, subject themselves to outside scrutiny, comparing the relationships between and among conflicting sets of information.

Third, those guiding the educational process must recognize that the teaching of ethics cannot be confined to an occasional class period or subject;

it must pervade every aspect of our teaching, behavior, and responses to students. Wheaton College philosophy professor Arthur F. Holmes⁸ advocates that ethics and morality not be relegated to the status of a subspecialty. He believes that because Christian institutions are to transmit biblical values, ethics should be integral to the curriculum. It is to be woven into every teaching moment. Every discipline—biology, literature, religion, history, government, geography—contains issues with moral consequences—access to scarce commodities such as food, minerals, and oil; euthanasia, stem cell research, athletes' use of steroids, the denial of human rights to women and minorities throughout history, the squandering of natural resources, pollution and global warming, storage and sale of nuclear weapons, foreign policies that advocate assassination of foreign leaders, and inhumane meth-



Throughout history, women and minorities have been denied basic human rights.

ETHICAL DILEMMAS THAT ARE NEVER OUT OF DATE INCLUDE SOME OF THE FOLLOWING:

- A wine company executive has offered a generous endowment to your school—including free laptops for every student. Should the school accept the donation?
- Should you tell on a friend who is cheating on her boyfriend?
- Which takes precedence: community health concerns or individual privacy?
- Should a winning coach be fired because he engages in abusive behavior and foul language?
- You have been invited to go on a summer mission project to rebuild a community recently devastated by natural disaster. You've also been selected for a prestigious internship. Which do you choose?
- A released sex offender begins attending your church. You have two little sisters under the age of five. What would be your response?
- Would you pay Sudanese government officials a bribe to be able to deliver medicine to a refugee camp?
- The state requires reporting of all suspected cases of child abuse. Should you honor the confidentiality of a friend or protect her child?
- Should corporations be forced to produce more energy-efficient automobiles, even if it threatens their profits?
- You've recently discovered that a family of illegal immigrants occupies a small building behind your church. Should you report them?
- You work for the U.S. president. He has requested that under no circumstances should you reveal details about the firings of eight staff attorneys. How do you respond when called before Congress to give an account of the matter?
- You learn that the long-term trade embargo your country has imposed against another nation is having devastating consequences upon the lives and health of its citizens. Do you act upon this information or let national officials deal with it?
- Your college fund is earning a higher-than-average return from being invested in hedge funds. You read in the newspaper that that most of the money the Chinese government gets for electronic surveillance to spy on democracy activists, people seeking to worship God according to their consciences, and visitors to Internet cafes comes from hedge funds. Should you reinvest the money in a savings account or stock that pays less interest?

ods for eliciting useful information from captured enemy combatants.

Fourth, those who think the teaching of ethical decisions should be simplistic (just do what's right in every situation) are in for a rude surprise. Life's situations rarely have straightforward responses. Teachers must have well-considered ethical convictions that are worth sharing and which they can use to mentor students as they aid them in discovering God's path in their lives. It is crucial that they do research and prayerfully and thoroughly consider the ethical issues prior to presenting them for class discussion. In this way, they will be equipped to guide the dis-

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Declaration Toward a Global Ethic



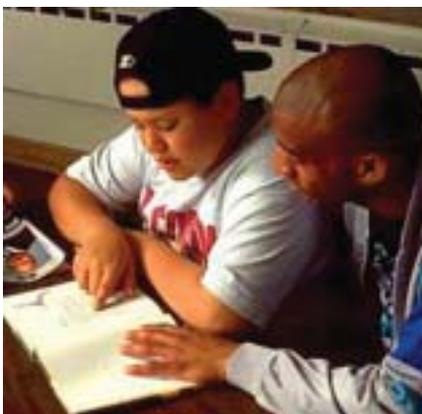
Parliament
of the
World's Religions Chicago, U.S.A.
4 September 1993

cussion rather than having it float freely without reaching a positive or productive conclusion.

Feeling Intimidated About Teaching Ethics?

Teachers may feel intimidated by student inquisitiveness regarding sensitive ethical issues. But only when students ask, search, and probe will they discover answers for themselves. Students should be encouraged to question using the Socratic dialectic method, rather than argument and debate. Teachers should "say it as they see it," inviting students to do likewise. This does require courage. The goal should be to inspire students to become moral agents, not just repositories of other people's ideas.

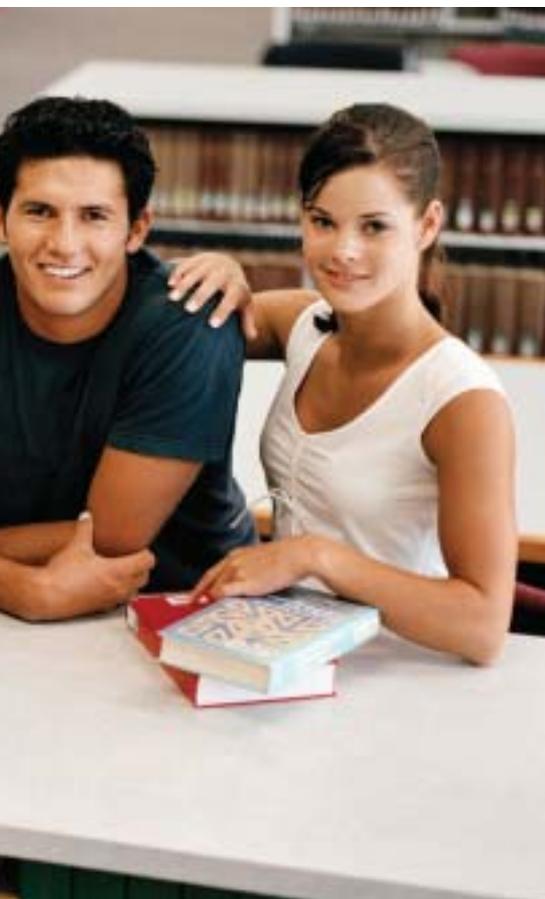
Another source of intimidation may come from parents and community members. But the teacher should regard these groups as resources rather than combatants. Their collective life experiences provide intergenerational, multiethnic, diverse economic, and ca-



Given the early-age formation of personal morals, schools cannot reserve discussions of ethics and moral certainties until the later grades, when young people are deemed to be more mature.

reer viewpoints from which to highlight ethical dilemmas faced as well as the diverse thought processes and approaches used in resolving difficult issues.

Neither should teachers be intimidated by the claim that exploring and



taking action on national issues violates the principle of “separation of church and state.” The work of government, according to David Easton, is the “authoritative allocation of values”—policy making that helps guide a nation and its people toward peaceful and prosperous lives. In order to achieve these ends, citizens must behave lawfully and practice charity toward one another. Where do those values originate if not from within communities of faith? If they renege on this responsibility, then who will provide leadership in the application of justice and mercy?

Nor must teachers be deterred from teaching ethics because of society’s (and even students’) preference for relativistic values. Adventist teachers must forthrightly yet respectfully promote principles derived from the only source of wisdom and right-doing, the Scriptures. The idea is to share, not impose, beliefs. Teachers can compare the tenets of various religions to show their similarities in demanding ethical behavior of their followers. It is thus possible to remain nonjudgmental and non-partisan, and appeal to all cultures represented within the student body.

Recognizing Responsibility

In 2005, a conference entitled “World Parliament: Toward a Global Ethic” was convened.⁹ For an entire weekend, the attendees grappled with adopting a global ethic to which all nations, creeds, and people could subscribe. The objective was to overcome the moral decay of society and to stem the rise of corruption in government and the corporate world.

Toward the end of the weekend, Tim Loonsfoot, Sr., an American In-

dian, was invited to speak. He spoke slowly, almost falteringly: “Ethics? I don’t know what that word means. We don’t have that word in my native Ojibwa language. So I asked the elders. After much discussion, we came to believe that by speaking your word ‘ethics’ you are meaning to say ‘responsibility.’ I can now understand that because as American Indians, we are taught from childhood that we have responsibility to Mother Earth, Father God, and to you, my brothers and sisters.”

Neither our society nor our communities of faith can afford to have students dodging ethical dilemmas of the day; rather, as Mr. Loonsfoot points out, they must be taught to think, to choose, and to live responsibly. ✍



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BY GUSTAVO GREGORUTTI

Trends Influencing in Adventist K-12 Schools

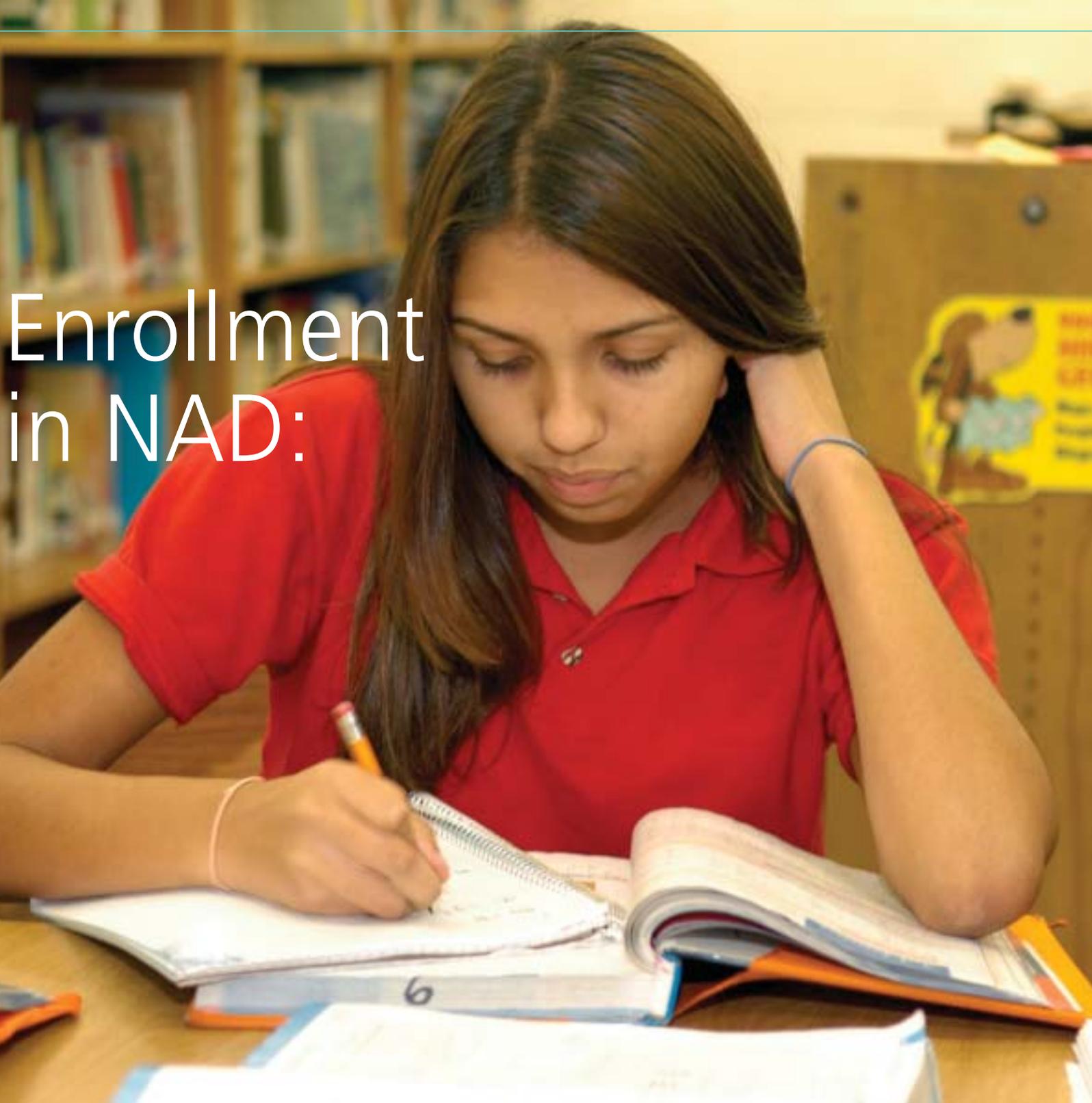
A Review of the Literature

Since soon after their denomination was organized in 1862, Seventh-day Adventists have promoted parochial education as a means to acquire knowledge within a Christian worldview. Training young people for the mission of sharing the good news of salvation to others was and is a major driving force in the development of a fast-growing international kindergarten through graduate-level system of education.

While Adventist Church membership has grown in North America, enrollment in Adventist K-12 schools, particularly by church members' children, has consistently declined since the 1980s. Table 1 on page 13 illustrates that between 1980 and 2005, K-8 enrollment decreased by 10,594 students (20 percent) and 9-12 enrollment decreased by approximately 5,458 students (26 percent), for an overall K-12 decline of 16,052 students (22 percent), according to the 2005 North American Division Annual Reports.¹ These trends were most severe for K-8. Between 1980 and 2000, K-8 enrollment declined by approximately 5,058 students, or about 10 percent. From 2000 to 2005, K-8 enrollment declined by 5,536 students, or

about 11.5 percent in just five years. Enrollment in grades 9-12 had a large decrease from 1980 to 2000 of approximately 4,944 students, or 24 percent. From 2000 to 2005, grades 9-12 enrollment fluctuated, but overall decreased by a few hundred students.

By contrast, enrollment at most U.S. private and church-affiliated schools has increased in the past few years. According to the 2003 *Projections of Education Statistics to 2013* report by the U.S. Department of Education's National Center for Education Statistics (NCES), private elementary and secondary enrollment increased 18 percent between 1988 and 2001 and was projected to increase another 7 percent between 2001 and 2013.²



Enrollment in NAD:

According to the *Private School Universe Survey 1999-2000*, conducted by the U.S. Census Bureau and published by NCES,³ conservative Christian schools experienced an incredible increase in enrollment during the 1990s. The approximately 245,000 students in

While Adventist Church membership has grown in North America, enrollment in Adventist K-12 schools, particularly by church members' children, has consistently declined since the 1980s.

those schools accounted for more than 75 percent of the total increase in enrollment at private schools during that decade. Enrollment at Episcopalian and nonsectarian schools increased by 37 and 26 percent, respectively. During the same period, churches whose schools had negative enrollment trends included Calvinist, Catholic, Lutheran, and Seventh-day Adventist.

The Condition of Education 2007,⁴ the latest NCES report on trends in private schools enrollment, shows that by 2003-2004 (the latest figures available), the enrollment in private schools had declined from 5.3 to 5.1 million students. The distribution of students across different types of private schools had shifted, with Catholic schools losing students overall. However, the percentage of children enrolled in conservative Christian schools (Adventists are part of this classification) increased from 11 to 15 percent. Non-

What factors might have caused these enrollment declines in Adventist schools?

sectarian schools grew from 13 to 18 percent during the same period of time.

A word should be said here regarding demographic changes resulting from the aging baby-boomer population and related household structural trends. According to Fields, the portion of married couples with children declined from 40 percent of all households in 1970 to 23 percent in 2003. These children represented 26 percent of the U.S. population, a proportion that was essentially unchanged from 1990 but down from 36 percent in 1960.⁵

These changes are an important demographic trend that may have affected enrollment in Adventist schools. However, enrollment attrition in the church's NAD K-12 schools has been steeper than the

demographic changes (see Table 1). Furthermore, in recent years, there has been a decrease in the actual number of Adventist children enrolled in K-12 schools in NAD, as well as their percentage of the total school enrollment. The enrollment statistics would look even worse if the number of non-Adventist students had not increased.⁶

What factors might have caused these enrollment declines in Adventist schools? It may be helpful to look at a literature review of studies that examines perceptions and factors affecting enrollment at Adventist K-12 schools in North America.⁷

A Review of Studies on NAD Adventist Schools

Kromann (1983) explored parental attitudes regarding Adventist



secondary boarding schools in mid-America. He found a significant difference between parents who sent their children to Adventist schools and those who did not in their opinion of the quality of academics, cost of attendance, work program, faculty dedication, witnessing training, and attitudes toward dormitory living. There were also significant contrasts between the two groups' church attendance and length of membership. However, the study found no significant difference between the two groups' socio-economic levels, or their opinions about the teachers' effectiveness or the schools' uniqueness in teaching Christian beliefs and values. The study revealed that boarding school costs and dormitory living were two negative variables that may have contributed to non-attendance.

