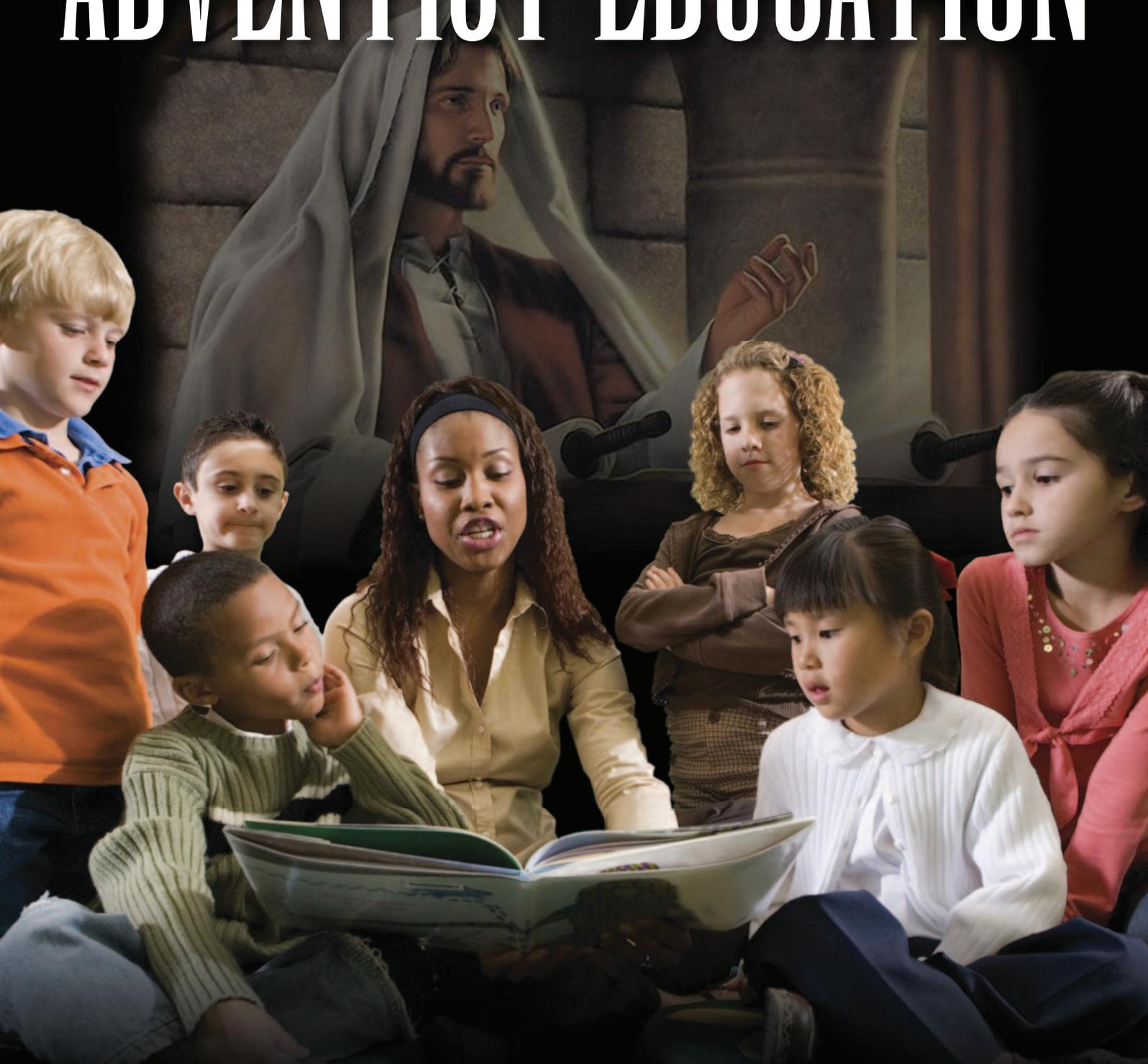


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The table printed on p. 49 of the February/March 2016 issue by Deril Wood and Jeannette Dulan was incomplete. The article with the complete table can be found online at: circle.adventist.org/files/jae/en/jae2016780324507.pdf.

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Faith-Ann McGarrell

While rereading *True Education* several months ago, a familiar passage reminded me of Mr. Gatewood:¹ “Teachers . . . should possess not only strength but breadth of mind; they should be not only whole-souled but large hearted.”² I entered the 4th grade at Ruth Murdoch Elementary School late in September, weeks after the official start of the school year. My parents had just moved our family from Georgetown, Guyana, to Berrien Springs, Michigan—from the equator to what felt like the Arctic. Being a quiet child, recently immigrated to the United States and adapting to a new school culture, I did not readily converse with adults other than my parents—much less teachers. Mr. Gatewood, who was not my teacher, somehow knew my name and my parents, and readily greeted me each morning with a hearty “And how is Faith-Ann this morning?”

This simple act created a sense of fitting in and belonging at a time when navigating the transition to a new culture seemed overwhelming.³

I soon learned that Mr. Gatewood’s whole heart was intertwined with his students—from the shy ones to those who had much to say. He made it his mission to be “large hearted” and “whole-souled” with his time, interest, and resources.

I later volunteered and worked in Mr. Gatewood’s classroom emptying trash cans, vacuuming, cleaning chalkboards and erasers, grading papers, and tutoring.⁴ He often “volunteered” me for activities I would not have pursued on my own—working in the school’s main office during the summer, assisting with registration, and tutoring. His favorite cheer was: “I know you can do it!” When asked what I would study in college,

I presented several choices to which he chuckled and said, “I think you’re going to be a teacher.” I, of course, disagreed.

Yet, in subsequent years I found myself gravitating toward teacher-like activities: tutoring, teaching Sabbath school, and working as a reader for various professors. Before I knew it, I was passionately pursuing teaching as my profession. One Sabbath, 15 years after high school graduation, at Pioneer Memorial Church in Berrien Springs, Michigan, I saw a familiar profile. It was Mr. Gatewood! I had the privilege of “surprising” him with the news that I had, indeed, become a teacher. He laughed and said with confidence “I knew it!”

Teaching is comprised of more than content knowledge. Parker Palmer in his classic *The Courage to Teach* says: “Teaching, like any truly human activity, emerges from one’s inwardness, for better or worse. As I teach, I project the condition of my soul onto my students, my subject, and our way of being together.”⁵ He continues: “. . . teaching holds a mirror

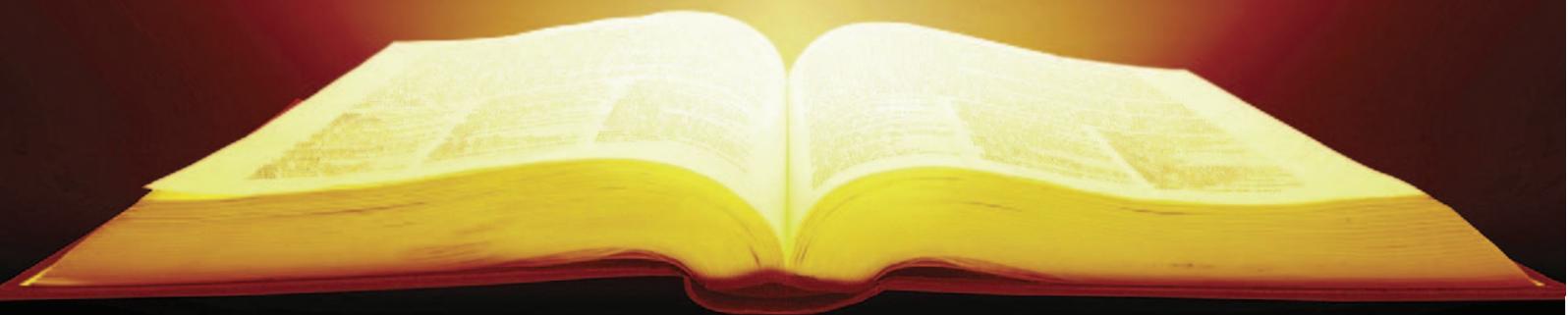
to the soul. If I am willing to look in that mirror and not run from what I see, I have a chance to gain self-knowledge—and knowing myself is as crucial to good teaching as knowing my students and my subject.”⁶

Teaching, then, is a sacred act. It is not just about completing lesson plans, grading student work, or supervising students in various activities; it is more than maintaining one’s standing in a given community or enjoying the perks of the profession; instead, it is living in the present and simultaneously, the future.⁷ It involves guarding the condition of soul for it has a marked impact on the lives of those within the teacher’s care.