Roesel (1983) examined Adventist K-10 schools in Pennsylvania, with the exception of regional (black) schools. He surveyed parents, teachers, pastors, head elders, and school board chairpersons about their perceptions regarding enrollment in local Adventist schools. He concluded that (1) pastors were seen as unsupportive of Christian education at the local congregation level, which was perceived to have a negative impact on enrollment; (2) charging tuition had a positive effect on enrollment compared to having free tuition; (3) teachers' dedication and involvement were perceived as positively influencing enrollment; (4) distance and transportation to schools had little impact on enrollment; and (5) recruitment activities were perceived as lacking and, when they did occur, as not necessarily having a positive effect on enrollment.

Rhoads (1986) studied student and parent perceptions of the educational philosophy, ac-

ademic program; social, spiritual, and spiritual climate; and staff adequacy, among other factors, that contributed to enrollment and attrition at selected Adventist secondary day schools in Northern and Central California. He concluded that (1) respondents placed a low value on Adventist education, (2) decisions to transfer from Adventist schools were unrelated to religious or philosophical issues; (3) parents wanted more staff assistance with academic, social, and spiritual concerns; (4) parents desired greater participation in

Kromann . . . found a significant difference between parents who sent their children to Adventist schools and those who did not in their opinion of the quality of academics, cost of attendance, work program, faculty dedication, witnessing training, and attitudes toward dormitory living.

school procedures; (5) Christian behavior and social morality were perceived as lacking in the schools; (6) parents and students desired improved disciplinary practices and an expanded curriculum; and (7) administrator and teacher performance was perceived as inadequate in many areas.

Fink (1989) surveyed pastors' perceptions regarding Adventist K-12 schools in eight Southern states.

The main findings were as follows: (1) the pastors felt positively about the creation and maintenance of the schools; (2) they perceived the schools as essential for the inculcation of Adventist doctrine; (3) they assumed the responsibility of promoting Adventist education at the church and conference levels; (4) they believed that all Adventist members should be expected to support Christian education whether or not they had school-aged children; (5) they were reluctant to close schools or to allow them to be

funded by public monies; (6) they showed disagreement regarding the present support given to Adventist education, compared with the past; and (7) they believed that the main reasons for low enrollment levels related to lack of commitment, tuition costs, and distance to schools.

Araya (1991) surveyed pastoral attitudes about the Adventist system of education in five Southeastern states. He concluded that (1) pastors opposed enrolling more non-Adventist students to balance budgets; (2) they did not consider Christian education as primarily an evangelistic medium, although they saw themselves as having strong participation in it; (3) they didn't see preaching more often on topics related to Christian education as necessary; (4) pastors of Caucasian groups tended to express a

Table 1. NAD Enrollment K-12 1980-2005

Year	K-8	9-12	Totals
1980	53,304	20,557	73,861
1985	51,864	19,573	71,437
1990	50,207	14,882	65,089
1995	50,669	15,766	66,435
2000	48,246	15,613	63,859
2001	48,289	15,582	63,871
2002	46,383	14,102	60,485
2003	44,229	15,782	60,011
2004	42,922	14,662	57,584
2005	42,710	15,099	57,809

higher level of positive conviction about the value of Adventist education; (5) pastors who had served longer were significantly more convicted than younger ministers about the value of church-sponsored education; (6) older pastors viewed education more as an evangelistic medium than younger ones did; and (7) the pastors believed that academic quality was not an issue for members who could send their children to church school. However, the pastors regarded personal relationships and finances as critical factors for enrollment.

Haakmat (1995) found that despite the growth of church membership in British Columbia, Canada,

[Hunt's] analysis revealed that these parents considered a spiritual environment to be the most important factor, followed by concerned and caring teachers, safety, and school climate.

the enrollment at Adventist schools had actually decreased. The study's main findings were that (1) long-time church members expressed a more positive opinion of Adventist education than those who had been members only a short time; (2) respondents for whom Adventist education was a conviction rather than a preference held more favorable attitudes toward the support of church schools; (3) church leadership was not perceived as contributing to a more positive attitude toward church schools; (4) respondents who favored or opposed accepting government funds for church schools did not hold significantly different attitudes toward Adventist education. Respondents in general seemed not to have strong positive attitudes toward the support of church schools and did not perceive them as playing a significant role in the spiritual nurture of students. Many respondents viewed Christian education as an ideological or philosophical conviction rather than a

preference that they would act upon.

Hunt (1996) examined factors that parents with children attending Adventist K-10 schools in Eastern and Southern states considered important in determining whether their child would attend an Adventist boarding school. His analysis revealed that these parents considered a spiritual environment to be the most important factor, followed by concerned and caring teachers, safety, and school climate. Parents who decided not to enroll their children after they had been accepted cited reasons of cost and location.

Baker (1996) examined attitudes and perceptions of southern Califor-

nia pastors toward Adventist K-12 education within their pastoral districts. This study concluded that (1) the ministers' philosophical and attitudinal support for denominational schools was generally strong, although tangible, demonstrated support was at a lower level; (2) the ministers were generally satisfied with their local church school; (3) there was no correlation between the ministers' age, whether or not their parents were Adventists, the number of years the pastors had attended denominational schools, and self-perceived levels of value and support; and (4) issues relating to financial support of the denominational school system were an area of dissatisfaction for many ministers. Most ministers expressed a strong belief that the denominational educational system was critical to the future health and survival of the church.

Mainda (2001) studied factors influencing school choice among Adventist parents in southwest Michi-

gan. This author concluded that the following factors predicted enrollment in church schools: (1) a belief that Adventist education was the best; (2) a conviction that teachers should be spiritual; (3) the child's influence on the parents—the stronger the influence, the more likely that the child would be enrolled in a Adventist school; (4) information about the school—the more the parents knew about the school, the more likely they were to enroll their child; and (5) perceived value and financial status—parents who viewed Adventist education as worth the cost and who had less need for financial aid tended to enroll their children at Adventist schools. Mainda found no significant relationship between school choice and parents' perceptions about social factors (physical education, extracurricular activities, racial harmony in the school, active social life, school spirit, and parental involvement) or school proximity. Parents with children in Adventist schools and those with children in public schools tended to hold different views in the area of academic programs. However, both groups of parents believed in the superiority of the Adventist educational system over the public one. This study found that the declining demand for Adventist education could be attributed to a perceived decline in its distinctiveness, primarily in the area of spiritual values.

Booker (2004) examined factors influencing African-American parents from Ohio and Pennsylvania who supported Adventist primary schools. He concluded that (1) parents who had attended an Adventist school tended to have a more negative perception of the quality of Adventist education than those who had not attended an Adventist school; (2) parental beliefs in children's development and the integration of faith were probably the most important factors in whether they sent their children to an Adventist school; (3) cost and distance influ-

[Lekic found that] respondents perceived spiritual focus as the most positive aspect of Adventist schools, followed closely by interpersonal relationships and student personal development.

enced whether these parents enrolled their children; (4) parents who had a high school diploma or less showed the greatest variance and most negative predisposition toward Adventist education; and (5) parents who had attended an Adventist school were more likely to send their children to a church school.

Lekic (2005) investigated perceptions and attitudes toward Adventist schools in Canada. He explored the differences between Adventist parents with and without children in Adventist schools, as well as the attitudes of non-Adventist parents whose children attended an Adventist school. He concluded that non-Adventist parents, especially

mothers, had a more positive attitude toward the schools than did parents in families where the couple were both Adventist, whether or not the Adventist families had children in church-operated schools. Furthermore, younger single parents who earned less than CAD\$30,000 a year or who were unemployed had more positive attitudes toward Adventist education than older married parents who earned more and were employed.

Respondents perceived spiritual focus as the most positive aspect of Adventist schools, followed closely by interpersonal relationships and student personal development. For Adventist parents, the top three reasons for sending children to church

schools were spiritual focus, a safe and caring environment, and dedicated school personnel. For non-Adventist parents, the three main reasons were a safe and caring environment, high-quality academics, and spiritual focus. Adventist parents who did not send their children to church schools gave the following reasons: distance from home, high cost of tuition, and lack of high-quality academics.

Other areas of concern about Adventist education were affordability, bullying, availability of extracurricular activities, facilities, the variety of resources, and lack of provision for special-education students.

Bryson (2006) sought to determine the most important factors related to increasing and declining enrollment trends in Adventist boarding academies in North America. She studied eight key factors: academics, climate, cost, facilities, location, mission, support, and leadership, and concluded that the respondents (educators, students,





and parents/guardians) regarded climate, mission, and academics as the most decisive factors affecting enrollment. Cost was the weakest predictor. Respondents from academies with increasing or declining enrollment scored similarly on levels of satisfaction and perceptions influencing enrollment. These findings confirmed several enrollment theories that regard enrollment as affected by personal interactions, belief systems, academics, and social influences that attract and keep a student enrolled in a private or parochial school.

Based on this author's literature review, it can be inferred that within the North American Division territory, enrollment in Adventist K-12 schools seems to be affected by the following set of beliefs, perceptions, and factors:

1. *Parents' perceptions.* Several studies concluded that limited curriculum, staff, and amount of available involvement were among the reasons for withdrawal; however, at the same time, parents seemed to agree, at least philosophically, that Adventist education was very good. Perceptions about teachers' and ad-

ministrators' training and qualifications were mixed and in some cases might negatively affect enrollment. Perceptions about the schools' spiritual environment, such as teachers' dedication and school climate, were considered important factors in the decision whether to enroll.

2. *Identification with Adventist education.* Parents exposed to the

church's education system tended to send their children to an Adventist K-12 school. Also, both parents being church members increased the probability of their child being enrolled at an Adventist elementary or secondary school. A paradoxical situation was observed that affected enrollment. Although most parents surveyed viewed Adventist educa-

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tion positively, this did not necessarily influence their decision about where to enroll their children.

3. *External factors.* Distance and cost of tuition were often cited as influential factors affecting enrollment. For most K-12 students in day schools, distance is a very difficult obstacle to overcome.

4. *Promotional factors.* Greater marketing by pastors, teachers, and church leaders, especially to newly converted parents, would improve enrollment rates. Conference leaders could also be crucial in ensuring stronger promotion.

5. *Church leadership.* Pastors and church leaders perceived themselves as cooperative and supportive of Adventist education; however, some parents saw these leaders as less supportive, which negatively affected enrollment.

Conclusion

From the literature review, we can infer that the decreasing demand for primary and secondary Adventist education in North America is linked to a perceived decline in its quality and spiritual values. Influencing parental perceptions will continue to be the strongest factor for overcoming obstacles such as cost and distance. Administrators, pastors, and teachers must focus on the distinctive features of Adventist education. The question that has to guide administrators, teachers, church members, and pastors is “*What is distinctive about our approach to educating young people?*” Yes, spiritual values and faith are the core of Adventist education. But the challenge is to combine these values with high-quality curricula, facilities, environment, teachers and

administrators, and supportive leaders.

Table 2 below shows another dimension, the organizational one. These statistics illustrate the struggles and problems that teachers and administrators face in running almost 1,000 K-12 schools. Dividing the 2005 North American enrollment of 57,809 by the total number of schools, 966, gives an average of about 60 students per school. Some boarding academies have enrollments of fewer than 100 students!

Statistics for 2003, the most recent year for which these figures are available, reveal that more than 60 percent (584 units) of K-12 schools in the NAD had one through three teachers, which classified them as very small institutions. The percentage would be even higher if 9-12 schools were factored out! The question is: How can administrators, teachers, and churches maintain quality with so few students?

Schools need computers, updated libraries, training opportunities, facilities for programs, and innumerable other resources.

Perhaps a set of new strategies from the union or conference level could help. Promoting Adventist education and its virtues among parents, pastors, seminarians, and constituents would be a good start. New pastors need training about Christian education. They also must have local and conference leaders who really support schools and are actively involved in helping address their challenges. Raising the minimum standards for schools to operate will encourage local members and administrators to do more for their schools. If everyone is convinced of the wonderful results that

Adventist education can bring, resources will flow in. We can reverse negative trends, but we must fight for the future of Adventist education with a clear purpose and effective strategies. ✍



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3. _____, *Private School Universe Survey 1999-2000* (Washington, D.C.: U.S. Government Printing Office, 2001), p. 6.
4. _____, *The Condition of Education 2007* (Washington, D.C.: U.S. Government Printing Office, 2007).
5. Jason Fields, *America's Families and Living Arrangements: 2003. Current Population Reports* (Washington, D.C.: U.S. Census Bureau, 2003).
6. The number of Adventist students enrolled in NAD primary schools (K-8) dropped by 6,838 between 2001 and 2005. In 2001, they represented 75.1 percent of total K-12 enrollment; this had dropped to 68.4 percent by 2005. At the secondary level (9-12), the number of Adventist students decreased by 1,541 between 2001 and 2005. Their percentage of total secondary enrollment was 88.2 percent in 2001; it had decreased to 81.1 percent by 2005. (“Adventist student” was defined as a child who was baptized and/or had one or more Adventist parents.) Figures are based on an analysis by C. Garland Dulan, September 2007.
7. Due to space limitations, not all studies on Adventist education are included here. For information on studies about non-NAD education, and on older studies, see <http://circle.adventist.org/download/FactorsInfluencingK12Enrollment.pdf>, or contact Gus Gregorutti at ggregorutti@hotmail.com.
8. North American Division Annual Report, 2005.

Table 2. NAD K-12 schools by type and size, 2003-2004 school year^a

School Type and Size	Teachers per School								
	K-8	K-9	K-10	K-12	9-12	1	2	3	4+
NAD Totals	679	53	111	68	55	281	186	117	368



CREATING A SERVANT

BY TRACY ARNETT

Adventist schools have been established to help complete a mission—God’s mission. Our young people are to see Christ, know Christ, and emulate Christ. Our role, as teachers, is to provide an environment that keeps them focused on these goals.

In the Gospels we see Jesus as a Servant, a lover of people. “Jesus went throughout Galilee, teaching in their synagogues, preaching the good

news of the kingdom, and healing every disease and sickness among the people” (Matthew 4:23, NIV). He spent hours every day serving others (Matthew 15:30; Luke 9:11, NIV).

Jesus’ message to us is to put others first (Matthew 20:26-28; Luke 6:32-36, NIV). Following His example, our schools should produce a servant mentality in our youth; they are to be others-focused, giving and kind. “Truly I tell you, just as you did it to one of the least of these who are

members of my family, you did it to me” Matthew 25:40, NRSV).

Beginning with the primary grades, the daily curriculum should be intentionally infused with service activities that model Christ-like actions. Young people will develop a love for service—a love for others—through projects, activities, discussions, and outreach opportunities. Thank-you cards and notes can be written during English class, while crafts, poetry, stories, and other activ-

BEGINNING WITH THE PRIMARY GRADES, THE DAILY CURRICULUM SHOULD BE INTENTIONALLY INFUSED WITH SERVICE ACTIVITIES THAT MODEL CHRIST-LIKE ACTIONS.

ities can be integrated into the daily curriculum in connection with an adopt-a-grandparent program. Students will enjoy knowing that a particular craft will be given to their adopted grandma or grandpa. Even primary students can tutor younger students or show them how to do something new. First- and 2nd-graders will enjoy helping the kindergarteners. Third- and 4th-graders can experience the joy of giving as they help their classmates play math games, read stories, and teach them how to work the computers. Even very young students can present the school worship program and help out during the church service. It is important for them to know that these things are service actions—ways to give to others, and to show their love for Jesus. “Every follower of Jesus has a work to do as a missionary for Christ, in the family, in the neighborhood, in the town or city where he lives. All who are consecrated to God are channels of light. God makes them instruments of righteousness to communicate to others the light of truth.”¹¹

As your students grow older or become more experienced givers, they can be involved in more complex outreach projects. There are many local project options: food banks, soup kitchens, nursing homes, hospitals, and other community-service facilities.

Make sure that your students are well-prepared and have practiced prior to participating in any event beyond school property. They need to know well in advance what they are expected to do, as well as the behavior that is appropriate for the activity. Don't assume that they know what is expected; practice ahead of time so that the experience is positive for everyone. Anyone who observes your class during the event should see well-behaved young people provid-

ing a positive reflection of your school.

To infuse a service orientation into your classroom, you must be purposeful; it will not happen by accident. Start with a yearly plan that outlines how you will help your students advance from an understanding of basic concepts to a lifelong desire to serve others. Success in this program is measured by *what the students become*, not by what you, the teacher, provide.

Classroom Options

Students of all levels can benefit from a plethora of local activities. Letter/card ministries, crafts, penny wars (a fun competition between classrooms),² food drives, and phone-athons are inexpensive ways to get started. Student mentorship can be extremely positive if planned well and supervised. Children of all ages enjoy having the opportunity to teach something to others. When the older grades study about various genres of writing and public speaking, these are perfect opportunities for ministry. Although the students will be nervous at first, they will gain confidence as they work with their peers to provide a school worship service. If the students are given more responsibility as they gain experience, this encourages them to personalize the programs more each time. Some teachers find this challenging, but the students should be allowed to plan and present every detail possible.

Nursing Home Visits

If teacher and students take the time to develop a positive, interactive program, this can be a very powerful outreach. The cross-curricular opportunities are endless. Use worship time in your classroom to talk to your class about the value of sharing one's faith with others. Discuss the loneliness that people feel when they are iso-

lated from their families in an assisted-living facility, have the older students explore other options (social studies). Discuss ways they can share Jesus' love with others (Bible). Then, collaborate on a program that the whole class can provide (language arts). This can include music, poems, verses, short stories, etc. Students will enjoy handing out crafts that they have made (art), and the residents will treasure these gifts.

Check with the local facility to be sure that there is a sound system available. If not, a basic karaoke machine can be carried in and used to amplify your students' presentations. The nursing home activities director will appreciate having a regularly scheduled visit by your school; be sure to be prompt and let them know in advance if you must reschedule.

Take some balloons and play a little indoor volleyball. The older students will enjoy this more than they think! Practice your Christmas program by providing it for the residents—allow your older students to give a short worship thought or special music. Use all of your students' talents.

Here again, advance preparation is essential in order to create a life-changing experience for your class. It is helpful, for all grade levels, to discuss what might cause the behavior they will see in the elderly residents. Provide guidelines on what to do when the residents reach out to them, make nonsensical statements, repeat themselves, or talk about things that aren't happening, etc. Depending on the age of the students, this preparation can happen through stories, discussion, drawings, or books.

Beautification Project

If you contact the mayor's office, they will doubtless welcome your school's donation of time and effort to beautify a section of your town. You

may find that nurseries are willing to donate plants if they are given credit. Older students can spend a day clearing an overgrown lot or plant attractive landscaping in a section of town. This is hard work, so the students will need to be prepared for the event.

Social studies, science, and language arts classes can include activities from your service curriculum. The students learn that being a citizen involves both rights and responsibilities (social studies). They can visit the local nursery to learn about plants and horticulture (science). They can

tions about the homeless community. They became more able to internalize what Jesus must have felt when He looked at the lonely, broken, sickly people who came to Him each day.

It's important to dedicate worship times before and after these visits to the topic of service. Students need to understand the purpose of their visits

Prayer Meeting and Programs

Students of all ages should be active in the local church. Whether or not the students attend church regularly, they can all participate and receive a blessing from various programs. Even if younger students are participating, it's best to have the older students plan the program.

AS YOUR STUDENTS GROW OLDER OR BECOME MORE EXPERIENCED GIVERS, THEY CAN BE INVOLVED IN MORE COMPLEX OUT-REACH PROJECTS.



write letters to get donors for the project and report on what they've learned in an essay about the experience (language arts).

Shelters and Soup Kitchens

"Whether in the home, the neighborhood, or the school, the presence of the poor, the afflicted, the ignorant, or the unfortunate should be regarded, not as a misfortune, but as affording precious opportunity for service."³ After donating one morning a month to a soup kitchen, my students lost many of their preconceived no-

and discuss what they saw, heard, felt, and learned from each experience. Let them draw their own conclusions with your guidance, and provide the opportunity for them to share.

Here again, it is important that the class is well-prepared for the visits; they should know what to do and what behavior is expected of them. Guidance such as staying with the group, walking in appropriate places, and staying on-task are all important reminders for students at every grade level.

They can provide an entire church service, student-led week of prayer, prayer meeting, vespers, or another program. From your local Christian bookstore or a nearby Adventist Book Center, obtain a selection of drama books, performance tracks, praise books, short story books, and other resources.⁴ Put these books on a table, and watch the students go to work. If they have never planned a program before, they'll need more guidance.

Start with a shorter program like prayer meeting, and suggest a theme. Your students may need an outline and help in planning. If younger students will be involved, the older ones will need to provide age-appropriate opportunities for them (help with song service, offering prayer, reciting a memory verse, etc.). Students are happy to participate when they have planned the program themselves. The event should be presented entirely by the students.

Sit back, relax, and enjoy the show! Then discuss the program the next school day so that students have an opportunity to think about its impact on those watching. You will be amazed at how eager they will be to begin planning their next program.

Distance Activities

As your service integration expands and your youth become more experienced, the older students will need bigger outreach opportunities.

Check with your local Red Cross Chapter; they offer extensive volunteer training (including CPR) and volunteer opportunities for most age groups. Your class could be called in to help with a disaster situation!

This is the time to plan your first distance outreach, such as a mission trip. For your students' first mission experience, you can plan multiple day trips during one week. Or you can plan a week-long trip farther away. For location ideas, check with <http://www.hesaidgo.org>.

My first mission trip was to the Navajo School in Holbrook, Arizona, with my class of 7th- to 10th-graders. We planned the trip for several months. I presented worship talks discussing ways to reach out to others. We talked about the purpose of our trip and looked up texts about the value of giving to others. My students and I made multiple calls and e-mails to the principal at Holbrook. Each morning during the trip, we had worship together and discussed friendships that were forming with the Navajo students. My class was required to split up during meals and meet new people. It was amazing to hear the experiences that they were having; the work was difficult, but rewarding. I cannot say enough about the value of planning for each detail. Don't be afraid to ask church members to help.

Make It Powerful!

To achieve the greatest return from service activities, be sure to conduct pre-service and post-service discussions and activities. The students must know why they're doing what they're doing. They must make personal connections to their actions and understand the value of giving to others and of treating everyone with respect. Stories and texts about service, discussion, and even role-play can easily be integrated into your worship talks before and after each event. Youth who are unaccustomed to giving will feel nervous; role-playing helps them understand what might happen and how to accommodate.

MAKE SURE THAT YOUR STUDENTS ARE WELL-PREPARED AND HAVE PRACTICED PRIOR TO PARTICIPATING IN ANY EVENT BEYOND SCHOOL PROPERTY.

Have them practice looking into people's eyes, talking politely, listening, and demonstrating good manners. Even older students need practice.

The Gospels are saturated with examples of service, which you can incorporate into worship, Bible class, or even social studies class. The disciples were instructed to serve others;

integrate technology: get your students to design bulletin inserts!). Put up a Christmas tree any time during the year (this might be more effective separate from Christmas) and invite the church members to pledge cash or time. Have students spend a couple of hours soliciting donations from area businesses.



Paul speaks repeatedly of how we are to live our lives.

Provide time for the students to journal about their experience and share with the class. English class projects can be built around your service theme. Students can combine writing talks, hunting texts, planning programs, and creating projects as they integrate service into their studies!

Fundraising

Another challenge when planning an outreach curriculum is financing, although many programs will have minimal cost. Place announcements in area church bulletins to ask for basic tools that are needed for small, local projects (here's an opportunity to

For larger projects or distant programs, you will need to tap into community resources. Need help gathering these resources? Put your older students to work. Letter-writing and grant-writing are valuable English lessons that will profit your service curriculum. Our church families are usually providing many financial resources to the school already; try fundraising opportunities that tap the community as well. One successful fundraiser at one of my previous schools was selling ads on T-shirts. Each business paid \$250 for an ad, and multiple ads were printed on the backs of T-shirts. We raised more than \$3,000 in one day from area businesses for the ads. Students wore the T-shirts on field trips, outreach activ-

ities, etc. during the school year.

Another successful fundraiser for my school was sending letters to non-constituent family members describing the planned mission experience; most of the students raised more than half the necessary funds using letters. A tip: If you're going to use sales-related fundraisers, choose ones where the products are either delivered by the company or can be purchased immediately with no orders (such as candy sales). Both of these options enable you to contact customers only once—the students don't have to return to the homes to deliver the products. Pre-printed cards (buy one item, get one free) are economical and popular. Using blank business cards, it's easy to print multiple cards for



your students to sell. Be sure to contact the companies first to be sure they will honor your discount cards. Suggestions might be “buy one, get one half-price or free”: salads, sub sandwiches, pizzas, ice cream cones, drinks, etc. The students sell the cards for \$10 each, and it's almost entirely profit. Big bonus: no return trip to deliver the product!

Drivers, Chaperones, and Other Fun Stuff

As usual, when leaving your school campus for any activity, there are multiple details to work out. Your local school board must vote on all trips off campus. Depending on the length of the trip, your conference or K-12 Board may need to give their approval. Be sure to complete criminal background checks on all volunteers who will chaperone on your trip. This is essential for your students' safety. Adventist Risk Management requires

that all drivers complete a driver application indicating their personal driving record. Go to <http://www.adventistrisk.org> for safety resources including their “Field Trip/Outing Planner” (15-passenger vans are not permitted). Drivers are required to have high liability insurance. See if Risk Management requires specific trip insurance for your event.

Make sure that your students will have safe transportation and excellent supervision. Each staff member in attendance should have each student's emergency contact information as well as a copy of his or her notarized, consent-to-treat form in case of illness or injury. Along with this form, I always have a copy of the student's immunization records, allergies, and medical history. Students under duress may not be able to quickly remember this important information, and some children may not know it.

You and your staff and teachers must develop policies and detailed plans *before* discussing them with participants. Then you can share them briefly with the parents, students, and adults who will be chaperoning the trip. If parents attend, make it clear that your rules supersede theirs. Participating adults must be informed about the rules in advance, and agree to follow the required procedures. Will your students be expected to stay together? What are they to do in the case of an emergency? How will you stay in contact if the group becomes separated? Who is in charge? What rules are being given to the students? What resources are available if a student misbehaves? Having the answers to these, and other, questions in advance helps to ensure safety and unanimity within the staff.

Get Started!

The impact of a service curriculum on the lives of your students will be eternal. Start today! First, define your goals. What do you hope to accomplish by implementing an “others-focused” environment in your classroom? How will you reach those

goals? “The life on earth is the beginning of the life in heaven; education on earth is an initiation into the principles of heaven; the lifework here is a training for the lifework there. What we now are, in character and holy service, is the sure foreshadowing of what we shall be.”⁵

Your yearly plans should begin with worship and Bible-class discussions on our commission to serve others. The students will be naturally led into fun, simple, local projects where they can begin to get involved. Larger, more complex outreach projects can then be introduced.

Finally, be certain that your own heart is fed. Matthew 10:8 tells us, “freely you have received, freely give.” Pray that your young people will be open to the Holy Spirit, and a blessing is guaranteed! ✍

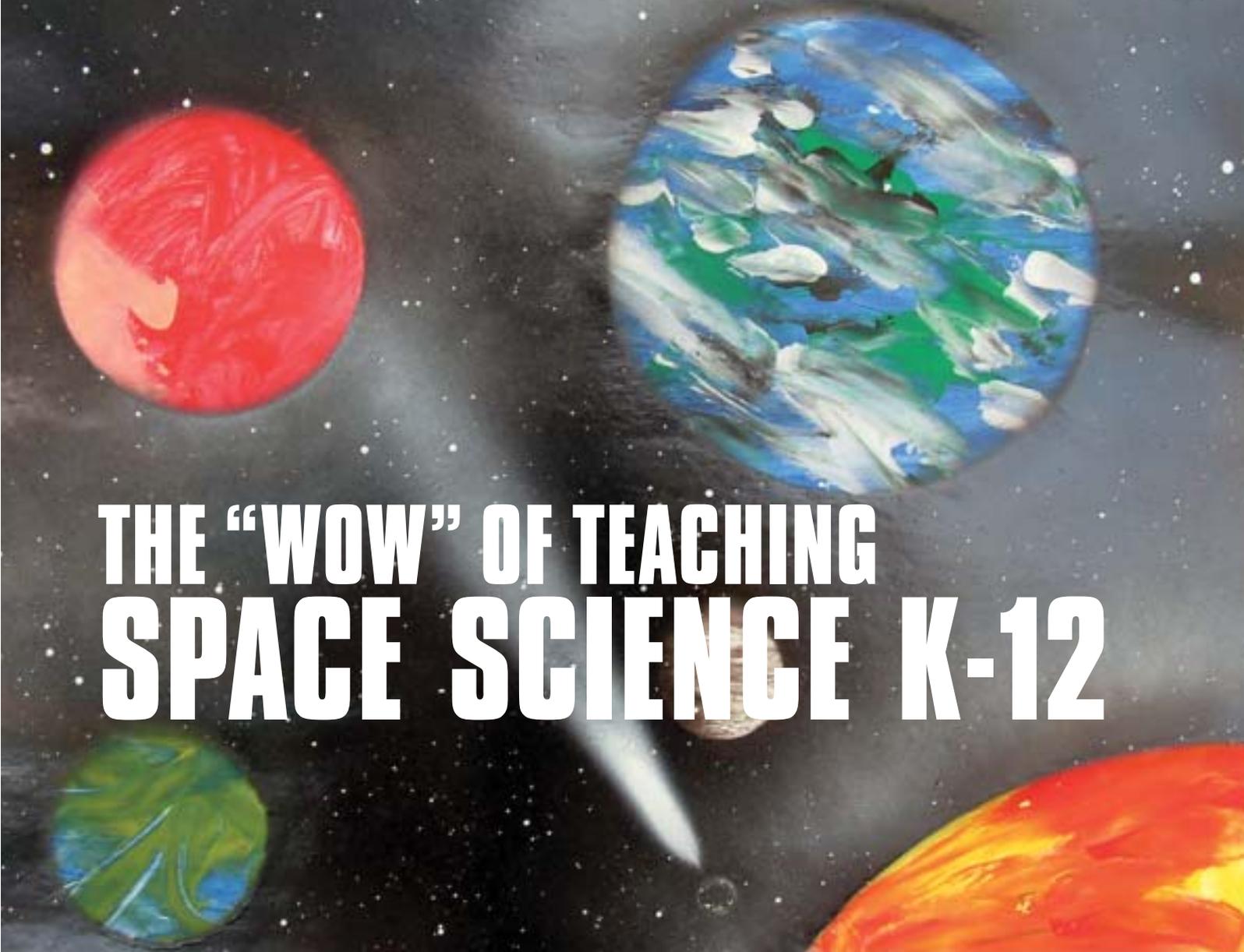


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THE “WOW” OF TEACHING SPACE SCIENCE K-12

BY BEN ROY

How would you like to have *you* for a science teacher today? I have asked myself this question many times. The days that I would *not* want to have me for a teacher are the ones when I am teaching at the lowest levels of learning—information gathering, memorizing, and organizing.