“Whole-
Souled
and
Large
Hearted”

Continued on page 47

The Christian Teacher in a Secular Society



How does a Christian teacher function faithfully and effectively in a secular society? Although not a simple matter to address or resolve, this issue is one that has become increasingly relevant, given trends in contemporary culture. In this article, I will highlight several considerations that can contribute toward an understanding of our role as Christian educators within this complex and, at times, difficult context. I also hope that these ideas may serve as points of departure and lead to further conversations. First, some core concepts.

A Christian is a disciple of Jesus Christ, one who evidences the spirit and the qualities of Jesus (Acts 4:13). A true disciple is both a believer and a follower.¹ Being a disciple is a matter of mind and of life, of thinking Christianly² and of living like Christ.³ The challenge is that we find ourselves in an increasingly secular world, a society in which individuals operate without a religious basis, endeavoring to live “without God in the world.”⁴

How should a Christian teacher operate in this secular milieu? How should he or she act and live? At an even more foundational level, given the pervasiveness of the secular worldview, how does one become a genuine Christian educator? And how does one maintain and provide evi-

The Challenge of Becoming, Being, and Living

dence of that distinctive character, with relevance and with redemptive purpose, while interacting with secular postmodern persons?

The Challenge of Becoming

It is altogether too easy to teach from a secular worldview—without reference to God or His plan for life and learning. Consequently, to become authentic Christian educators, we must first forge a biblical paradigm, a Christian view of education and of life that includes at least five key elements.⁵

• **A pervasive spiritual perspective.** Paul wrote, “Whether you eat or drink or whatever you do, do it all for the glory of God” (1 Corinthians 10:31, NIV). God’s glory is His character (Exodus 33:18-22; 34:5, 6). To do something for God’s glory, then, is to reveal His attributes. The emphasis, however, is that in *whatever* we do, in whatever aspect of the educational process we engage, we are to reveal an accurate and attractive picture of God.

Paul further explains, “Whatever you do, whether in word or deed, do it all in the name of the Lord Jesus” (Colossians 3:17).⁶ To do something “in the name of” Jesus means to say what He would say, to do what He would do. It implies that we seek to teach our subjects as He would teach them and to interact with our students as He would relate to them.

Consequently, in the biblical view, the spiritual perspective is all-encompassing. There are no secular disciplines or secular subjects. Setting up a spiritual/secular dualism would, in fact, create a false dichotomy. Rather, all of life and learning is to be seen in terms of its relationship to God.⁷

• **The divine origin of truth.** God is the Source of all true knowledge and understanding. Scripture states: “Every good gift and every perfect gift is from above, and comes down from the Father” (James 1:17, NKJV). The Book of Proverbs further adds, “For the Lord gives wisdom. From his mouth come knowledge and understanding” (Proverbs 2:6). In essence, God is the Source of knowledge and He also provides the ability to comprehend meaning and to correctly apply this understanding, which is the essence of wisdom. Finally, John is specific when he writes, “Grace and truth came through Jesus Christ” (John 1:17).

Consequently, truth begins with God, not with humanity. Further, if God is the Source of truth, all truth

BY JOHN WESLEY TAYLOR V

must therefore be God's truth, regardless of where it is found.⁸ As educators, we must recognize and affirm that connection, especially to our students. We do this when we help students to see God as the Creator of all things and the Author of their properties and principles, as these are revealed throughout the disciplines.⁹

• **God-centered values.** Faced with a society that was losing its spiritual footing, the prophet Ezekiel repeated God's urging: "'Teach my people the difference between the holy and the common, and show them how to distinguish between the unclean and the clean'" (Ezekiel 44:23).¹⁰ In the New Testament, Paul identifies these differentiating criteria to include that which is true, honorable, right, pure, lovely, admirable, excellent, and worthy of praise. He then counseled us to thoughtfully consider these values in making moral choices (Philippians 4:8).¹¹ Finally, Scripture highlights justice, mercy, and humility as foundational values and the divine expectation for our lives (Micah 6:8).

In essence, biblical values are God's desires for us as His creation. They are the portal to the abundant life that Christ wants us to experience (John 10:10). As a result, character formation—the development of a moral, value-based framework—is foremost in education. It is insufficient to simply convey knowledge, promote understanding, or impart skills and competencies. These are of value only when they operate within the context of a moral life, evidenced by ethical decisions and actions anchored in the character of God.¹²

• **Teaching as a divine calling.** In Ephesians 4, Paul states that when Christ ascended to heaven, He gave special gifts to His church, including the gift of serving as pastors and teachers (Ephesians 4:8, 11). In the original language, it is clear that the gift of pastor and teacher is granted

In the Christian view, to be spiritual is to be Spirit-filled. Consequently, a Christian educator must not only be competent, but also committed, for it is through the efficacy of the Holy Spirit that our students experience salvation. As educators, our greatest need is that the Spirit work in and through us.

to the same group of people. A person who receives one receives the other. To create a pastor/teacher dichotomy is simply not biblical. In essence, the pastor-teacher gift is a double portion of the Spirit (2 Kings 2:9), with important implications for those who serve as "pastors" and as "teachers."¹³

Paul adds that we are to see our role as God's ambassadors, "as though God were making his appeal through us" (2 Corinthians 5:20)¹⁴ while Peter writes that "If anyone speaks, they should do so as one who speaks the very words of God" (1 Peter 4:11). Teaching then is not merely a job, a career, nor a profession. It is a vocation,¹⁵ a divine calling. As we respond to that call, we become God's en-

dorsed representatives, with authority and responsibility.

• **A Spirit-filled life.** It is essential that an educator receive God's Spirit. In His promise of the Counselor, Christ indicated that it was the Holy Spirit who would teach us all things (John 14:26). Having received God's Spirit, we are also enabled to understand divine truth and to then teach, "expressing spiritual truths in spiritual words" (1 Corinthians 2:12, 13).¹⁶ Paul further states that we "are an epistle of Christ, . . . written not with ink but by the Spirit of the living God, not on tablets of stone but on tablets . . . of the heart" (2 Corinthians 3:3).

In the Christian view, to be spiritual is to be Spirit-filled. Consequently, a Christian educator must not only be competent, but also committed, for it is through the efficacy of the Holy Spirit that our students experience salvation. As educators, our greatest need is that the Spirit work in and through us.

In summary, in order to *become* authentic Christian teachers, our first and most important task is to develop a biblical view of our life and of our role as educators. This paradigm includes an understanding that all of life and learning is to take place within a spiritual framework, that all truth is God's truth, that character formation centers on divine values, that teaching is a divine calling, and that we are to live a Spirit-filled life.

The Challenge of Being

Being is not static, but dynamic. It has to do more with *how* we live our lives than with *what* we say we are. For a teacher, this matter of being includes at least three dimensions: how we approach our discipline, how we view our students, and how we model the Christian life. We will consider each of these.

• **A Christian educator approaches his or her discipline from a Christian worldview.** What does this mean? First of all, it suggests that we must

make Scripture foundational. The rationale is that the Word of God speaks with relevance to each dimension of life, that every discipline should connect with our lives in meaningful ways, and that as a result, God's Word should be relevant to each academic discipline. Our task is to seek for a thoughtful understanding of Scripture in relation to the discipline as a whole, and by extension, to those topics that we teach.

Next, we must clarify assumptions. As we approach a discipline, we make crucial underlying assumptions. These include the nature of the discipline and how it should be presented, the nature of truth and reality, and the origin and purpose of life, as well as matters pertaining to our relationship with God, with other human beings, and with the world around us. Our task is to continually evaluate how these assumptions align with the biblical worldview.¹⁷

Third, we will need to trace the Great Controversy. Every dimension of life is affected by the conflict between good and evil. In fact, the Great Controversy theme is the grand sense-making narrative for life.¹⁸ Our task is to understand how our respective disciplines are shaped by this cosmic conflict.

Fourth, we are to consider the gospel commission (Matthew 28:18-20). This means that we see our profession as a ministry—that we live lives of service. And that we view our witness not as an event, but as a lifestyle (see Figure 1). “You *are* my witnesses” (Isaiah 44:8, italics supplied). Our task is to understand what the gospel commission imparts to our discipline in terms of witness and service.

Finally, we must link biblical values to personal, everyday experiences. Real-life issues, with ethical implications, exist in every discipline.¹⁹ When considering a controversial issue, we need to ask: “What is God's design for this area of human activity?” “What biblical response is called for?” Our task is to identify guiding principles and moral values.²⁰ Students should then be encouraged to engage in ethi-

cal reasoning and develop a personal position derived from the biblical perspective.