People of all ages not only learn, but *remember*, concepts and facts more easily when lessons require thought, manipulation, and interactive conversation. Activity-based lessons can provide all three of these components.

The study of science can introduce students to the miracles of creation. Teachers must help students see the “glorious scenes painted by the great Master Artist upon the shifting canvas of the heavens, . . . become acquainted with the wonders of earth and sea, . . . [and] watch the unfolding mysteries of the changing seasons”¹ Teachers should not merely *tell* students about God’s

creatures; the animals themselves are to be their teachers.²

Actually *doing* science brings WOW into the process

(wonder, open-mindedness, wide-eyed-ness). For example, instead of only reading about different types of soil, students should see, feel, and smell samples of dirt, dig in it, weigh it, sift it, identify its colors, look at it through a magnifying lens, identify living things in it, test its pH, add water and observe the results, then talk, read, and write about what they discovered.

Here are some suggestions for increasing the “WOW” factor in your science classes:

- As you plan the school year, examine your Seventh-

Do not tell students what they are going to learn. Let them discover the lesson’s concepts for themselves.

day Adventist Curriculum Guide K-12 and the scope and sequence section of the teacher's edition of your textbook. Decide which concepts are the most important, and then design activity-based lessons for them. Get ideas for activities from the teacher's edition, publications such as *Science & Children* (for elementary teachers), *Science Scope* (for middle school/upper elementary teachers), and *The Science Teacher* (for secondary teachers); colleagues; professional conferences; and Websites.

- Plan each lesson carefully. Collect and store needed components in labeled, clear plastic boxes. Include a list of the box's contents, a copy of the lesson plan, and a note about any additional items required for the lesson. (Make a list of all the materials you need for the year, and share it with parents during registration or open house. Invite them to choose items they are willing to supply for the class.)

- Begin each class with a demonstration.
- Ask questions to stimulate thought. Do not tell students what they are going to learn. Let them discover the lesson's concepts for themselves. At the end of the lesson, you can summarize the concepts and ideas.

Try this national award-winning NASA space art lesson.

Instructions for one of my favorite "WOW" lessons is given below. It may be used when teaching about space or the Solar System. This lesson makes every student a successful space artist. One of the teachers to whom I taught this lesson shared it with her 5th graders, and one of her students won first place for the National NASA Space Art Contest.

Intergalactic Space, Grades K-3

Theme: Solar System or Space

Objective: Students will learn about space by designing and creating a poster of our Solar System.

Materials:

- One-fourth sheet of semi-glossy poster board per student, plus one for the teacher;
- Poster paint: blue, green, brown, white, red, and yellow;³
- Containers to hold dabs of poster paint, e.g., small paper plates;
- One can of glossy black spray paint per seven students;
- One can of glossy white spray paint;
- Different-size lids from jars and other containers, ranging from small to large;
- One pencil per student;
- Protective clothing for each student;

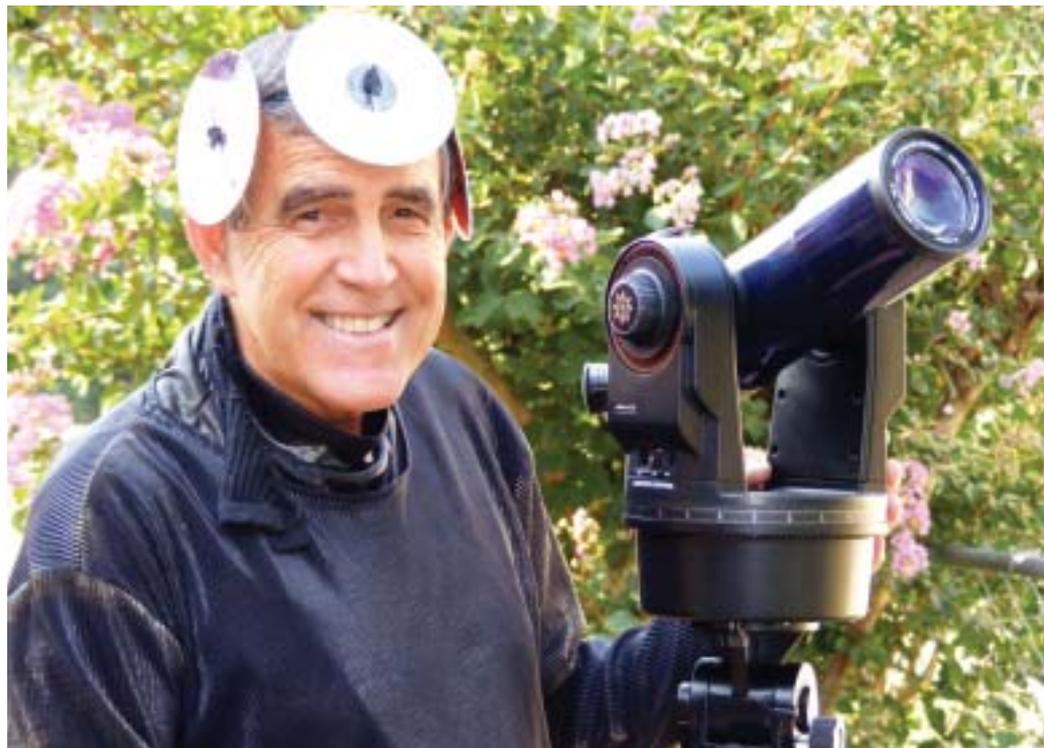
People of all ages not only learn, but *remember*, concepts and facts more easily when lessons require thought, manipulation, and interactive conversation.

- Ground cloth or tarpaulin.
- Optional: songs about space; pictures of objects in the Solar System; and information in five languages: English, Spanish, Portuguese, German, and French; see <http://solarviews.com> for details. Teachers and students may use materials from the site.⁴

Procedure:

Tell the students that they are going to be space artists today. (Try dressing up like a space traveler. Wearing a costume makes any new concept or activity more interesting and fun, and helps add "WOW" to your lesson.)

Before beginning this lesson, make a list of the planets in the Solar System in order of their distance from the Sun. Post it on the chalk board, or distribute it to the students. Discuss facts about the Solar System: planets (size, orbits, moons, unique characteristics, etc.), the asteroid belt, comets, and the Sun. Tell the students that they are going to create a collage depicting some of the planets in our Solar System. If you wish, you can play background music as they work.



The author, Ben Roy, dressed for an astronomy presentation.

Now you are ready to begin making the collage. (It is very important to demonstrate each part of this lesson, after which students follow your lead.)

1. Have the students don their protective clothing.
2. Have each student write his or her name on the non-glossy side of the poster board.
3. Using the semi-glossy side of the poster board, demonstrate to the students how to arrange the different-sized lids on the poster board, then lightly trace around each lid to create the outline of planets and the Sun. Tell the students that as they paint each circle, they should make sure that the paint goes a little outside the line. (This is important because they will later cover each circle with a lid, which must cover all of the paint.) They do not have to put the circles in any particular arrangement. Tell them to save the lids.

The study of science can introduce students to the miracles of creation.

4. Holding up your piece of poster board, tell the students that they will use their fingers for brushes today. To model how to do this, choose a circle on your poster board and dip your fingertip in the blue paint.

5. Ask the students: "Which planet is the second one from the Sun?" (Venus) Choose one circle to represent Venus. Fill the entire circle with blue.

Next, dip your finger in yellow paint and daub it over the blue in several places. Students will notice that a third color, green, has been created by mixing the blue and yellow paint.

(While you are demonstrating how to paint the planets



and Sun, you can continue to share/review information about the parts of the Solar System.)

6. Ask the students: "Which is the third planet from the Sun?" (Earth) Choose one circle to represent Earth. Astronauts say that planet Earth looks like a blue marble in space. Paint the entire circle blue.

Ask the students what would be brown on Earth that could be seen from space? (deserts and mountains) Dip a finger in the brown paint, and put a little here and there.

Ask what would be green on Earth that could be seen from space? (forests and jungles) Dip a finger in the green paint, and put a little here and there on top of the brown.

Ask what would be white on Earth that could be seen from space? (clouds, ice caps, glaciers, and snow) Dip a finger in the white paint, and put a lot of white here and there.

7. Dip the tip of your index finger in the red paint, and ask the students: "Which planet is called the red planet?" (Mars). Choose one of the traced circles to represent Mars. Paint the entire circle red. Dip your second finger into the white paint, explaining that Mars has polar ice caps. Put a little white at the top of the circle representing Mars.

8. Ask the students if they know the names of any of the "dwarf planets" (Pluto, Ceres, and Eris). Choose a small circle to represent Pluto. Dip a finger in brown paint and fill the entire circle with brown. Dip a finger in the white paint and mix some white into the brown paint.

9. Ask the students: "What is the name of our star?" (Sun) Choose a large circle to represent the Sun. Dip your finger in the yellow paint, and fill the entire circle with yellow. Then dip a finger in the red paint, and mix it into the yellow to create some orange areas.

10. When the students have finished their paintings, set them aside to dry. Then take them outside and put them on top of your drop cloth. Have the students cover each of their planets with lids matching the sizes of the circles.

11. Using the black paint, have the students watch as you spray in the black night sky between and around each lid.

12. As you lift the lids off of each painting, the students will "Ooh" and "Ah" in delight!

13. After the black paint dries, the students can add some stars by rubbing a small amount of white paint on a small stiff-bristled brush and daubing it gently where they want the stars, or by dipping a dull toothpick into the white paint and applying small dots wherever they like.

14. A comet can be added by inverting a can of white spray paint over the painting and quickly pressing the spray nozzle into the poster board. Remind the students that the tail of a comet always goes away from the Sun.

Intergalactic Space, Grades 4-12

Try dressing up as a space traveler as mentioned in the lesson plan for K-3. The older students still enjoy the fun of dress-up!

Theme: Solar System or Space

Objective: The students will learn about space by designing and arranging a solar system.

Materials:

- One-fourth sheet of semi-glossy poster board per student, plus one for the teacher;
- Six colors of glossy spray paint: blue, green, brown, white, red, and yellow, one can for every 14 students;
- One can of glossy black spray paint per seven students;
- Different-sized lids from jars and other containers, from small to large;
- Ground cloth or tarpaulin;
- Plastic shopping bags for texturing paint;
- Poster board torn into hand-size pieces;
- Optional: songs about space; pictures of objects in the Solar System and information in five languages: English, Spanish, Portuguese, German, and French.⁵

Procedure:

A week or so before the lesson, give students a short quiz to determine what they know about the Solar System. This will help you plan a discussion before and during this project. You can discuss facts about the Solar System: planets (classification, size, orbits, moons, unique characteristics, etc.), the asteroid belt, comets, the Sun, and the Milky Way.

Tell the students that they are going to create a collage depicting some of the planets in our Solar System. Tell them that because the Sun and some of



the planets are very large, the picture will not be drawn to scale. Younger students can draw circles around the jar lids on the poster paper as guidelines for where to spray the paint.

If you wish, you can play background music as they work.

Because this activity involves the use of spray paint, it must be done outside, and students should wear a smock or other protective clothing.

The teacher must demonstrate the entire lesson before the students begin their projects.

1. Place the semi-glossy side of the poster board facing up on top of the drop cloth.

2. Tell the students that they will start with the second planet from the Sun (Venus, Earth's twin). Spray a hand-sized circle of blue paint several centimeters from Mars. While the paint is still wet, spray some yellow paint here and there on top of the blue paint.

Immediately lay a plastic shopping bag on top of the wet paint, patting the plastic down lightly into the paint, then quickly peeling the bag off. This creates an interesting texture, mixing the blue and yellow paint to create a third color, green, on planet Venus.

3. Spray a large circle of blue paint on the poster as you talk about the Blue Planet in space, Earth. Spray some brown and green (deserts and mountains; forests and jungles) here and there over the blue. While the paint is wet, completely cover the entire circle with a layer of white paint (clouds, snow, glaciers, and polar icecaps). Carefully lay a plastic shopping bag on top of the layer of white, then slowly peel the bag off.

4. While giving information about Mars and asking questions about the Red Planet (Mars looks red because it is covered with dirt that contains a lot of iron oxide), spray a fist-size circle of red paint on the poster board. While the red paint is still wet, spray a small spot of white across the top of the red circle. This represents the northern polar ice cap. Brush a torn edge of poster board over the wet red area (avoiding the ice cap), to create a uniquely textured red planet.

5. To represent one of the dwarf planets, Pluto, spray a very small spot of brown paint in an open area on the poster board, followed by a light spray of white. Wipe a finger through the brown and white paint, creating a nice blend of color.

6. To represent our moon, lightly spray a small spot of black paint close to planet Earth.

7. Spray a very large yellow arc in one corner of the poster board to represent the Sun. While the paint is wet, lightly spray red paint over the yellow. Immediately lay a circular piece of torn poster board over the wet paint, then peel it off. You have just added a sunspot.

8. After the students have completed their posters, place them on a drop cloth or tarpaulin. Choose a matching-sized lid for each planet, and place the lids over each circle. A trash can lid or Frisbee may be used for the Sun.

Decide which concepts are the most important, and then design activity-based lessons for them.

9. Using a can of black paint, spray the black night sky color in between and around each lid. You can add a little blue to the black to make an interesting night sky.

10. You can add a hint of the Milky Way Galaxy by holding a can of white spray paint about 20-30 centimeters above the poster board, and quickly spraying across it.

11. If desired, a sprinkling of stars can be added. Holding the can of white spray paint upright, place the finger that you are using to depress the button so that it partially blocks the sprayer. Some of the paint will hit the pad of your finger and spatter tiny bits of paint onto the poster board. Or the students can use dull toothpicks to apply dots of white paint on the background.

12. A comet can be added by inverting a can of white spray paint over the painting and quickly pressing the spray nozzle into the poster board. The tail of a comet always goes away from the Sun.

13. As you lift the lids off of each painting, you and the students will "Ooh" and "Ah" in delight! These student paintings look just like commercially designed posters! ✍

I hear the teacher talk and I forget.

I see the teacher demonstrate and I remember.

I do and I understand.

Adapted Chinese Proverb



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Mr. Roy is also the president of "The Science Zone Corporation," which puts on mobile science shows, teacher in-services, and weeks of prayer throughout North America and produces science kits and DVDs. Some of his 72 science lessons have appeared on 3ABN's Kids' Time program. He can be contacted by e-mail at benroy@gosciencezone.com or at his Website at <http://www.gosciencezone.com>.

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Enrolled or ENGAGED?

Teacher Mediation Makes the Difference

BY JOANN M. HERRINGTON

On the first day of school, you stand at the door, cheerfully welcoming the students into your classroom. Their parents have paid tuition and have high hopes for their achievement. Everything is brand new: clothing, backpacks, textbooks, pencils or pens, and notebooks. After taking their assigned seats, the students look up at you expectantly.

You're well prepared: Your lesson plans are written, graphic organizers are ready, and bulletin boards and learning centers are bright and appealing.

Yet sometime before the first grade report, if you are like a lot of teachers, you're feeling frustrated. Why aren't your carefully prepared lessons being more enthusiastically received? Why aren't students paying attention and staying on task? Why don't they have a better grasp of the essentials of the course? Why are their test grades so low?

A glance at the roster confirms that your students are enrolled. But are they engaged?

If students are not engaged in the total school experience physically and psychologically, then the efforts of the institution are for naught.

What Is Student Engagement?

Judgments about the quality of a typical student's educational experience are often based upon the institution's reputation and resources—the credentials of the faculty, the number of computers per classroom, the scores on standardized tests for incoming or exiting students, sports programs, library holdings, and the like.¹ However, students can be surrounded by all of the aforementioned resources and fail to learn much in their classes or other activities. If students are not engaged in the total school experience physically and psychologically, then the efforts of the institution are for naught. The amount of learning and personal development a student experiences is directly proportional to the quantity and quality of his or her involvement in the school program.

Student engagement is currently a hot topic. During a search, this writer found nearly 2,500 articles written in the years 2005 and 2006 on this subject. Myriad definitions and applications of

student engagement exist throughout educational literature. One succinct definition by Bomia et al.² states that student engagement “refers to a student’s willingness, need, desire and compulsion to participate in, and be successful in, the learning process.”

Skinner and Belmont, cited by Brewster and Fager of the Northwest Region Educational Laboratory³ noted that students who are engaged “select tasks at the border of their competencies, initiate action when given the opportunity, exert intense effort and concentration in the implementation of learning tasks; and show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest.”

Less motivated or disengaged students, on the other hand, “are passive, do not try hard, and give up easily in the face of challenges.”⁴

Learning Anchored in Experience

Research by constructivist Lev Vygotsky⁵ convinced him that optimal learning takes place when students build, rearrange, and organize internal

representations through experience— if they are engaged with a concept. As experience unfolds, the learners gather information, which they use to form new concepts, solve problems, and create meaning.⁶

In addition to experience, mediation is essential to help learners negotiate the path to understanding, according to Vygotsky.⁷ With the teacher’s help, students are able to grasp concepts more efficiently and accurately. This empowers them to achieve far more than they could have accomplished independently.

How does this work? Here is an example: Young children tend to label everything. However, once a label is attached to a concept, the child tends to resist any change in its meaning (e.g., the child may call all animals *puppy* because the first animal he or she identified was a dog). By exploring the child’s perceptions, a mediator—parent, sibling, or teacher—can help him or her understand that a variety of animals exist, and that each has its own name. As the result of mediation, the child’s understanding is

broadened, and misconceptions are corrected.

Shulman describes this process as the “essence” of understanding: the learner’s ability to transform the message embedded in instruction into his or her own cognitive configuration. He states that “the consequences of teaching can only be understood as a function of what that teaching stimulates the learner to do with the material.”⁸ Experiencing the lesson personalizes the learning for each student.

So Where Do Teachers Go Wrong?

Teachers typically start by describing the factual aspects of the lesson, saving the experience part for later— *if* there’s time. Unfortunately, this method often fails to ensure that students understand the content or become engaged in the topic. Knowledge is valuable, but it’s experience that makes knowledge meaningful. Quantum Teaching,⁹ a dynamic instructional model, offers a methodology whose foundation rests on the tenets of Piaget and Vygotsky: Experience Before Label. Humans learn by



Skinner and Belmont . . . noted that students who are engaged “select tasks at the border of their competencies, initiate action when given the opportunity, exert intense effort and concentration in the implementation of learning tasks; and show generally positive emotions during ongoing action, including enthusiasm, optimism, curiosity, and interest.”

doing; consequently, it is experience, rather than discussion, that locks information in the brain.

Start With an Experience

While enjoying a cruise to Alaska last year, my traveling companions and I noticed that our waiters were incredibly attentive to us, treating us royally and with such flourish that we could hardly wait to see what they'd do next.

In the same way, teachers must take time to present lessons with verve and vivacity to help students focus and learn. They should give special attention to the activities during the first part of the class because this is when students often decide whether they will stay on board for the class period or become disengaged. Their emotional buy-in affects memory and recall.

Ask any woman to describe the setting when her husband proposed to her. Ask a co-worker where he was on the day when Princess Diana died or on 9/11. They are likely to recall specific details because of their emotional reaction to the event. The amygdala, which is the emotional center of the brain, plays a strong role in storing memory. According to Joseph LeDoux, of New York University's Center for Neural Science, “Amygdala arousal seems to imprint in memory most moments of emotional arousal with an added degree of strength. The more intense the amygdala arousal, the stronger the imprint.”¹⁰

But Does It Work?

Fast forward to my Content Reading and Writing course at Union College in Lincoln, Nebraska. Early in the semester, the topic is Affective Learn-

ing. In the past, I typically taught Maslow's Hierarchy of Needs, conation, and downshifting.¹¹ My assessment of students' mastery of these concepts showed that during discussion, they showed a rudimentary understanding of the topics, but later were unable to define or give examples of the terms *conation* or *downshifting*, in particular. Determined to improve my students' mastery of these concepts, I set out to use the Experience Before Label strategy.

I reserved an alternate classroom—one too small to hold the number of students enrolled. I also secured heaters to make it hot and stuffy, in contrast to our usually comfortable, air-conditioned classroom.

A sign directed students to the new location. As the first students sat down, they looked quizzically around the room, but said nothing. After all the seats were taken, students reluctantly stood along the wall or flopped down on the floor. A murmur began to hum throughout the room, but I cheerfully ignored it and plunged into a review of the previous class session, followed by a brief quiz. I did not move around the room to receive the quizzes, but forced students to step over and around one another to reach my desk near the classroom door. In exchange for their quiz sheet, I gave them a slip of paper directing them to leave quietly and go to our regular location, where cool air, plenty of seats, soft music—and a plate of cookies—awaited them.

When all were reassembled, I asked them: “What did you think of me and of the classroom environment?” The answers varied, but most had an impression of disorganization

and poor planning. The most humorous reply: “I didn't think you were crazy, but when you did that, I wasn't so sure anymore!”

Reflecting on their experience, students achieved a better understanding of Maslow's theory, because their physical needs had been ignored. They remembered the terms *conation* and *downshifting* on the test, because they could recall that they lacked the motivation to care about my lecture, and that they had actually downshifted when they thought I didn't care about their needs.

Later that semester, a student told me about an incident that occurred as she worked with a middle-school student during her field practicum.¹² “My student wouldn't focus—I couldn't figure out why he was struggling so with the day's work. But as I looked closely at his face, I saw the beginnings of a bruise under his skin. I stopped trying to instruct him and asked how his face had gotten hurt. He told me about some incidents of bullying, and we had an opportunity to talk about ways he could deal with the problem.” The college student went on to say that she experienced a moment of recognition as she talked with the student. For her, *Maslow's hierarchy of needs, conation, downshifting*—heretofore theoretical concepts—leapt from textbook pages to life through the prism of experience.

As the semester went on, I experimented with various strategies, including simulations, games, opinion polls, and a mock quiz, to provide experiences that would scaffold students' understanding of course concepts. The results? Comments on the formal course evaluation, a teacher-adminis-

Learning anchored in experience finds its basis in Scripture.

tered exit survey, and student narratives showed they enjoyed learning in this way. It was also satisfying to grade mid-term and final tests, where students showed their understanding of important educational concepts.

A Scriptural Foundation

Learning anchored in experience finds its basis in Scripture. Ever the Master Teacher, Jesus personally undertook the training of those who would be the Christian Church's future leaders. These were not students who merely heard or read about the Kingdom, but disciples who followed their Savior, learning from daily interaction with Him.

The term *discipleship* has been described as a relationship which "connotes holistic education, engaging personal discipline, conceptual knowledge, heart, commitment, and behavioral focus" on the student's part.¹³ Teachers today who seek to pattern themselves after Him who said "Come unto Me" would do well to imitate His simple and appealing invitation: "Walk with me and work with me—watch how I do it. Learn the unforced rhythms of grace. I won't lay anything heavy or ill-fitting on you . . ." ¹⁴

Christ's methods were effective—just ask Peter if he "got it," as he dived himself off onshore after walking on the water with Jesus. Imagine how the disciples' effectiveness in casting out demons improved after Jesus' seminar, Exorcism 101. Descending from the Mount of Transfiguration, Jesus accurately pinpointed the cause of their failure to help a desperate father's afflicted son, and suggested remediation: fasting and prayer. As Christ sought followers for His kingdom, He first entered their world, showing through parables that He understood their situation. As teachers, we must do no less; for, though we have been granted the legal authority to teach, only our

students can grant us the right to teach *them*. Engagement is the bridge that allows us to enter our students' world and them to enter ours.

Now You Try It!

The unforgettable and climactic scene in the movie *The Miracle Worker*¹⁵ depicts the dawn of comprehension for Helen Keller as teacher Annie Sullivan holds Helen's hand under the stream of water gushing for a pump. As content—water—merges with experience, Helen becomes motivated to discover the objects and people around her. History bears witness that this remarkable woman, aided by the efforts of a persevering teacher, enriched the world. A miracle, indeed!

The good news is that every teacher can realize amazing results by implementing modern methodologies based on biblical principles. Lessons that grab students' attention, nudge their curiosity, and encourage increased motivation through experiential learning will help your class progress from simply being enrolled to becoming engaged. ✍



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Ms. Herrington has worked as a teacher in church schools and public schools, a principal, and a conference superintendent of education. She has done graduate work in curriculum and instruction and in educational technology.

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An Update on K-12 Distributed Education in the North American Division

When the editor of the JOURNAL OF ADVENTIST EDUCATION suggested I write an update on what is happening in distributed education in K-12 Adventist schools, I was immediately interested. The Adventist Virtual Learning Network group has discussed kindergarten through graduate-level or birth-to-eternity education since its inception in 1999. These early collaborators believed that “together we stand; divided we fall” and “by collaborating, even the weakest school, college, or university can become a stronger influence locally and can serve the needs of individuals in the global community.”¹

So what has happened in the past eight years? Documenting K-12 initiatives is not an easy task, since conferences, unions, and individual schools are constantly moving into and out of distributed learning. If this column misses your initiatives, it’s because the author has not been able to find you on the Web!

First, a definition. Distributed education occurs when the teacher and student are in separate locations, and learning occurs through the use of technologies (such as video and Internet). The program may be wholly online or a supplement to traditional classroom instruction.²

Three early K-12 providers were Adventist Education for the 21st Century (AE21)³; Silver State Adventist School (Reno, Nevada); and Griggs International Academy (formerly Home Study International or HSI).⁴

AE21 currently serves 120 students in grades 9-12. The students are located at 16 different sites—eight in Florida, the rest mostly scattered throughout the eastern U.S. Classes are delivered via live, interactive video conferences on regular school days. Other Web-based technologies such as discussion forums, webcams, instant messaging, e-mail, and a secure Website for assignments and grades make this a technology-rich educational environment. The students typically attend an Adventist school and are supervised by local teachers. Several previous articles in the JOURNAL have described the philosophy and educational processes used by AE21.⁵

It appears the staying power of AE21 is related to several factors:

1. It is fully sponsored by the Florida Conference.
2. Because it is connected with Forest Lake Academy (FLA), an accredited high school, its students receive FLA credit and an FLA diploma.
3. It is a true consortium, since 16 schools share teachers and other resources; and
4. It allows parents to keep their children in the local Advent-

ist school.

Griggs’ Alternative Programs for Learning Enrichment (APLE) allows schools to offer grades 9-12, even if they do not have enough teachers or students to support a full high school program. How does this work? The students enroll in the Griggs program, but are supervised by teachers at the local Adventist school. The curriculum is available either online or paper-based, and tests are administered by Griggs—often online. Students receive their diplomas and credits from Griggs. In some cases, appropriately certificated teachers may supplement the program by teaching one or more face-to-face courses, thereby offering students a greater variety of options. Griggs works in collaboration with the North American Division and the local unions and conference offices of education to make certain that potential APLE schools have the local support to serve the students well.

Silver State Adventist Academy (SSAA) in Nevada is one of 22 APLE schools. Although it has discontinued its distance-education program, it uses the Griggs program so it can enroll 11th- and 12th-grade students. Gary Wilson, SSAA principal, says the school’s enrollment is steady, and parents are pleased with the program.

Griggs International Academy offers a full high school diploma program online. Currently, 302 Adventist high school students are enrolled in this program. Griggs also provides an online high school diploma completion program for more than 700 students studying at Job Corps centers throughout the United States.

Griggs is also developing an online middle school, with the 6th grade available this year.⁶ Griggs International Academy uses the Desire2Learn course management system, a Web-based platform that allows for both synchronous and asynchronous learning. Through use of a discussion board and instant messaging, students can communicate with their teachers and one another.

Distance programs operated for a time in the Mid-American Union and the Hawaii Conference, but have been discontinued. When the grant that financed the Hawaii program ran out, there was insufficient financial support to continue it. The Mid-America Adventist Virtual School (MAAVS) began in 2000 and operated for several years. According to Melvin Northrup, who was on the committee that established MAAVS, its principal objectives were to: “(1) Provide access to a 9th-grade Adventist education for young people lacking that access; (2) Fill supplementary needs for individual high school students with offerings taught by Adventist teachers, and for students in small schools with a 9th grade

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Students take pride in completing quality work for inclusion in their portfolios.



A student from Rogers Adventist School in College Place, Washington, displays artwork that will be included in his portfolio.



Students hone their technical skills as they work on their digital portfolios.

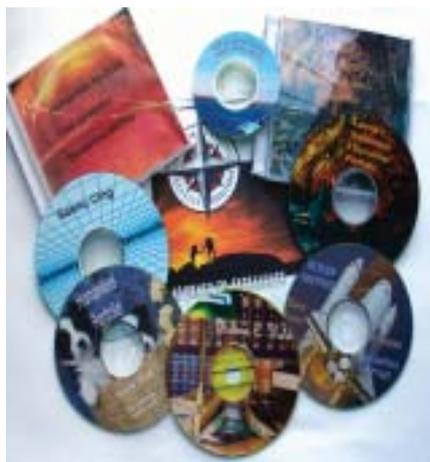


A portfolio includes goals that students have set for themselves.

The Power of the P

BY SHELLEY BACON

“Begin with the end in mind” is a maxim from Steven Covey’s book *Seven Habits of Highly Successful Teens*. Applications to education are obvious: If teachers begin with their goals in mind, their students’ educa-



Digital portfolios can be stored on CDs for future reference or to share with parents and school groups.

tional experience will improve.

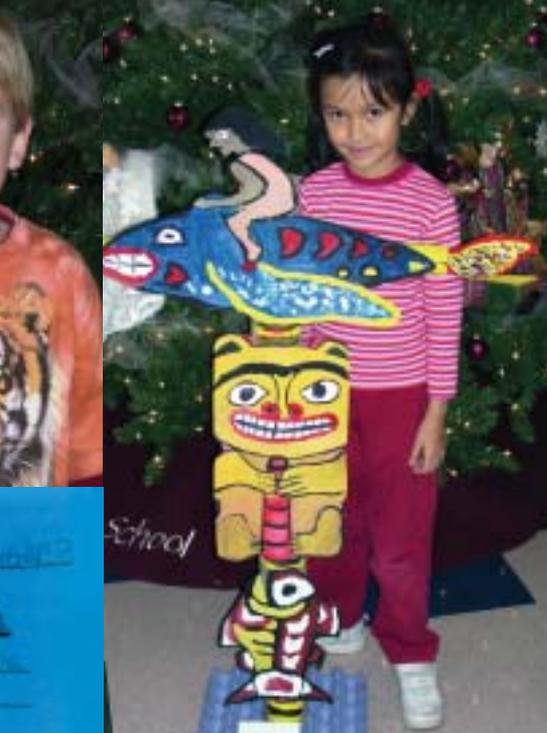
The next logical step is to decide what the “ends” are. As Adventist educators, our highest end goal is for our students to live eternally. A close second would be for them to serve God and their fellow human beings while on Earth. Other end goals are spelled out in the *Journey to Excellence* prepared by the North American Division Office of Education, the theme of the 2006 teachers’ convention.¹

Society presses yet another “end” upon us as educators. We are expected to prepare our students for life in the 21st century. A December 17, 2006, *Time* article, “How to Bring Our Schools Out of the 20th Century,” asserted that today’s stu-

What changes do we need to make to ensure that our students get the quality education that will prepare them for the 21st century and beyond?

dents need to know “more about the world,” to learn to think “outside the box,” to become “smarter about new sources of information,” and more. Anyone who read this article and also has attended any of William Daggett’s “Model Schools” seminars, which stress his new “three R’s” (Rigor, Relevance, and Relationships) will recognize that the *Time* authors and Daggett were talking about the same thing.