• **A Christian educator views his or her students as God does.** What does this imply? The overarching theme is that God views every student as a candidate for heaven.²¹ He sees them, not as they are, but as they can become by His grace.

This divine perspective conveys a number of implications in regard to how we relate to students. It suggests that we take a personal interest in each student, and that we affirm the worth and potential of each individual. It means that we are to love our students, even though we may disagree with them. It means that we trust them, even though at times they may seem untrustworthy.²² It implies that we challenge them to do their best and help them to develop a sense

of mission. Above all, it reminds us that our ultimate purpose is to lead our students to experience a personal relationship with Christ.²³

• **A Christian educator models the Christian life.** What does this include? It indicates that our lives are to reflect the character of Christ, that our students see an accurate and attractive picture of who God truly is. As a result, they can say: “If God is like my teacher, I want to know Him!”²⁴ It involves that we convey confidence in God's revelation and that we affirm biblical standards of moral behavior. It means that we make the Christian life an adventure, with zest!²⁵

The Challenge of Living

How should we function as Christian educators? How should we then live? The aspect of action focuses on reaching out with intentionality to secular postmodern persons with salvation purpose.²⁶ It involves a number of key behaviors (see Figure 2 on page 8):

• **Create community.** Contemporary secular society is post-individualist. Its postmodern focus emphasizes community.²⁷ Building community, including virtual communities, has become a prime goal of postmoderns. Scripture also affirms the role of community, both within the body of believers and in fulfilling the gospel commission.²⁸

As Christian educators, we need to be proactive in creating caring, connected communities in our classrooms and throughout the school. We should be intentional in establishing positive relationships with and among students. We must remember that belonging precedes believing.

• **Recognize context.** Postmoderns have highlighted the significance of context and, by extension, culture.²⁹ As Christians, we must also seek to understand others' backgrounds and culture, which modify the way they see and understand life. In Scripture, the Jerusalem Council (Acts 15) illustrates the importance of understanding culture and of taking context into account.

Figure 1. Two Views of Christian Witness



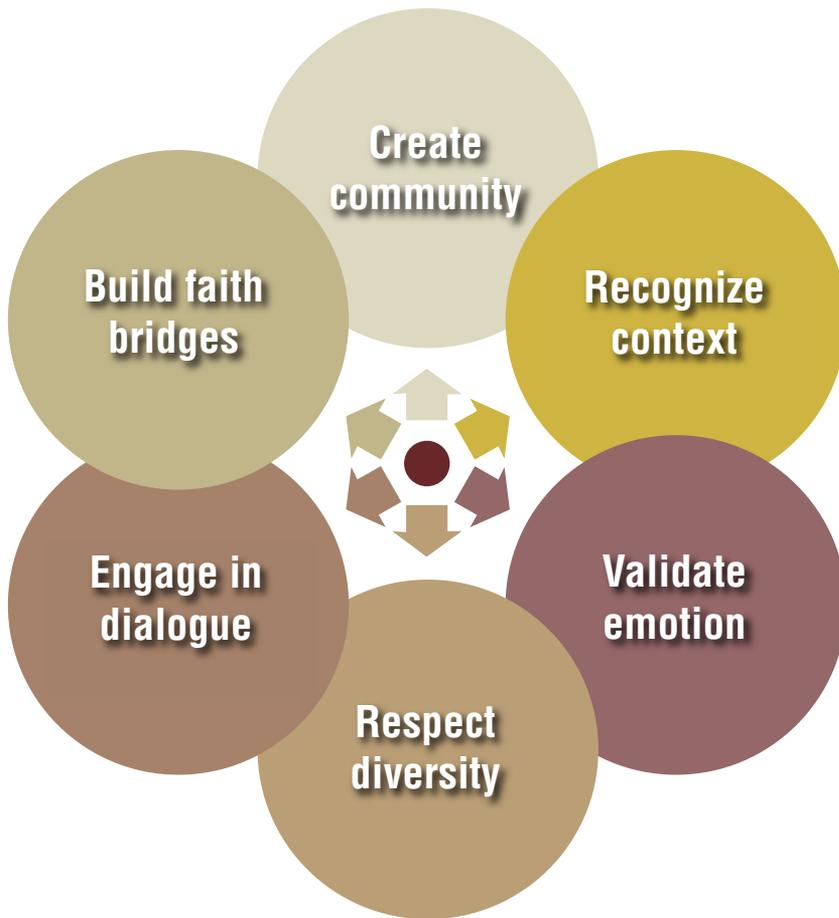


Figure 2. Reaching the Secular Person

As a result, when discussing social issues, historical events, and biblical passages with postmoderns, it is essential that we examine context. This also helps us to avoid imposing our own conditions on interpretations of meaning and motive. At the same time, we cannot mindlessly accept or reject contemporary culture. We are to affirm those elements of culture that are in harmony with God’s will, and we are to redirect any aspect that may not be congruent with God’s character or His plan.³⁰

• **Validate emotion.** In the Age of Reason, modernists tended to suppress feelings and elevate logic. In rejecting rationalism, postmodernism has chosen to highlight emotion.³¹ Thus the pervasiveness of comments

such as these: “How can it be wrong when it feels so right?” “Go with your gut feeling!” “Just do it!” The result is the tendency of contemporary society to elevate feelings over rationality and objective truth.

In the Christian perspective, the emotions are of importance (Nehemiah 8:10; John 11:35). Too often, we have denigrated emotion into a sign of intellectual weakness, and have reduced the gospel to a sterile set of postulates and proof texts. As Christians, we must affirm feeling as well as reason. We should make the gospel not only logically compelling, but also emotionally attractive. While we should help others to think carefully and analytically about what they believe, we must also encourage sensitivity, spontaneity, and joy.

• **Respect diversity.** Postmodern secularism celebrates diversity and promotes inclusiveness.³² It maintains

that minority groups have rights and merit respect. It holds that the community must function as a support network for the individual members of society. This perspective resonates with the Christian worldview. Christ’s mission was to break down barriers of exclusivity, to set the oppressed free (Isaiah 58:6; Luke 4:16-21). He reached out to the marginalized, to those rejected by mainstream society (Matthew 11:19; Mark 2:16).³³

As Christian educators, we must recognize that each individual, regardless of ability, ethnicity, or social status, is of inherent worth, both by creation and by redemption (Isaiah 43:1; Jeremiah 1:5; John 3:16). We are to become a voice for the exploited and oppressed. We are to treat each person with respect, irrespective of ethnic or religious affiliation.³⁴ Furthermore, the Christian paradigm must be open to consideration of divergent views, while at the same time safeguarding fundamental beliefs (Isaiah 8:20). Our goal is unity in diversity.

• **Engage in dialogue.** Secular postmoderns view learning as a democratic process, not merely as the transmission of knowledge from expert to novice.³⁵ It is a conversation in which both parties share experiences and insights. Our role as educators is consequently less of a top-down dispenser of information and more that of a *guide by the side*. Increasingly, we should think of education as learning together, as forming a learning community.

There is an important corollary to this approach. We should make it clear that Christians do not have a monopoly on truth. Rather, non-believers also discover truth.³⁶ The key difference is that the Christian recognizes the Source of that truth. This implies that we can all learn from one another, regardless of belief or background, provided that we can connect that knowledge back to its Source and apply it to our lives through the truth-filter of His Word.

• **Build faith bridges.** In the post-

modern world, there is a new openness to spiritual themes. Spirituality is no longer banished to the fringes of society, but has become a social dialogue. This surge in spiritual consciousness, however, should not be confused with a renewed interest in religion. Postmoderns are spiritual, but not necessarily religious.³⁷ Many, in fact, are suspicious or openly antag-

onistic toward religion. This poses a monumental challenge!

All of this suggests that Christians are to be ambassadors of generosity, benevolence, and goodwill. It implies that our witness may best be formulated as relational—developing conversations about God, sharing one's personal experience with God, and seeking a

deeper understanding of the Spirit. Finally, secular postmoderns must see that Christianity is a vibrant community of faith, experiencing the joy and peace of a Spirit-filled life.

Conclusion

As Christian educators living in a secular postmodern world, we are to

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think deeply and Christianly regarding our beliefs and convictions—the challenge of *becoming*. We should then view our discipline and our students from God’s perspective, and exemplify the Christian life in a faithful and invitational way. This is the challenge of *being*. Finally, we must connect meaningfully with our students and converse clearly and persuasively regarding our Christian worldview—the challenge of *living*. Together, these three ingredients—becoming, being, and living—present us with the opportunity to serve faithfully and effectively as Christian educators in a secular society. ✍

This article has been peer reviewed.