What changes do we need to make to ensure that our students get the quality education that will pre-



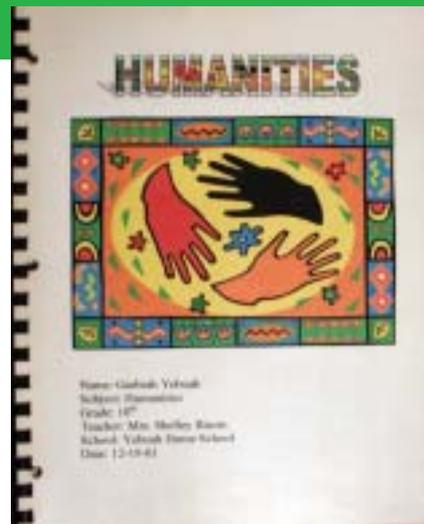
Students from Rogers Adventist School made totem poles and then photographed them for inclusion in their portfolios.

pare them for the 21st century and beyond? Is there a tool that we can begin using NOW that will help our students acquire and demonstrate the knowledge, skills, and—most importantly—**applications** that they need to manage the rapidly changing world around them?

Portfolios, which can be created in a variety of formats, afford opportunity for student reflection, are useful for integration of content and ideas, documentation of continuing growth, showcasing of student work, and authentic assessment.

Different types of portfolios can be used to demonstrate a variety of goals. But first and foremost, portfolios should be used for student reflection, or “metacognition.” According to Jon Mueller’s online “Authentic Assessment Toolbox”:

“[I]n the more thoughtful portfolio assignments, students are asked to reflect on their work, to engage in self-assessment and goal-setting. Those are two of the most authentic



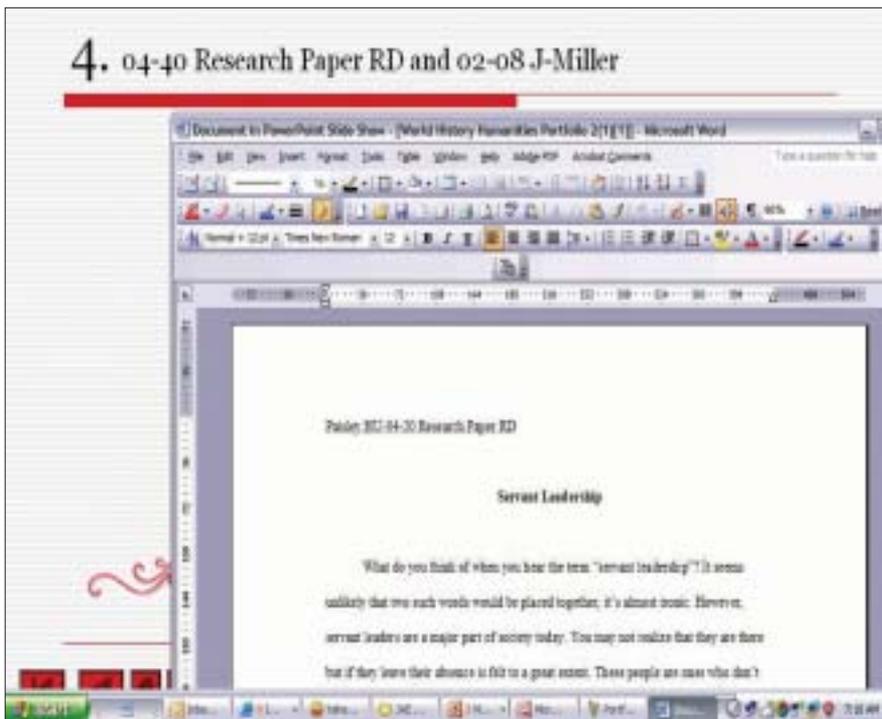
Printed cover of a hard-copy portfolio.

skills students need to develop to successfully manage in the real world. Research has found that students in classes that emphasize improvement, progress, effort and the process of learning rather than grades and normative performance are more likely to use a variety of learning strategies and have a more positive attitude toward learning. Yet in education we have short-changed the *process* of learning in favor of the *products* of learning. Students are not regularly asked to examine how they succeeded or failed or improved on a task or to set goals for future work; the final product and evaluation of it receives the bulk of the attention in many classrooms. Consequently, students are not developing the metacognitive skills that will enable them to reflect upon and make adjustments in their learning in school and beyond.”²

As Mueller has pointed out, thoughtful portfolio assignments require student reflection and encourage the development of the life-skill of metacognition or “thinking about thinking.”

Portfolios take time to create and assess; if the end result does not enable both the student and the teacher to recognize and assess growth, and the student to make strong connections to the “real world,” they become little more than a nice collection of useless arti-

Portfolio



Digital portfolios can be created with Microsoft PowerPoint and embedded Word files.

facts. Meaningful portfolio assignments afford students the opportunity, through reflection, to find significance in the tasks that school requires of them and thereby enable them to make connections to what is important to them and to their future.

Types and Uses of Portfolios

Integration: Teachers can help students make strong connections between and within various disciplines through the use of **Integration**. Even though the *Journey to Excellence* preferred practice of “Integrated Curriculum” isn’t always easy to implement, content integration can be fostered through the use of portfolios.

Integration of content relates to Bill Daggett’s new three R’s. The “Relevance” postulated by Daggett can be ensured through the inclusion of a reflective assignment, which should be part of every portfolio. It is important for students to understand—so far as possible—the *whys* of the learning that is required of them. When students are able to make connections between their assignments and “real life,” they will see the relevance of what they are learning and will be much more likely to retain the knowledge and apply the information to new situations.

Even if you do not have an integrated curriculum, you can require an integrated portfolio that pushes your students to make significant connections between the content of various courses. Elementary teachers have an advantage in this area, as they usually teach multiple subjects and are aware of the content for each of them. Secondary teachers can ask the students how the content in their class has helped them learn and/or apply new skills in other classes.

Continuing Growth Documentation: Portfolios can also be used to document **continuing growth**, either longitudinally or yearly. A longitudinal portfolio would fit nicely with

Daggett’s idea of “rigor,” as it documents the student’s depth of knowledge and understanding in a particular field. “Artifacts”—the items chosen to be included in a portfolio—should demonstrate

growth in knowledge, skills, and/or understanding. These sorts of portfolios can be begun in 1st grade and added to yearly by each successive teacher. Samples of student work can be assembled either in a hard-copy format, or digitally, to show progress from year to year. An example of the usefulness of portfolios in this area would be for handwriting. Sample assignments could be included from the beginning and end of each year, showing improvements and changes in style.

The NAD’s *Journey to Excellence* (J2E) goals can be used as a foundation for a “continuing growth” portfolio with a strong emphasis on reflection. Students can be asked to reflect on each of the 10 goals and make connections between what they do in school—the assignments, discussions, activities—to progress toward each of the goals. As students move from grade to grade and from elementary school to high school, their growth in all of the J2E goals can be documented through artifacts and continued reflection, ensuring that the “tasks” of school—the material to be read, the information to be mastered, and the assignments to be completed—are connected longitudinally, integrated, and related to real life.

“*Showcase*”: Showcase portfolios work well for many disciplines, but are especially appropriate for subjects such as art. Students can include samples or scans of their work, and photos, if they are creating a digital portfolio. A showcase portfolio for writing, for instance, could include essays from an entire

Thoughtful portfolio assignments require student reflection and encourage the development of the life-skill of metacognition or “thinking about thinking.”

class or course, or samples of a particular type of writing, such as persuasive papers, creative stories, poetry, etc. Project-based learning³ projects can document each step of a process and then highlight the final completed project and comment on its effect outside the classroom. Such “showcase” portfolios could easily motivate other students to engage in quality work!

Reflection: Reflection can and should be a part of ALL portfolios, but you might want to create a whole portfolio dedicated entirely to this process. The idea of encouraging “metacognition” can help fulfill Ellen White’s admonition to “train the youth to be thinkers, and not mere reflectors of other men’s thought,”⁴ and teach them to “reason from cause to effect.”⁵ Relevance moves students from the acquisition of knowledge to the adaptation stage, where the knowledge becomes part of the child’s life and forms the basis for further learning, questioning, reasoning, and problem-solving.

Teachers must urge students to ask and answer these questions: “WHY is this important?” “HOW will this knowledge affect my life?” and “WHERE can I use it in the future?” If students do not dig for answers to these questions, their studies will not be relevant to their everyday lives and therefore will not be retained. A portfolio focused on re-

For additional reading and resources, please see the entire excellent article by Jon Mueller in his “Authentic Toolbox”: <http://jonathan.mueller.faculty.noctrl.edu/toolbox/portfolios.htm>.

flexion will help students make the strong connections required to retain knowledge that they can apply in the future.

Authentic Assessment: Portfolios can be an excellent **assessment tool**. A reflective portfolio is in itself a form of assessment; the teacher gets to see into the heart of his or her students, and learns what each one “took away” from the school work completed.

How can a portfolio be used for students to assess their work? If you simply have students compile their best work for their portfolio, or save both their initial attempts and their refined work at the end of the year, how does that form a part of the assessment process? It does document growth, which is an important thing. And it can be a showcase of sorts. But doesn't something need to be *added* that demonstrates mastery? If everything in the portfolio is already graded, how can it be an “authentic assessment” of student work?

In order for a portfolio to be truly a tool for assessment, it needs to include new information. The culminating assignment must challenge the student to make connections (as in the “reflective” and “integrated” portfolios). Can students tell how they have grown academically? Can they make connections between what they have *learned* and what they will *do* with that knowledge? Can they discuss the knowledge intelligently and write about it? Can they draw a picture of it? Can they teach it to someone else? What we as teachers “teach” is not nearly as important as what our students “take away” from our classes. A true assessment tool measures what they have “taken away.” If they can use the knowledge they have acquired to help them do problem solving, you will truly have an “authentic assessment.”

Format of Portfolios

Portfolios can be created in

many different formats:

• *Hard-Copy Collection of Artifacts and Reflections*

Portfolios can be collected samples of student work that is placed in storage for later viewing and assessment. The collection can be put in a box, binder, folder, or some other physical space. Though this method may seem old fashioned in the digital age, it can still be very effective. A hard-copy portfolio can be showcased at Home and School events, or kept in the classroom to show interested parents and students what students do in your classroom. However, hard-copy portfolios do require significant storage space, either in your classroom or in the attics or basements of your students' houses. Therefore, you may want to use digital portfolios.

• *Digital Collection of Artifacts and Reflections*

Many tools can be used to create digital portfolios, including Microsoft PowerPoint. Adding the “kiosk” mode⁶ allows viewers to browse through the portfolio using links, much as they would on a Web page, and affords the portfolio creator a chance to learn to use a new technological tool. Multimedia tools can be added to PPT files, which gives students the option of adding video, audio, and digital pictures to their presentation. They can read into the “sound recorder” of a computer⁷ or take a video of themselves completing or presenting a project. For example, a student could read and record the same selection at the first of the year, the middle of the year, and the end of the year to demonstrate progress.

• *Web-Based Collection of Artifacts and Reflections*

Web-based portfolios allow teachers and students to make a permanent record of achievement and progress and are an excellent way to “showcase” student work and reflection. PowerPoint files can be uploaded to the Internet; Websites can be created with pictures, text, links to artifacts, videos of stu-

dents in action, etc. Blogs can even be added (with teacher monitoring) to encourage dialogue and further learning.⁸

This side of the kingdom, we will never reach the “end” of our educational goals. But we can employ tools that will help our students progress toward those goals. Portfolios are powerful tools that can help our students achieve important life goals and prepare them for the 21st century. Why not use this powerful tool in your classroom? ☞



Shelley Bacon teaches a “virtual classroom” for high school sophomores that is part of AE21, a distance-learning program based out of Forest

Lake Academy in Florida that utilizes videoconferencing and traditional online learning to distribute quality education to students across the U.S. This article is adapted from a seminar presentation at the North American Division Teachers Convention at Nashville, Tennessee, in August 2006.

NOTES AND REFERENCES

1. You may read all 10 goals, as well as preferred practices referred to in this article, at <http://www.journeytoexcellence.org/>.
2. See <http://jonathan.mueller.faculty.noctrl.edu/toolbox/portfolios.htm>.
3. “I define *project* as ‘an authentic performance-assessment task in which students must apply the knowledge and skills learned in class to solve a genuine problem outside the classroom’” (Eeva Reeder, <http://www.edutopia.org/designing-worthwhile-pbl-projects-high-school-students-part-1>).
4. Ellen G. White, *Education* (Mountain View, Calif.: Pacific Press Publ. Assn., 1903), p. 17.
5. _____, *Child Guidance* (Nashville, Tenn.: Southern Publ. Assn., 1954), p. 362.
6. Kiosk: In Microsoft PowerPoint, go to “Slide Show,” and select “Set Up Show.” Select “Browsed at kiosk,” and then add “action buttons” to link each slide to other slides.
7. Choose Start > All Programs > Accessories > Entertainment > Sound Recorder.
8. Some examples of K-12 Web-based or “e-portfolios,” as well as commercial resources for e-portfolios, can be found at <http://electronicportfolios.com/ALI/samples.html#k12>.

A new epidemic has arisen that could well shorten our students' lives. "The current generation of children [could] become the first in American history to live shorter lives than their parents," states former President Bill Clinton, who has formed an alliance with the American Heart Association to tackle the problem. He points out that "if childhood obesity continues to increase, it could cut two to five years from the average lifespan."¹

Tracy Orleans, senior scientist with the Robert Wood Johnson Foundation Obesity Project, says that "the obesity epidemic snuck up on us; it was happening, but we were not paying it enough heed."² The concern a decade ago was eating disorders (anorexia and bulimia). While these problems still exist and may even be expanding to include more teenage boys, the obesity epidemic is ringing alarm bells. Public health officials, legislators, and governors are acting to address the problem, with a primary emphasis on schools. Why schools? Because 17 percent of all children and teens in the United States are either overweight or obese—the rates have tripled since the 1960s—and are still rising.³

A Worldwide Problem

Public health officials are calling pediatric obesity "an uncontrolled worldwide epidemic."⁴ Dr. Tim Lobstein of the International Obesity Taskforce, in an analysis of worldwide trends in childhood obesity, says that "nearly half of children in both North and South America could be overweight in just four years' time."⁵ He further points out that childhood obesity is increasing in al-

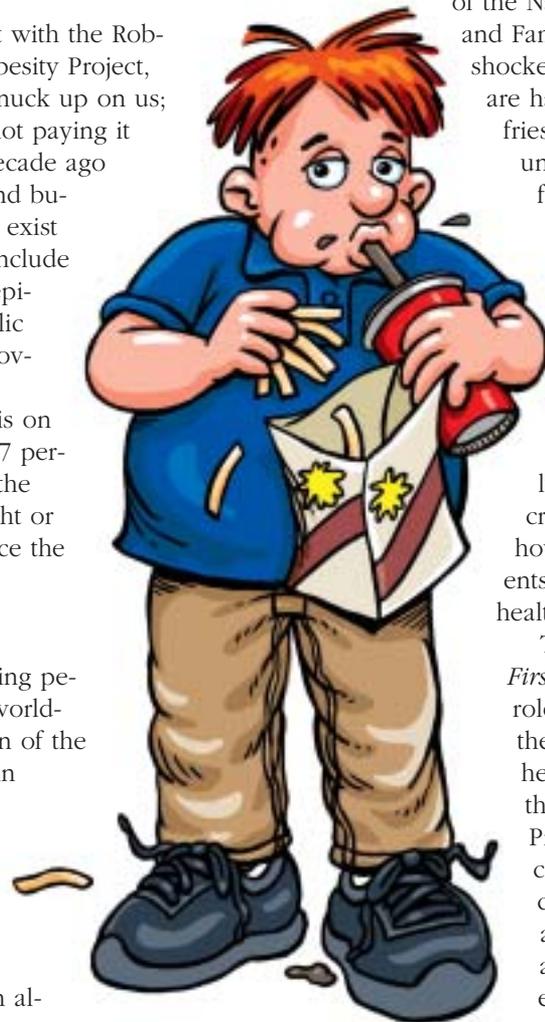
The obesity epidemic is ringing alarm bells.

most all industrialized countries for which data are available, as well as in several lower-income countries. North America, Europe, and part of the Western Pacific have the highest prevalence of overweight children (about 20-30 percent). He estimates that one in five children in China will be

overweight by 2010. Eating habits begin in childhood. Children do not automatically make wise choices of food. "When lunch is sold *a la carte*, kids buy what they like," points out Diana Zuckerman, president of the National Research Center for Women and Families. "None of us should really be shocked that when kids can choose, they are having lunches consisting of French fries and dessert. Kids will make really unhealthy choices if you let them."⁶ The food industry has recognized this for years, with direct marketing aimed at children and teens. Half of the more than 50 commercial television messages kids receive per day are for food.⁷ Convenience/fast foods and sweets comprise 83 percent of advertised foods; snacktime eating is depicted more often than breakfast, lunch, and dinner combined.⁸ Increased regulation of the industry, however, will not take the place of parents and teachers in educating kids about healthy choices.