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NOTES AND REFERENCES

1. And a true follower of Christ is ultimately a disciple maker (Matthew 28:18-20).
2. John 8:31; 1 Corinthians 2:12-16; Philippians 2:5; Romans 12:2. Unless otherwise indicated, all Scripture quotations in this article are from The Holy Bible, New International Version. Copyright © 1973, 1978, 1984, 2011 by Biblica, Inc. Used by permission. All rights reserved worldwide.
3. John 15:8; Galatians 2:20; 1 Peter 2:21; 1 John 2:6.
4. Ephesians 2:12.
5. This paradigm is a subset of the Christian worldview, with a special focus on the educational process and the role of educators. For further study, see the sample of resources that address the Christian worldview on page 9.
6. See also 2 Corinthians 10:5, “We demolish arguments and every pretension that sets itself up against the knowledge of God, and we take captive every thought to make it obedient to Christ.” If every thought is captive to the Lord Jesus, it follows that each concept we teach, and by extension each topic and subject, should recognize that Jesus is Lord—that this is His discipline, His classroom.
7. Proverbs 3:6 affirms: “In all your ways acknowledge Him” (NKJV). Texts in the endnotes marked NKJV are from the New King James Version®. Copyright © 1982 by Thomas Nelson. Used by permission. All rights reserved. The implications of this concept are further explored in “The Challenge of Being” section on page 7.
8. This concept of all truth as divine truth was significantly developed in Frank E. Gaebel’s *The Pattern of God’s Truth: The Integration of Faith and Learning* (Winona Lake, Ind.: BMH Books, 1985); and in Arthur F. Holmes’ *All Truth Is God’s Truth* (Grand Rapids, Mich.: Eerdmans Publishing, 1977).
9. James writes that “Every good gift and every perfect gift is from above, and comes down from the Father of lights” (James 1:17, NKJV; see also John 1:17). This implies that we must view every domain of knowledge and each dimension of our lives as an extension of God’s truth.
10. While this section focuses on making a difference between the clean and unclean, there is also a biblical basis for distinguishing between the sacred and the common (see, for example, Exodus 3:5 and 12:11; Leviticus 10:1, 2; 1 Chronicles 13:9, 10 and Numbers 4:15; 1 Samuel 13:9-14 and 2 Chronicles 26:16-21). We must not, however, create a false dichotomy in our lives between the spiritual and the secular. Rather, as previously noted, all of life is to be Spirit-filled and viewed from the divine perspective. Certain things in life, however, are sacred, made

holy either by God’s direct presence or by His express command, or because they have been dedicated to God. Consequently, the Sabbath, the tithe, and the place of worship, among others, are sacred. Yet all days of the week are to be filled with God’s Spirit, all one’s resources are to be employed to God’s glory, and wherever one may be, he or she is to abide in God’s presence. Thus Martin Luther could say that “the shoemaker should shoe the sole of the pope as religiously as the pope should pray for the soul of the shoemaker” (cited in Arthur F. Holmes, *The Idea of a Christian College* [Grand Rapids, Mich.: Eerdmans Publishing, 1987], page 16); and Ellen White could write, “There is practical religion in a loaf of good bread” (*Counsels to Parents, Teachers, and Students* [Mountain View, Calif.: Pacific Press Publishing Assn., 1943], p. 313).

11. Quoted from NLT. Scripture quotations marked NLT are taken from *The Holy Bible, New Living Translation*, copyright © 1996, 2004. Used by permission of Tyndale House Publishers, Inc., Wheaton, Illinois 60189. All rights reserved.

12. As earlier noted, God’s glory is defined through the attributes of His character (see Exodus 33:18, 22; 34:6, 7). When we do all things to His glory (1 Corinthians 10:31), we seek to reflect His character and transmit a clear picture of who God is. Further implications of this element in the biblical worldview are discussed in “The Challenge of Being” section on page 7.

13. It suggests, for example, that pastors are to educate their flock, and not merely sermonize (Matthew 28:18-20). On the other hand, teachers are to also see their role as that of a shepherd (pastor), nurturing and caring for their flock (Jeremiah 13:20). See also “Two Ministries/One Mission” by George R. Knight, *The Journal of Adventist Education* 72:4 (April/May 2010):4-9: <http://circle.adventist.org/files/jae/en/jae201072040406.pdf>; and “The Same Gift: ‘And . . . to Some, Pastors and Teachers’” by Newton Hoilette, *The Journal of Adventist Education* 55:2 (December 1992/January 1993):4-7: <http://circle.adventist.org/files/jae/en/jae199355020404.pdf>.

14. Writing to Timothy, Paul clarified that those who are called to teach are also to be faithful to their calling (2 Timothy 2:2).

15. The word *vocation* is derived from the Latin *vocare*, which means “to call.”

16. Quoted from the 1984 edition of the NIV Bible.

17. While disciplines present data or rules, such as the data of science or the rules of logic, these must be interpreted by indi-

viduals based on the assumptions of their worldviews. What is key is the hermeneutic that is brought to the discipline. The specimen, for example, might be the forelimb of a whale or a bat, which is similar to the human arm. The assumptions of a secular naturalist lead to an interpretation that suggests a common evolutionary ancestor, while the assumptions of the theistic creationist interpret the data as the work of a common Creator, God.

18. It helps us understand, for example, why bad things happen to good people. The Book of Job, which speaks to this matter, takes us behind the scenes in this cosmic conflict.

19. A social studies class, for example, could consider issues such as sexism, racism, and nationalism; AIDS, birth control, and the recreational use of drugs; pressure groups and conflicts of interest, as well as immigration policies, squatter settlements, foreign aid and national debt, the exploitation of natural resources, and waste disposal. Issues in technology include piracy, hacking, computer fraud, encryption, robotization, artificial intelligence, intellectual property rights, and privacy at the work site. There are issues in business subjects concerning equitable taxation, fair profit, monopolization, unionization and worker strikes, declaration of bankruptcy, sexual harassment, and deception in advertising. Physical-education courses could discuss competition, deception, financial sponsors for events and sports equipment, contracts, and hormone enhancement. In psychology, issues include hypnosis, IQ testing, sexual expression, co-dependency, dealing with a counselee's threat of harm to self or others, and securing informed consent from persons who may have psychological impairments. Scientific issues include global warming, cloning, animal experimentation, abortion, euthanasia, nuclear energy, and waste recycling, among others.

20. These ethical-moral values include priorities such as acceptance, altruism, benevolence, compassion, fairness, gratitude, honesty, impartiality, integrity, justice, liberty, loyalty, mercy, purity, respect, sincerity, stability, tolerance, and trustworthiness. Values in the academic realm also embrace accuracy, competence, cooperation, curiosity, discernment, logical thought and expression, relevance, sensitivity, and thoroughness, among others.

21. Ellen White writes, "It becomes every student to learn of God, who giveth wisdom, how to learn to the best advantage; for all are candidates for immortality" (*Fundamentals of Christian Education* [Nashville, Tenn.: Southern Publishing Assn., 1923], p. 379).

22. How many times, for example, have

we let God down, and yet, despite our untrustworthiness, God continues to give us opportunities and responsibilities?

23. This concept is further developed in George R. Knight, *Philosophy and Education: An Introduction in Christian Perspective*, 4th edition (Berrien Springs, Mich.: Andrews University Press, 2006), page 207; and in E. B. Snorrason, *Aims of Education in the Writings of Ellen White*, Ph.D. dissertation, Andrews University, 2005, available at <http://digitalcommons.andrews.edu/cgi/viewcontent.cgi?article=1706&context=dissertations>.

24. Perhaps this is one way in which the prophecy of Zechariah 8:23 will be fulfilled, which states: "This is what the LORD Almighty says: 'In those days ten people from all languages and nations will take firm hold of one Jew by the hem of his robe and say, "Let us go with you, because we have heard that God is with you."'"

25. Young people often conclude that the Christian life is all about what one *cannot* do; that anything happy or fun is swiftly prohibited. Jesus, however, declared, "I have come that they may have life, and that they may have it more abundantly" (John 10:10, NKJV). Our students need to see the Christian life as the abundant life. The most powerful part of that message is how we ourselves approach the Christian life.

26. "In the highest sense the work of education and the work of redemption are one" (Ellen G. White, *Education* [Mountain View, Calif.: Pacific Press, 1903], p. 30).

27. See the reading list on page 9 for foundational works that address the principal tenets of postmodernism that are evidenced in contemporary culture.

28. Scripture, in fact, begins with the community of the Godhead, in whose image we are made (Genesis 1:26; see also Genesis 1:2; Psalm 133:1; Isaiah 42:5; Matthew 25:31-46; John 1:1-14; Acts 2:1, 46; Romans 15:1; 1 Corinthians 12:12-27; Galatians 6:2).

29. Georg G. Iggers, "A Search for a Post-postmodern Theory of History," *History and Theory* 48:1 (February 2009):122-128; Fredric Jameson, "The Cultural Logic of Late Capitalism," in *From Modernism to Postmodernism: An Anthology*, Lawrence Cahoon, ed. (Malden, Mass.: Blackwell Publishers, 2003), pp. 556-572; Richard Rorty, "Solidarity or Objectivity," in *ibid.*, pp. 447-456.

30. As Christians, we should see our role not primarily as a thermometer, adapting to the prevailing context, but as a thermostat of context and culture—creating a positive difference for God in the world.

31. For educational implications, see Michalinos Zembylas, *Teaching With Emotion: A Postmodern Enactment* (Charlotte, N.C.: Information Age Publishing, 2005).

32. George Fallis, *Multiversities, Ideas, and Democracy* (Toronto: University of Toronto Press, 2007); Michel Foucault, *Madness and Civilization: A History of Insanity in the Age of Reason*, Richard Howard, trans. (London: Routledge, 2001).

33. The woman at the well of Sychar, for example, was marginalized from mainstream society due to a combination of ethnicity, gender, and lifestyle (John 4:5-42).

34. It should be noted that these redemptive acts are not mere manifestations of humanistic altruism nor even of a social gospel. Rather, they are the consequence of redemptive grace in the lives of Christians: "Freely you have received; freely give" (Matthew 10:8).

35. Richard Edwards and Robin Usher, *Postmodernism and Education: Different Voices, Different Worlds* (New York: Routledge, 1994); Henry A. Giroux, "Toward a Postmodern Pedagogy," in *From Modernism to Postmodernism: An Anthology*, op. cit., pp. 687-697; Patricia Hinchey, *Finding Freedom in the Classroom* (New York: Peter Lang Publishing, 2010); Patrick Slattery, *Curriculum Development in the Postmodern Era: Teaching and Learning in an Age of Accountability* (New York: Routledge, 2013).

36. God "'causes his sun to shine on evil people and good people. He sends rain on those who do right and those who don't'" (Matthew 5:45, NIV) because He desires all "to come to a knowledge of the truth" (1 Timothy 2:4, NIV). Holy Bible, New International Reader's Version®, NIV® Copyright © 1995, 1996, 1998 by Biblica, Inc.® Used by permission. All rights reserved worldwide.

37. Lieven Boeve, *Interrupting Tradition: An Essay on Christian Faith in a Postmodern Context* (Dudley, Mass.: Peeters Press, W. B. Eerdmans, 2003); David S. Dockery, ed., *Challenge of Postmodernism: An Evangelical Engagement*, 2nd ed. (Grand Rapids, Mich.: Baker Academic, 2001); Robert Greer, *Mapping Postmodernism: A Survey of Christian Options* (Downers Grove, Ill.: InterVarsity Press, 2003); Dan Kimball, *They Like Jesus but Not the Church: Insights From Emerging Generations* (Grand Rapids, Mich.: Zondervan, 2007); David Kinnaman and Gabe Lyons, *unChristian: What a New Generation Really Thinks About Christianity . . . and Why It Matters* (Grand Rapids, Mich.: Baker Books, 2007); Myron B. Penner, *The End of Apologetics: Christian Witness in a Postmodern Context* (Grand Rapids: Baker Academic, 2013).



THE TEACHER *PAR EXCELLENCE*:

What is a role model? A role model is a person who influences, inspires, and motivates us—someone who lives a life others admire.

Adults may give little thought to having role models, but many have mentors—individuals whom they trust to guide them forward. Usually, we think of children and young people as those who need adult role models. However, if we examine those who influence us most and why, we will realize that they are people who stimulate our thinking and provide us with important life lessons. A well-known proverb says: “You are what you eat.” A variation of this saying might be to state: “We are disciples of what [or whom] we pay attention to.”¹

Matthew’s Jesus as a Role Model for Teachers

Several teachers have shaped my thinking and deeply influenced my approach not only to teaching and academia, but also to life. While these individuals made a difference, my utmost role model is Jesus Christ, the teacher *par excellence*.

Jesus as a Teacher

In the New Testament, the concept of Jesus as a Savior is more prominent than His portrait as a teacher. This fact, however, does not suggest that the significance of the “teaching Jesus” is marginalized, and this is reflected in an analysis of titles applied to Jesus. The most frequent title used is “Lord” (*kurios*), applied to Him 83 times, but the second most frequent is “teacher” (*didaskalos* or *rabbi*), represented 56 times.²

BY LASZLO GALLUSZ

According to the research by Pheme Perkins, ancient literature mentions four types of teachers during Jesus' time who had adult followers: (1) philosophers; (2) sages; (3) interpreters of the Jewish law; and (4) prophets. He points out that elements of Jesus' teaching reflect features from all four of these categories.³ While in recent decades gospel studies have devoted significant attention to comparing Jesus with Cynic teachers and charismatic itinerant preaching figures, the differences are stronger than the similarities.⁴ The category of teachers that comes closest to the picture of Jesus presented in the Gospels is that of the Jewish rabbis. However, in spite of a number of similarities with first-century rabbis, the differences are so fundamental that Jesus could rightly be considered radically different in His teaching style and content.⁵ His unique contribution and far-reaching impact qualify Him as the teacher *par excellence*.

Matthew's Teaching Jesus

In the rest of this article, we will focus on Matthew's portrait of Jesus as a teacher. This, more than the other canonical Gospels, can be considered a teaching Gospel. In the early church, it was the most beloved and the most quoted of the four books.⁶ In Matthew, we find the most complete and systematic account of the life, death, and resurrection of Jesus. As noted by Paul Minear, "The author of this Gospel was a *teacher* who designated his work to be of maximum help to teachers in Christian congregations."⁷

The teaching character of Matthew's Jesus surfaces in at least two vital features:

1. *The structure of the Gospel.* The Book of Matthew is shaped by a pattern of alternating discourses and narratives. It presents five of Jesus' major sermons—all focusing on the central theme of His teaching and preaching: the kingdom of God (chapters 5 to 7, 10, 13, 18, 24 to 25).⁸ Some have seen in these five discourses parallels to the five books of Moses, which are here delivered by the New Moses.⁹ The number of instructional lessons is high in comparison to the other synoptic Gospels.

2. *The progression of educational formation.* In the overall flow of Matthew's Gospel, we notice the following stages: Jesus calls disciples; teaches them; sends them out in the field to practice for some time, then teaches them again; they find themselves in situations in which they are tested; and finally, at the end of the Gospel, Jesus sends them out to continue His teaching ministry.¹⁰

Lessons for Teachers

I would like to propose five distinctive lessons from Jesus' practice and ministry of teaching that can be gleaned from His sermons recorded in Matthew. While this is not a comprehensive study of Jesus' teaching methods, it reflects general lessons that surface in the study of Matthew's instructional materials.¹¹ These lessons are not limited only to the Book of Matthew; some of them surface in the other Gospels as well.

1. ***Jesus met people where they were; He was constantly attuned to the life experiences of those around Him.*** As He taught, Jesus did not begin with a systematic set of teachings

that were discussed in a certain time-frame. He did not have a well-prepared syllabus from which every item had to be covered. Jesus was oriented toward the context in which people lived: He began with the questions and life situations of His audience. He capitalized on the well-known scenes and experiences of His contemporaries. Such an approach gave His teaching freshness and newness, making it different from the teaching of the trained scholars of His time. One of the best illustrations of this principle can be found in the Sermon on the Mount (Matthew 5-7), which is considered one of the greatest sermons in human history.¹² The application of the principle, however, surpasses this discourse, as is evident from the comment of Alban Goodier: "He speaks of their everyday joys and sorrows, the salt of their everyday meal; the village perched up there on the hill above and the candlesticks in the windows; their daily conversation with its oaths and loose language; their household quarrels; the local thief; the local borrower of money; the sun now beating down upon them, the rain which had but recently ceased; the rust and moth which were a constant trouble; their dogs, their fish, their eggs. . . . He has said what he said in the language of their lives."¹³