The current advertising campaign for *First Five* in California emphasizes the role modeling of adults by reminding them, "If you want your kids to make healthy choices, it's not what you tell them to do, it's what they see you do." Preventing obesity is a balancing act: controlling the kind and amount of calories taken in the form of food and beverages while increasing the amount of calories expended through exercise. How many parents sneak

Before



CHILDHOOD

BY JOYCE W. HOPP

“empty calories” when they think their child is not looking? How many teachers or administrators watch from the window rather than participate in an exercise activity?

Long-Term Effects of Obesity

“Unless current trends reverse, it seems likely that one third of all children born today [in the U.S.]—and even higher proportions of Hispanic and Black children—will develop type 2 diabetes during their lifetimes and can expect a shortened life expectancy because of it,” states Marion Nestle, a leading public health nutritionist.⁹ Type 2 diabetes, the kind of insulin-resistant diabetes previously seen only in middle-aged and older adults, is a disease highly related to obesity.

Long-term health consequences of obesity include hyperlipidemia, hypertension, respiratory illnesses, and higher rates of cardiovascular disease. Obesity also affects quality of life. Overweight adolescents, independent of baseline socioeconomic status and performance on aptitude tests, are less likely to marry, complete fewer years of school and are more likely to be poor as adults.¹⁰ Children who are teased about their weight often develop social stigmas, including low self-esteem and self-worth.

Factors Contributing to Obesity

While many would like to blame their overweight condition on genetics, that doesn’t explain why families who are overweight often have overweight pets as well! Lifestyle does make a difference. Society, however,

has also changed, and those changes contribute in no small measure to the obesity epidemic. Dr. Nestle lists those changes as follows:¹¹

enough to make a person obese.¹² A change in food production in the 1970s, for example, illustrates the sugar problem: The development of

Change	Consequence
More families with working parents	Parents unable to supervise children’s meals and active play
Neighborhoods and parks perceived as increasingly unsafe	Children unable to play outside without supervision
Limits on school physical education	Less play during and after school
Increased agricultural production	Increased competition for market share, promotion of more junk food directly to children
Increased demand for convenience foods	More eating occasions; more calories consumed
Greater consumption of food prepared outside the home	Larger portions; more calories consumed
Business deregulation	Unrestricted marketing to children
Television deregulation	More commercials for junk foods during children’s programming
Increased use of computers	Food marketing on the Internet; more sedentary behavior
Increased media consolidation	Alliances with food companies to market to children
Increased Wall Street expectations for corporate growth	Expansion of fast food chains, food products, and marketing to children

Schools are focusing on elimination of sugar-laden sodas and sugary drinks for good reason: They have become the biggest source of calories in the teenage diet. At 140 calories or more per drink, the excess energy in one such drink a day is

high-fructose syrup, cheap to use, has led the food industry to sweeten foods as never before. Brownell points out that it is inexpensive to thus sweeten foods, and people like things that are sweet.¹³

The living environment is impor-

OBEESITY: AN EMERGING EPIDEMIC

“If you want your kids to make healthy choices, it’s not what you tell them to do, it’s what they see you do.”

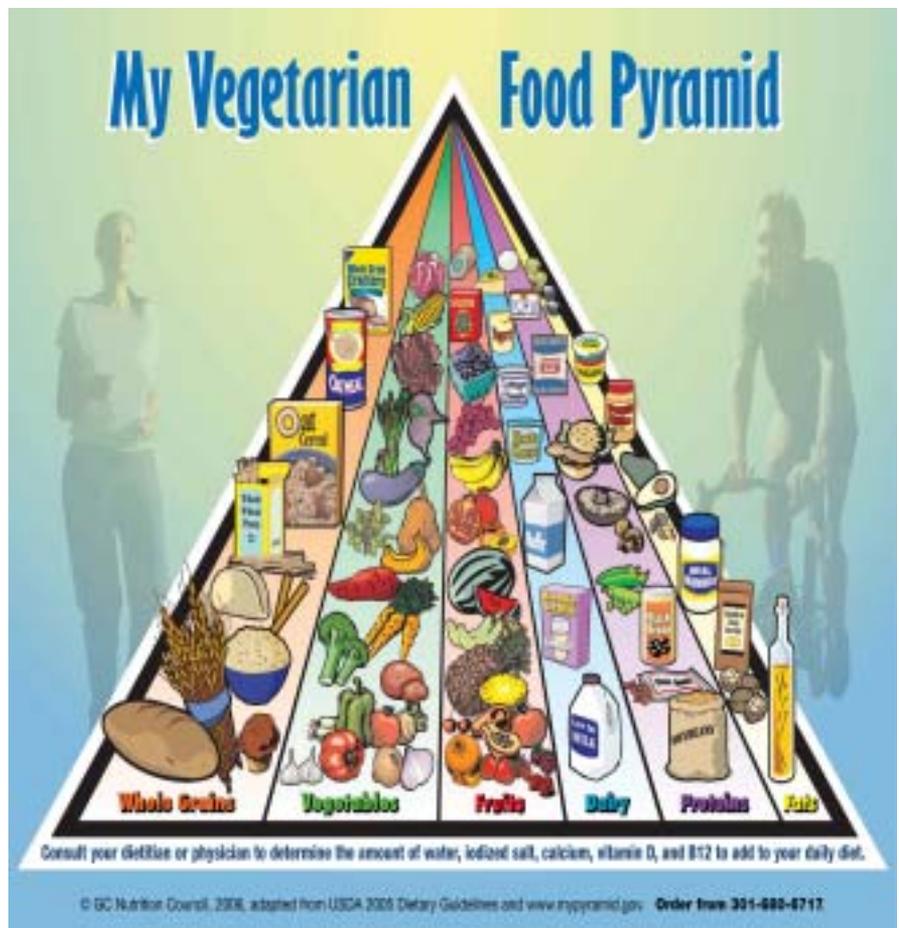
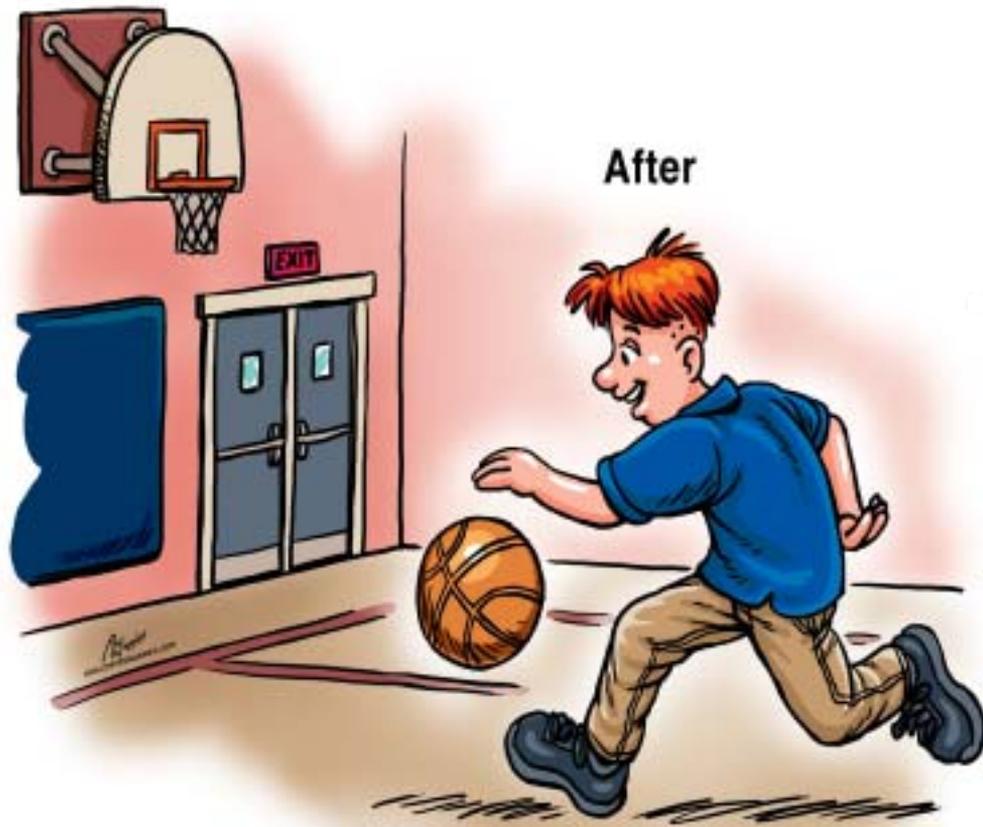
tant, too. A community that provides walking and bike trails, well lit and free from shrubbery, creates a safe place for children and adults to exercise together (good role modeling!). On the other hand, research shows that fast-food restaurants cluster around schools, offering food choices that the school may have eliminated in the interest of better health.¹⁴

Choices Adventist Schools Can Make

While information alone rarely changes behavior, up-to-date and accurate information does form the basis for a good educational program. Adventist schools have had the advantage of well-designed science-health textbooks for the past 30 years. *Science-Health Series B, Unit III* (pages 299-379) includes both information and activities that address the problem of disease risk factors, including obesity.

Because the epidemic of obesity became evident in the past five years, however, this created a problem in keeping textbooks current. Thus the current series of texts, produced during the first half of the 1990s, needs updating.

Some have wondered why Adventist schools need their own science and health texts when there are “good” textbooks available in the marketplace, and textbook development is expensive and time-consuming. As a member of the North American Division Science-Health Textbook Committee both in the 1970s and again in the 1990s, I learned that the theory of evolution is pervasive, not only in science but also in health. It is difficult, for example, to encourage students and their families to return as close as possible to God’s original diet [see



List of Suggested Websites

<http://www.americanheart.org/healthierkids>
<http://www.clintonfoundation.org>
<http://www.iom.edu> (Institute of Medicine Report on Childhood Obesity; Food Marketing Report)
<http://www.cdc.gov/healthyplaces/healthtopics/children.htm>
<http://www.mypyramid.gov/kids/index.html> (Food Pyramid for Kids)
<http://www.rwjf.org/portfolios/interestarea> (Robert Wood Johnson Foundation Website)
<http://www.cspinet.org/new/sugar.html> (Center for Science in the Public Interest. Americans: Drowning in Sugar)
http://www.surgeongeneral.gov/topics/obesity/calltoaction/fait_adolescents.htm (US Surgeon General, Fact Sheet: Overweight in Children and Adolescents)
<http://www.obesityresearch.nih.gov> (Obesity research page. National Institutes of Health Website)
<http://www.cdc.gov/nccdphp/dnpa/obesity> (Overweight and Obesity Page, Centers for Disease Control and Prevention Website)

The Ministry of Healing, page 296] if there is no God, nor an original diet! Yet that diet, complete with fresh fruits, nuts, grains, and vegetables, is one that promotes longevity and prevents obesity.

Adventist teachers and parents need to practice more and preach less. It takes planning, time, and effort to create healthy meals on a daily basis. The same goes for arranging a time and place for regular exercise. We don't need more memberships in fitness clubs; we need more time and places for exercise with our children, walking or playing. (Try *power walking* to get your overweight students involved.) The school can be the safest place many children will have to exercise, so the school schedule needs to include time for supervised activity both within and outside of school hours. Plan physical activity so that it includes every student, not just those who are good at sports; all too often in sports, the good get better while the poor drop out.

Encourage and reward students for progress. Notice and appreciate even small steps. Behavior change is a slow process, so don't expect overnight miracles. Challenging students to do things together, with a "buddy" system, can often make changing behavior easier. Evaluating food advertisements for their in-

Long-term health consequences of obesity include hyperlipidemia, hypertension, respiratory illnesses, and higher rates of cardiovascular disease.

tended effect, reading and interpreting food labels, recording the daily/weekly distance walked (and equating it to calories expended), planning an educational program for one's family, can be done together. Students can evaluate the foods served at the school cafeteria and at school events, and educate their parents to make healthy food choices. Junk food and high-calorie sweets can be banned from lunchrooms and classroom parties.

While individually we may not be able to change the marketing and availability of high-calorie fast foods and beverages, we can do something about the epidemic of obesity and inactivity in our families and classrooms. There is no immunization that will prevent this epidemic; only a change in behavior will do it. You can help ensure that your students are healthy and fit for life. ☞



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Hopp served as an Associate in Health Ministries in the General Conference of Seventh-day Adventists from 1954-1963, and again from 1997-2005, as well as a member of the Science-Health Textbook Committee of the North American Division from 1972-1980, and from 1985-1995.

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3. Kathryn Foxhall, "Beginning to Begin: Reports From the Battle on Obesity," *AJPH* 96:12 (December 2006), p. 2108.
4. C-E Flodmark, I. Lissau, L. A. Moreno, A. Pietrobelli, and K. Widhalm, "New Insights Into the Field of Children and Adolescents' Obesity: the European Perspective," *International Journal of Obesity* 28 (2004), p. 1189.
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11. Nestle, p. 1498.
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HOW THE

BRAIN LEARNS BEST

BY ARLENE TAYLOR

How does the brain learn? If we knew, it would make life so much easier for everyone—parents, students, and teachers! Although we may never discern precisely how this miracle occurs, current brain-function research is beginning to crack open the door and allow us to peer through.¹

One of the complications is that each human brain is unique, although in most cases the variations are subtle. Re-

searchers disagree on the ways these subtle differences influence human behaviors and learning outcomes.²

The search for connections between brain function and learning is further complicated by inconsistency between study conclusions, ethical limitations related to the use of human subjects in research, and personal bias among those who use the research to create practical applications. Unlike animal experiments, studies involving humans are of

necessity correlative in nature.³ Nevertheless, findings on brain function can be extremely helpful, even if the knowledge is imperfect and somewhat tentative.

Although we see through a glass darkly in terms of the mechanisms the brain uses for learning, we do know quite a lot about the way brains naturally learn *best*. That knowledge is both exhilarating and depressing⁴: exhilarating because with some effort and innovation, the educational process could be significantly enhanced for most students; depressing because millions of brains are experiencing less-than-optimal learning because the environments in which they must function are demeaning if not downright punishing.⁵

Following are several research-based conclusions about how the brain learns best.