Since Jesus spoke to people in their language, in their situation, and considered their problems, it is no wonder that the common people were attracted to Him. His approach was a message itself that authentic religion is not only for the privileged or sophisticated, but should be understandable and available for ordinary people, who in His time were despised by the scribes as unable to comprehend really important and complex issues. Jesus had an amazing capacity to explain the most profound truths and issues in the language understood by ordinary people. He normally avoided difficult, philosophical terminology and put His finger on the central issues challenging His audience. It was not only the content of His teaching that attracted a crowd, but even more His personality, as He accepted the people, loved them, and believed in them.¹⁴

2. ***Instead of abstract training, Jesus provided education for life.*** He taught people how to think and how to live. His education shaped the core values of His audience. It was an "invitation to human intelligence and freedom,"¹⁵ and a call to action! Matthew's Gospel shows Jesus summing up religion in this powerful and positive statement: "In everything do to others as you would have them do to you; for this is the law and the prophets" (Matthew 7:12, NRSV).¹⁶ Jesus helped people to see life with God's eyes and cast a radical vision of reality:

- In the Sermon on Mount (chapters 5-7), He redefined the idea of happiness, suggesting that the happy person is the one who is considered happy by God, not by the Romans or by the local authorities. The eight macarisms ("Blessed are the . . .") at the beginning of the sermon cast light on happiness from the perspective of Jesus (the meaning of Greek *makarios* is not only "blessed" but also "happy"): happy are those who see their need and turn to God, and who demonstrate qualities reflecting God's character as meekness, mercy, purity, etc. (Matthew 5:3-12).

- In the Missionary Sermon (chapter 10), He pointed out His disciples' responsibility for transmitting the values and ideals of the kingdom so that people within their sphere of

influence could be transformed and, as a result, the world would become a better place.

• In His Apocalyptic Sermon (chapters 24 and 25), He called attention to the history of the world heading toward a purposeful end, making it necessary to use wisely the God-given opportunities and live in light of the coming of the *parousia*.

3. Jesus fostered person-centered education, inspiring people to grow and become better versions of themselves.

He was more concerned with the kind of person one should be than with the things one should possess. He believed in people, saw potential in them, and gave them sound directions they could use to rebuild their lives. Jesus offered people hope that their lives could be different; and this hope, along with the sense of acceptance, gave them courage to think and change.

Today, we live in an age of instant learning in which information is easily accessible to students; therefore, teachers are not necessary for transmitting cognitive data. However, the “students are searching for more than a professional competence from their teachers.”¹⁷ They are seeking to discover what is real and also receive motivation and encouragement to enter boldly into unknown areas (at least for them) by questioning. Parker Palmer rightly notes: “A teacher, not some theory, is the living link in this epistemological chain. The way a teacher plays the mediator role conveys both an epistemology and an ethic to the student, both an approach to knowing and an approach to living.”¹⁸

Reading the Gospels leads us to the conclusion that Jesus was concerned with *how* to think, not just *what* to think. This was unique to His approach in comparison with the teachers of His time. His interactions with ordinary people inspired and encouraged them to start thinking for themselves and making their own decisions. That meant daring to question common assumptions, examining the thinking behind the rules, and forming an opinion regarding their relative importance. He often inspired thinking by using parables and by introducing questions that compelled His audience to actively participate.¹⁹ In the Gospel of Matthew, He raised the “what do you think” questions five times (Matthew 17:25; 18:12; 21:28; 22:17, 42). Examples of His other thought-provoking questions include: “For if you love those who love you, what reward do you have?” (Matthew 5:46); “Why are you talking about having no bread?” (Matthew 16:8); “Who do you say that I am?” (Matthew 16:15). While Adventist teachers should not turn away from teaching facts and theories (these are certainly

While we rejoice in seeing new things happening, established truth is not to be left behind. A virtue of a disciple is to learn to appreciate the best of both worlds and try to hold the two together for a church that is in need of both.

needed), they must teach more than a body of knowledge or a set of skills. Jesus wanted to see transformation in people with whom He interacted: transformation of their thinking and their lives.

4. Jesus called attention to the importance of honoring both established truth and innovation. The discourse on the Parables of the Kingdom (chapter 13) is concluded by the following statement: “Therefore every scribe who has been trained for the kingdom of heaven is like the master of a household who brings out of his treasure what is new and what is old” (Matthew 13:52). In this text, Jesus announced a new principle for disciples of the kingdom. The context of this sermon implies that the “new” things refer to the new teachings associated with Jesus, while the “old” things signify the teachings of the Torah. A disciple of Jesus needs to discern the value of both. While we rejoice in seeing new things happening, established truth is not to be left behind. A virtue of a disciple is to learn to appreciate the best of both worlds and try to hold the two together for a church that is in need of both. Troy Troftgruben rightly con-

cludes: “Faithful ministry entails both a sense of the past as well as vision for the future. Abrogating either of these threatens the vibrancy of the whole. In teaching, proclaiming, and ministering. . . [L]eaders [are called] to be ‘masters’ of both worlds, drawing on both old and new for the sake of serving as discerning teachers.”²⁰

5. Jesus stressed the importance of fostering community where special status among the members has no significant place. In biblical anthropology, human beings are not viewed as isolated islands; they function in a context of relationships of different types.²¹ Living in an individualistic culture, it is easy to forget that the focus of attention is not on an individual, but on a community and on our contribution to it through serving, as modeled by Jesus, our example (1 John 3:16). The Master Teacher’s fourth and fifth sermons in Matthew’s Gospel (greatness in the kingdom [chapter 18] and the apocalyptic discourse [chapters 24 and 25]) highlight that we are to treat others in the community according to the values modeled by Christ. These sermons emphasize the values of humility, forgiveness, concern for others, acting with integrity, treating people with dignity, and serving others. By putting into practice all these values, we foster community. We should not forget that Jesus directly associated Himself not only with the so-called people of influence, but also with the “least”: the least important, the least impressive, and the least recognized, who in fact through their experience with Jesus as

recorded in the Gospels have exerted untold influence through Christian history. The bottom line is that we should treat students with no less dignity, care, and grace than we would treat Christ Himself.

Conclusion

Lin Norton defines four categories of teachers: (1) Mediocre teachers tell their students what to do; (2) Good teachers explain to their students; (3) Superior teachers demonstrate to their students; and (4) Great teachers inspire their students.²² The influence of a great teacher can never be erased. Teachers shape the thinking and lives of young people not only with the content being taught, but also through their example. Therefore, an Adventist teacher has not only an academic task, but also a spiritual vocation. Regardless of our area of expertise, Jesus' example in teaching stands as an inspiring model in relating to students, as well as helping them grow and see the world in a different light.

This article has suggested five lessons from Matthew's portrait of the teaching Jesus, which serve as directions for Christian teachers of our time in fulfilling their vocation: (1) meeting the students where they are; (2) providing them education for life, instead of abstract training; (3) fostering person-centered education by inspiring students to grow; (4) honoring both established truth and innovation; and (5) fostering community. Let's follow the example of the Teacher *par excellence!* ✍

This article has been peer reviewed.



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in the Book of Revelation has been published in the *Library of New Testament Studies* series (London: Bloomsbury T&T Clark, 2014). He is the author of three books and a number of scholarly articles in English, Hungarian, and Serbian.

NOTES AND REFERENCES

1. Laurence Freeman, *Jesus, the Teacher Within* (New York: Continuum, 2000), p. 172.
2. Conducting a simple word search using any Bible software such as *BibleWorks: A Software for Biblical Exegesis and Research* (<http://www.bibleworks.com/>) will produce similar results.
3. PHEME PERKINS, *Jesus as Teacher* (Cambridge: Cambridge University Press, 1990), pp. 2-22.
4. The initiative was part of the "third quest" of the historical Jesus, which had an agenda to analyze Jesus in the context of first-century Judaism. For a concise overview of the quest of the historical Jesus as one of the main interests of the New Testament scholarship in the past hundred years, see Gerd Theissen and Annette Merz, *The Historical Jesus:*

A Comprehensive Guide, John Bowden, trans. (London: SCM, December 1998), pp. 1-15.

5. For an analysis of similarities and differences between Jesus and the first-century rabbis, see e.g., Marie Noël Keller, "Jesus the Teacher," *Currents in Mission and Theology* 25:6 (1998):450-460.

6. Gerd Theissen, *The New Testament: A Literary History*, Linda M. Maloney, trans. (Minneapolis: Fortress, 2012), p. 142.

7. Paul S. Minear, *Matthew: The Teacher's Gospel* (Eugene, Ore.: Wipf and Stock, 2003), p. 3.

8. For a discussion of the Gospel of Matthew's structure and its function, see David R. Bauer, *The Structure of Matthew's Gospel: A Study in Literary Design* (Sheffield: Sheffield Academic Press, 1988).