1. The brain learns best through multisensory processing.

Although most teachers organize their lessons sequentially (because that's how they were taught to present information), the brains of nearly all of their students learn best through multiprocessing. Recently, I Googled "sequential learning plans" on the Web and found more than 657,000 sites, contrasted with only 18,400 for non-sequential lesson plans. The brain comprehends complex topics best when they are embedded in rich sensory input. It needs multipath, multimodel, and multisensory experiences to create as many associations as possible. It is insufficient for students to merely read or hear about a topic. The more complex the topic, the more likely that the brain will master and retain the concept if the learning experience includes rich sensory input. When information enters the brain by way of two or more sensory systems, combined with some type of emotion, learning happens more readily, and retention is enhanced.⁶ This combination is not usually incorporated into formal instruction. One powerful strategy that helps engage the whole brain for learning is reading aloud by both teacher and student.

2. The brain learns best in a predictable sequence.

Although the brain rarely learns in a sequential manner, learning does occur more efficiently in a predictable sequence.⁷ This requires patience because the teaching process may not produce immediate tangible results. Five stages need to be included for optimal learning:⁸

- *Preparation* (priming and pre-exposure): The brain creates a conceptual map when shown how the process will proceed. This provides a framework for the new learning and primes the brain to make possible connections.

- *Acquisition* (direct and indirect learning): The brain receives information directly (e.g., through handouts, lesson plans, reading assignments) and indirectly (e.g., by reviewing related visuals and/or multimedia). Options need to be provided for learners whose preferred learning style

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is visual, auditory, or kinesthetic.

- *Elaboration* (error correction and depth): The brain explores the topic through a variety of explicit (e.g., reading, listening, discussing, completing work sheets) and implicit methods (e.g., role play, life experiences, simulations, field trips, guest speakers). Experimentation and feedback help to purge inaccurate perceptions and strengthen neural networks.

- *Memory Formation* (associations and encoding): The more associations that are created in the brain, the better the chance

that the information will be encoded in long-term memory and available for recall. Many factors contribute to the laying down and retrieval of information. These can include rest (especially REM sleep time), nutrition, mental development, the quality and quantity of associations created in the brain, prior learning and motivation, repetition and review, emotional intensity, and so on.

- *Functional Integration* (extended usage) — Learning involves much more than simply getting neurons to communicate with one another in a predictable sequence. It requires getting the neurons to fire together enough times to create connections so that the information can be recalled and applied in diverse situations. Making connections to what the student already knows and engaging emotions can help promote long-term learning. Frequent review also helps ensure retention and retrieval.⁹

3. The brain learns best in a flexible environment.

Although all human brains are similar, every brain is unique, so learning environments need to be flexible.¹⁰ Normal development can differ by two or more years between learners of the same chronological age.¹¹ This has huge implications for classroom policies.

Classroom seating needs to be flexible. In 1978, educators Rita and Ken Dunn found that at least 20 percent of learners are significantly affected by the presence or absence of seating options.¹² Varying the seating arrangement (circles, U shapes, etc.), and allowing more space between students can result in more time on task and decreased disruptive behavior. Teachers should allow students as much choice as feasible in selecting where (and in what position) to sit, regardless of the arrangement, and plan activities that encourage them to get up and move around. Some students learn well while reclining or standing, rather than seated in the traditional in-line rows of desks.

To ensure optimal learning, students need to be encouraged to stand and stretch frequently.¹³ Learning can be enhanced by including physical education and movement activities in lesson plans, by having students stand up for part of the lesson, by having them periodically stand up and stretch, or by directing them to have a relevant discussion with another student. Boys especially benefit from moving around as they learn.¹⁴

4. The brain learns best when intrinsically motivated.

Learning increases when the child is encouraged (e.g., “You’re on the right track,” or “Give it your best effort”) rather than praised, rewarded, or punished.¹⁵ Unfortunately, grading has traditionally been based on external motivators such as reward and punishment. In the presence of extrinsic rewards, behaviors become more stereotypical, rigid, narrow, and predictable. Although rewards will temporarily enhance the performance of repetitive tasks, they quickly inhibit intrinsic motivation and learner creativity and, in the long term, do more damage than good.

Intrinsic motivation is required for learner creativity, higher levels of self-esteem, reflective thinking, and motivation. In fact, Drs. Geoffrey and Renate Caine contend that behavior-oriented threats will cause learners to “downshift” into a defensive mode, which is not conducive to learning.¹⁶

5. The brain learns best in a healthy body and invigorating environment.

It is outside the scope of this article to describe adequately all of the components of brain-compatible environments. But here are a few examples to stimulate your thinking:

- *Water.* Make sure students ingest plenty of pure water so the brain is well hydrated. The body needs eight to 15 glasses of water per day, depending on the person’s size, level of activity, and the climate.¹⁷

- *Classroom temperature.* Keep the classroom temperature consistently within a comfortable range—approximately 70 degrees Fahrenheit (22-23 degrees C.), give or take a few degrees.¹⁸

- *Humidity.* Maintain an indoor humidity between 35 percent and 50 percent. Levels that are too low can trigger dry skin and itchy eyes, and increase susceptibility to colds and respiratory illness. Levels that are too high can encourage the growth of mold, mildew, and fungus, all of which can cause serious health problems.¹⁹

- *Lighting.* A five-year Canadian study conducted by Dr. Harry Wohlfarth indicated a link between lighting sources and levels of stress, absenteeism and overall achievement in the classroom.²⁰ In 1988, Wayne London, a Vermont psychiatrist, compared illness absentee rates by replacing standard fluorescent lighting with Vitalite® full-spectrum lighting that simulates natural light. Students in the classrooms

To ensure optimal learning, students need to be encouraged to stand and stretch frequently.



with full-spectrum lighting missed 65 percent fewer days than those in fluorescent-lit classrooms.²¹

- *Air circulation.* Make sure every classroom has a constant supply of fresh, uncontaminated, and highly oxygenated air. Good levels of oxygen in the blood can positively impact brain power. Learners in a closed classroom typically exchange only 10-25 percent of their lungs’ capacity with each breath. Research suggests that increasing circulation will improve learning rates.²²

- *Plants.* Studies by the Federal Clean Air Council and NASA showed that indoor plants raised indoor oxygen levels and increased productivity by 10 percent. A single plant may affect the oxygen levels of 100 square feet of space. Preferred plants for enhancing indoor learning environments include bamboo palms, areca palms, lady palms, rubber plants, philodendrons, and yellow chrysanthemums.²³

- *Aromas.* Specific aromas have been shown to positively impact learning. Research by Weiner and Brown in 1993 showed that certain aromas stimulate people to set higher goals, take on greater challenges, and get along better with others. Aromas that enhance mental alertness include peppermint, basil, lemon, cinnamon, and rosemary.²⁴

- *Movement.* The classroom should be arranged and lessons planned to encourage physical movement. Brain exercise must be balanced with physical exercise. In a resting state, the brain utilizes 20 percent of the body’s total oxygen. Exercise enhances blood circulation and lung capacity.²⁵ Here are some recommended policies to ensure higher levels of movement in the school environment:

- Have every student engage in a minimum of 30 minutes of physical movement each day.²⁶

- Give students five- to 10-minute breaks every 90 minutes so that they can get a drink or walk around.²⁷

- Encourage learners to take frequent deep breaths through their noses and to maintain good posture.²⁸

- Have students engage in cross-over movement (clapping, touching the right body parts using the left hand or foot; and vice versa, etc.) to integrate learning.²⁹

- Incorporate role playing, charades, pantomimes, classroom scavenger hunts, and singing rhymes while jumping rope to facilitate new learning.³⁰

- *Stimulating right- and left-brain learning.* Encourage

the students to breathe through the left nostril for a few minutes prior to right-brain learning (to stimulate the right hemisphere) and through the right nostril for several minutes prior to left-brain learning (to energize the left hemisphere).³¹

- *Use of color.* Colors used in the classroom are selected with an eye to brain function. For example, yellow is the first color distinguished by the brain, and is excellent for classrooms. Studies by Deborah Sharpe, author of *The Psychology of Color and Design*, showed that yellow is connected with cheer, happiness, and fun.³² Faber Birrin in his book, *Color and Human Response*, reported that yellow elicits positive moods, while green encourages productivity and long-term energy.³³

- *Humor.* Use appropriate humor (i.e., jokes, cartoons) to help students relax and to enhance individual and group performance.³⁴

- *Emotions.* Carefully monitor the classroom climate to reduce the downshifting or primal thinking that occurs when students are anxious or afraid. This can be accomplished by offering a variety of strategies to help learners relax. Teachers and aides can help students develop their emotional intelligence, a skill that is more important to life-long success than IQ.³⁵

- *Scheduling new learning and review.* Present new information during the morning hours, and schedule afternoon activities that help integrate the new information with previous learning and students' knowledge and experiences.³⁶

- *Evaluation.* Compare each student's performance to his or her previous work, rather than to the performance of other students.³⁷

Learning Styles

The human brain does not have one favorite learning style. It is capable of changing styles on a daily basis or even from hour to hour, depending on what is going on in the learner's life and environment. Teachers usually prepare lesson plans with the assumption that students will all learn in a similar manner—often the teacher's favored learning style! However, because every brain develops uniquely, no single approach will work for everyone, though each student will typically have one preferred approach for organizing and processing information.³⁸

To ensure optimal learning and retention, school activities need to include the strengths of both hemispheres of the brain. A plethora of models have been developed in the attempt to ensure whole brain learning. Some models address learner responses (e.g., McCarthy 4-MAT, Meyers-Briggs),³⁹ while others deal more with how learning is processed (e.g., Gregorc/Butler, Ned Herrmann).⁴⁰ While such models can offer useful frameworks, teachers should provide as wide a variety of different learning opportunities and choices as possible. Students should have assignment options that include several choices in each learning style.

Conclusion

We've known for some time that traditional styles of education don't work for many brains. Some approaches are actually brain-antagonistic.⁴¹ Brains learn anyway because they love to learn, especially if teachers and mentors model a love of learning. Unfortunately, what young brains learn is often not what was intended.⁴² What they learn is to hate school, avoid instructors, underachieve, and drop out.

Fortunately, brain-function researchers are shedding light on how the brain learns best, much as early navigators traveled and mapped the world. Their discoveries could change the fabric of traditional education and benefit billions of brains on our planet.

Changing "what we've always done" is a daunting task. But if we are willing to increase our knowledge about how the brain learns *best* and take one step at a time, it is not an impossible task. If teachers implement brain-friendly strategies consistently, the outcome could be remarkable.

In the words of Eric Jensen, it is no longer a question of *can we?* We know we *can* provide learners with brain-compatible environments and curricula that support the brain's natural learning abilities.⁴³ The question is, *will we?*



Arlene Taylor, Ph.D., is founder and President of Realizations Inc., a nonprofit corporation pledged to promoting brain-function research and to providing related educational resources. An internationally known writer and speaker, Dr. Taylor writes from Napa Valley, California. This article is based on a presentation she made

at the North American Division Teacher Convention in 2006. Additional information on the application of brain research in the classroom may be found on her Website: http://arlenetaylor.org/selected_brain_facts/index.htm.

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AVLN

Continued from page 33

attached to an elementary school; and (3) Provide supplementary classes to senior academies to ensure certification coverage on the campus. Course materials and transcripts were provided by Class.com and Home Study International." Northrup's assessment: "MAAVS seemed most effective at serving small elementary schools with an attached 9th grade where phone lines provided reasonable access." However, the program was not financially viable and did not attract enough teachers or students who could cope with the challenges of online delivery.

Currently, Atlanta Adventist Academy (AAA) operates as a conference school with campuses in Duluth, Peachtree City, and Marietta, Georgia. The use of videoconferencing equipment enables students to be taught by AAA teachers at the campus closest to their homes. All Atlanta-area students assemble two days a week at the Duluth campus for face-to-face classes.⁸

AAA also offers courses to one Georgia-Cumberland Conference junior academy and three other remote sites. These students come to Atlanta for special occasions, but normally attend a local school.

AAA's program illustrates the potential for enhancing small-school curricula with real-time interactive videoconferencing courses. This approach also enables parents and supervisors who live in the city to spend less time commuting and more time with family.

In the winter of 1999, the Connecticut Valley Adventist Church of South Windsor launched plans to begin a new strategy for Adventist education. Because so many Christians are isolated and have limited educational options, they devised an educational plan that would take advantage of the growing availability of the Internet. This plan provides families with a flexible educational program using certified Adventist teachers. The Central Connecticut Adventist Virtual School (CCAVS) initially partnered with Home Study International and Convene, the largest dedicated educational server.⁹ CCAVS currently operates under the guidelines of the Atlantic Union Conference and the Southern New England Conference and is offering grades 4-10 during the 2007-2008 school year.¹⁰

In 2006, the British Columbia Conference started the West Coast Adventist School (WCAS).¹¹ With the province's huge territory and skyrocketing home schooling, church educational leaders felt it was important to provide Adventist education to students who were not enrolled in Adventist schools. Using British Columbia (BC) provincial curriculum, the school represents a collaboration between Caribou Adventist Academy (K-12), Okanagan Adventist Academy (K-12), and other Adventist schools in the province. Currently, it serves students K-8, and adds courses as resources become available. Their commitment is to "make at least 2 home visits to all full-time, WCAS registered students within a reasonable distance of the school, to establish individual learning plans and provide assistance, feedback and advice on their progress." Parents are expected to communicate weekly with the teacher regarding their child's learning.¹²

During the past eight years, a number of NAD K-12 educators have been experimenting with non-traditional delivery methods such as videoconferencing and the Internet. The history of these initiatives suggests that Adventist K-12 educators are reshaping Adventist education to make it available to more young people.

Who provides support and guidance for these initiatives? The NAD union directors and the NAD K-12 Board of Education established the Technology and Distance Education Committee K-12 (TDEC) for this purpose. This standing committee has been given the responsibility of researching issues in educational technology; developing Adventist distance education policies and guidelines; serving as a resource for distance education course development; reviewing and evaluating technology-based courses and programs; and facilitating the integration of technology in the instructional process. TDEC meets three times a year and consists of one representative from each of the nine unions of the North American Division, Home Study International, and North American Division Office of Education. The NAD Office of Education also maintains a partnership with Griggs University so that local schools can enrich their programming with courses offered by its accredited teachers. This is especially beneficial for small schools that may not have certified teachers for some of the courses the school would like to offer.

Larry Blackmer, vice president for education and technology director for the NAD, is planning a "Distributed Learning Summit" for spring 2008 that will bring together those who are providing distributed learning in NAD. This summit will doubtless expand and enhance the AVLN vision of strengthening Adventist education through the use of technology and deeper collaboration. "Two are better than one, because they have a good reward for their labor. . . A threefold cord is not quickly broken" (Ecclesiastes 4:9-12, NKJV).¹

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Editorial

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all, it means getting ready to be with Him. That last dimension—the eschatological one—provides a destination point in life's journey, regardless of its many contours.

Third, Adventist education provided me with a distinct worldview.

Before I went to the Adventist school, my world goals were to climb the professional ladder and live a decent life. But Christian education provided a more wholistic worldview—I am not alone. Above me and within me is God. Around me are human beings

just like me. A vision and a mission link us all together, bidding us to march toward the kingdom of God and to help one another.

The march to the kingdom, the fellowship with Christ here and in the hereafter, and reaching out and touching one another are part of Christian education's challenge to more than a million young people today.

I cannot guarantee that Adventist education will do for everyone what it did for me, but I do believe having that Adventist advantage can make a huge difference in the lives of young people. That's reason enough to support Christian education.—**John M. Fowler.**

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