9. While there is scholarly agreement that Jesus is presented in the fashion of a New Moses in Matthew's Gospel, the typological fulfillment should not be pressed too far. Namely, Benjamin W. Bacon's *Studies in Matthew* (London: Constable, 1930) suggestion that the First Gospel is to be understood as a kind of "Christian Pentateuch," since Jesus' five discourses are modelled after the five books of Moses, is vulnerable on several grounds. The major weakness of this hypothesis is that it relegates two key sections of the Gospel, the birth and the passion narratives, to a status of prologue and epilogue.

10. For a slightly different educational formation scheme, see Troy M. Troftgruben, "Lessons for Teaching From the Teacher: Matthew's Jesus on Teaching and Leading Today," *Currents in Mission and Theology* 40:6 (December 2013):387-398.

11. For an in-depth study of Jesus' teaching methods, see Roy B. Zuck, *Teaching as Jesus Taught* (Grand Rapids, Mich.: Baker Books, 1995); Liv Fønnebo, "A Grounded-theory Study of the Teaching Methods of Jesus: An Emergent Instructional Model" (Ph.D. Dissertation, Andrews University, 2011): <http://digitalcommons.andrews.edu/cgi/viewcontent.cgi?article=1368&context=dissertations>.

12. For a brief orientation on the history of influence of the Sermon on the Mount, see Ulrich Luz, *Matthew 1-7: A Commentary Hermeneia: A Critical & Historical Commentary on the Bible* (Minneapolis, Minn.: Fortress, 1989-2005), pp. 177-181.

13. Alban Goodier, *The Public Life of Our Lord Jesus Christ* (London: Burns, Oates & Washbournet, 1930), pp. 230ff.

14. Jesus' acceptance of people is probably most evident in His eating habits and His table fellowships. For an in-depth study of the topic, see János Bolyki, *Jesu Tischgemeinschaften* WUNT, 2/96 (Tübingen: Mohr Siebeck, 1998).

15. Sean P. Kealy, "Jesus, the Unqualified Teacher," *African Ecclesiastical Review* 19:4 (1977):228-233.

16. Scripture texts in this article are quoted from the New Revised Standard Version of the Bible. Bible texts credited to NRSV are from the New Revised Standard Version of the Bible, copyright © 1989 by the Division of Christian Education of the National Council of the Churches of Christ in the U.S.A. Used by permission.

17. Keller, "Jesus the Teacher," op. cit., p. 459.

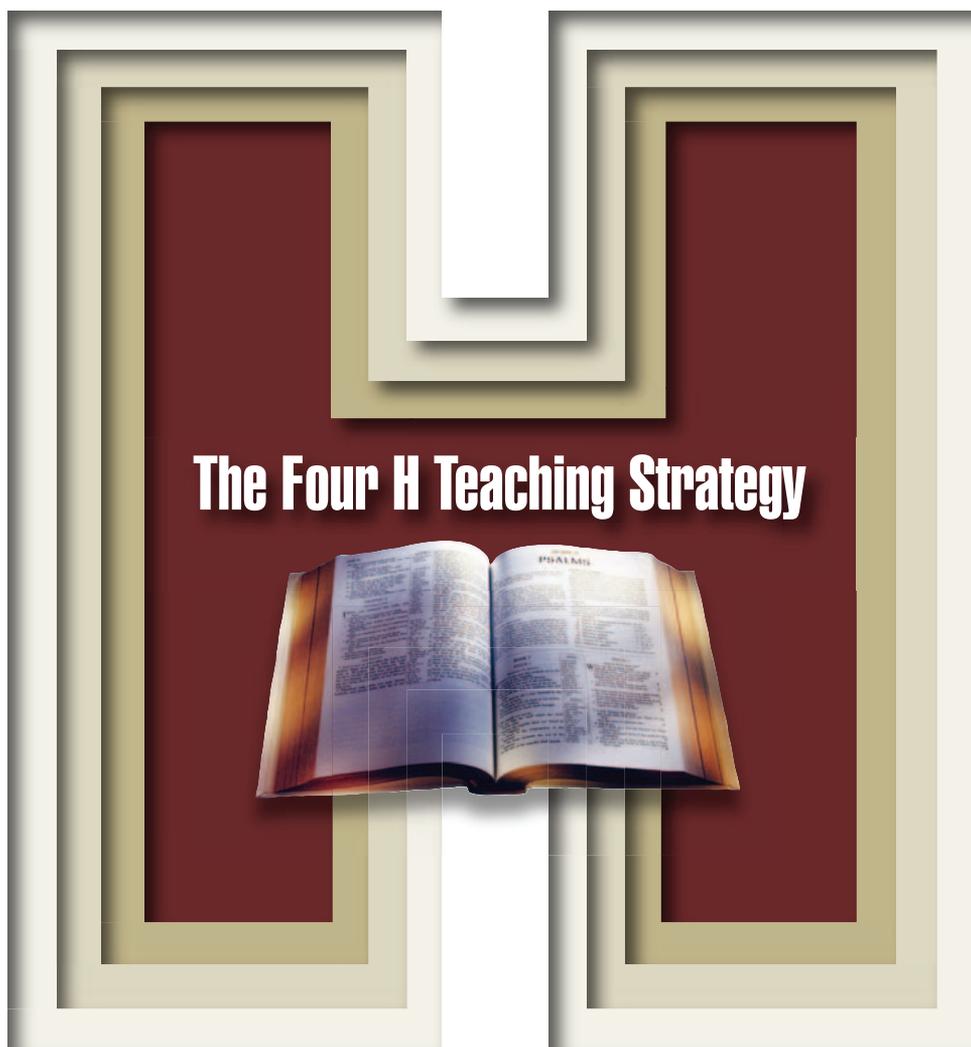
18. Parker Palmer, *To Know as We Are Known: A Spirituality of Education* (New York: Harper & Row, 1983), p. 29.

19. The rhetorical impact of Jesus' teaching in parables is a topic for itself, which is beyond the scope of this study. For an in-depth treatment of this topic, see e.g., David Wenham, *The Parables of Jesus* (Jesus Library; Downers Grove, Ill.: IVP Academic, 1989); Craig L. Blomberg, *Interpreting the Parables* (Downers Grove: InterVarsity, 1990); Brad H. Young, *The Parables: Jewish Tradition and Christian Interpretation* (Peabody, Mass.: Hendrickson, 1998).

20. Troftgruben, "Lessons for Teaching From the Teacher," op. cit., p. 395.

21. See Paul B. Petersen, "'Unwholly' Relationships: Unity in a Biblical Ontology," in "What Are Human Beings That You Remember Them?" *Proceedings of the Third International Bible Conference, Nof Ginosar and Jerusalem, June 11-21, 2012*, Clinton Wahlen, ed. (Silver Spring, Md.: Biblical Research Institute, 2015), pp. 235-248.

22. Quoted in Francine Anuarite K. Wasukundi, "Pedagogy of Jesus for Modern World Christian Teachers," *African Ecclesiastical Review* 54:3-4 (2012):262-284.



The Four H Teaching Strategy



An Interactive, Multisensory Approach to Teaching Bible

Daily Bible lessons in elementary and secondary classrooms may be likened to a serial story. Each Bible passage reveals a little more of the unfolding Cosmic Conflict meta-narrative¹ and God's yearning for each human being to be part of His kingdom. Adventist Bible teachers have the daily privilege of sharing this message with their students.

Preparing a Bible lesson requires a different set of criteria from any other lesson in the curriculum. These les-

sons deal with cognitive, affective, and spiritual dimensions of life and have the potential to inspire students to change their world for the better, not for selfish reasons, but for godly inspired reasons.

The best Bible lesson plan is only words on a page unless it is brought to life by the teacher and the power of the Holy Spirit. Bill McNabb and

Steven Mabry warn that "We have for far too long treated the Bible as Good Advice rather than as Good News. We need to approach Bible study as if we are about to discover together the greatest news ever heard."²

What Is *The Four H Teaching Strategy*?

The Four H Teaching Strategy is an interactive, multisensory approach to teaching Bible that assists teachers to prepare engaging and transformational Bible lesson plans. It was created by the author in response to

BY BARBARA FISHER

Box 1. *The Four H's*

The Four H's explained:

- **History**—listening and discovering. It provides an overview of where each Bible story fits into the Cosmic Conflict metanarrative; and includes Bible reading, biblical history, world history, cultural information, maps, and timelines.
- **Head**—learning and knowing. The children gain knowledge about God and familiarity with the Bible stories. This includes the development of inquiry skills.
- **Heart**—loving and responding. It provides opportunity for spiritual (emotional) engagement, heartfelt commitment, and response to the story.
- **Hand**—living and giving. It explores ways to apply and implement this story in the lives of the students and for them to share it with others in the community.

It should be noted that these strategies are not necessarily applied in chronological order; they often overlap and may occur several times during the lesson.

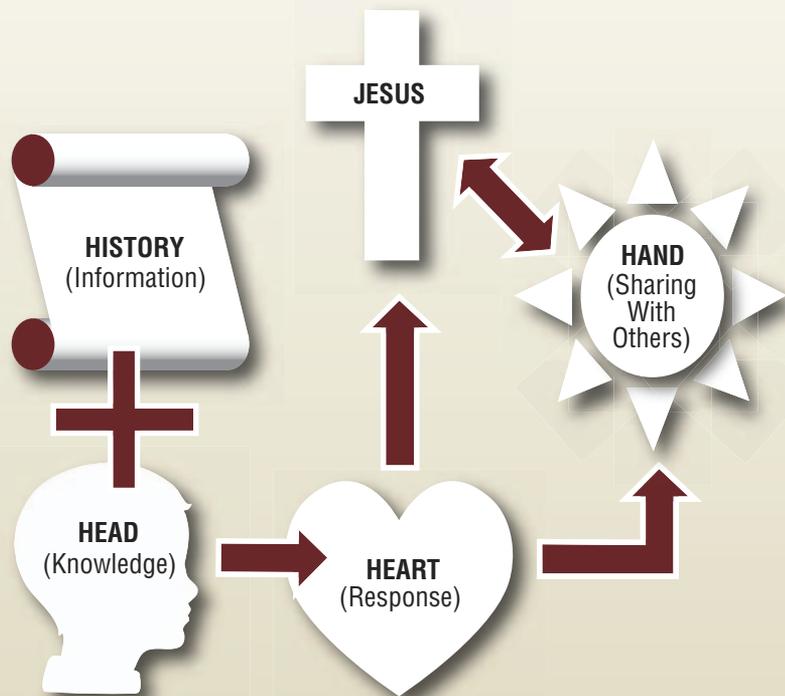
21st-century Adventist students' complaints about having to endure passive, seemingly irrelevant and uninteresting Bible lessons and the realization that teachers were confused about where to place the emphasis in the Bible lesson, i.e., on the knowledge section or the life-application section. *The Four H Teaching Strategy (History, Head, Heart, and Hand)* is designed to place equal emphasis on each of the *Four H's*, thus ensuring a balance between Bible knowledge and life-application in an interactive and modality-based learning approach. It is currently used by pre-service teachers at Avondale College of Higher Education in Coorabong, New South Wales, Australia, to assist them in developing interactive, multisensory Bible lessons that encourage and cultivate reflective thought in culturally diverse classrooms.

A modality-based instructional approach was selected from a variety of learning-style approaches because the author believed that by combining modality-based instruction with (a) sensory learning; (b) reflective thinking; and (c) multiple intelligences, that best-practice, active learning for 21st-century culturally diverse classrooms could be more readily achieved. *The Four H's* could therefore potentially provide every student with a variety of active learning tactics/methods that would empower them to:

1. utilize their learning strengths via the sensory modalities of touching, tasting, smelling, listening, and talking;
2. acknowledge their preferential way(s) of learning, e.g., visual, auditory, reading and writing, and kinesthetic³;
3. maximize their learning potential by offering more than one way of engaging with the material;
4. experience interactive rather than passive learning; and
5. engage in reflective thought.

Central to every *Four H's* Bible lesson is engagement with and reading from the Bible; therefore, each student needs: (1) his or her own copy of the

Figure 1. *The Four H Teaching Strategy Model*



History and Head knowledge are powerless without a Heart response, and a Heart response provides the impetus for Hand(s) to demonstrate and share a personal and committed relationship to Jesus.

Bible; (2) the opportunity to individually engage with and reflect upon God's Word according to his or her cognitive stage; and (3) time to interactively engage with and read God's Word.

Bible Lesson Preparation Using *The Four H Teaching Strategy*

A typical lesson plan is a written description of the academic content to be taught. It includes a detailed organizational structure of content, method for organizing the learning, the focus and desired outcomes, and supporting resources. A Bible lesson, using *The Four H Teaching Strategy*, includes all the above but becomes so much more because the lesson deals with eternal consequences.

In a typical Bible lesson plan, the Learning Procedure (or Lesson Plan) includes three main sections: Introduction, Development, and Conclusion. *The Four H Teaching Strategy* can be applied in all three sections of the Learning Procedure. For example: During the Bible lesson Introduction section, *History, Head, or Heart* phases can be utilized to hook students, or gain their attention. The next section, the Development of the lesson, incorporates the *Head* and *History* phases to provide the setting, essential background information, and a knowledge base for studying the Bible story or passage. Once the Bible knowledge base has been established and developed, spiritual engagement and a commitment response from the *Heart* phase become appropriate. Finally, during the Conclusion section of the lesson, the *Hand* and *Heart* phases can help the teacher initiate discussions about applying the story to the student's life and discovering ways to engage in personal outreach.

The Four H Teaching Strategy sample lesson plans, presented later in this article (Tables 2 and 3), demonstrate the implementation of the *Four H's* for different age groups. Table 1 outlines a sample of the variety of

Table 1. Examples of the Use of Sensory and Modality-based Learning in Bible Lessons	
1. Visual displays	Maps; artwork; Bible artifacts; videos; picture books; timelines; object lessons
2. Multisensory experiences	Touching thorns; feeling lambswool; holding sand; smelling perfume; making and tasting unleavened bread; imagining being a bystander in a Bible story and then describing the scene
3. Bible reading	Interactive; silent; choral; Readers Theater ⁴ ; paired reading; comparing texts from different Bible versions
4. Discussions	Listening to; participating in; cause-and-effect tables for biblical character actions; Think-Pair-Share ⁵ ; "What if. . .?";
5. Music	Making; listening to; composing; singing
6. Researching information	Internet; interviews; dialogues; Bible dictionary; Bible atlas; concordance
7. Reflective thinking ⁶	Journaling; quiet reflections; learning logs
8. Art and artistry	Painting; video production; diorama construction; 3-D creations; plays and dramas

sensory- and modality-based ideas available for teachers to utilize when planning *Four H's* interactive, multisensory, and modality-based Bible lessons.

The teacher can nurture, mentor, and guide as students encounter and experience the information presented during *History, Head, Heart, and Hand* components of the strategy. "As we help our kids to get inside the Bible, they will discover that it challenges and confronts many of their attitudes and actions."⁷

The Checklist for a Quality Bible Lesson

A lesson is only as good as the teacher who presents it. If it is meaningful for the teacher, then it will more likely be meaningful for the students. "Our job as Bible teachers is more than getting our students to understand what the Bible says about a par-

ticular issue; we must help them understand what God is saying to them personally."⁸

The Checklist for a Quality Bible Lesson (Box 2) seeks to assist the teacher in planning and teaching Bible lessons that help students to "understand what God is saying to them personally."⁹ Each part of a Bible lesson can be likened to a piece in a jigsaw puzzle. To see the complete picture, each piece is essential. The pieces in this Bible lesson jigsaw puzzle, and their role in the Bible lesson, are as follows:

1. The teacher's private devotions and prayer, a clear lesson focus, lesson outcomes, resources, and the learning context, which help to establish the spiritual direction of the Bible lesson;
2. The teaching approach and at-

Box 2. Checklist for a Quality Bible Lesson

- Prayer:** The divine power source for the lesson, teacher, and student.
- A clear and attainable lesson focus:** Shows where the lesson is headed and that the teacher has a clear goal in mind.
- Appropriate and achievable learning outcomes and indicators:** Describe what learning is to occur and how it will be achieved. The lesson is evaluated against these behavioral indicators.
- A variety of resources:** Adds variety and sensory input. Should be kept simple so as not to distract from the lesson.
- Learning context:** Indicates how the lesson fits into the “big picture” of the unit and how its concepts are built on prior learning.
- An active, multisensory learning approach:** Ensures that learning is participatory, engaging, and multisensory by using a variety of sensory modalities (touching, tasting, smelling, listening, and talking).
- Learning styles and Gardner’s Multiple Intelligences:** Accommodates different learning styles (e.g., visual, auditory, and kinaesthetic) and ensures learner participation.¹⁰
- The Bible reference:** Helps the students understand the context of the story in the Scriptures and gives them practice in navigating their way around the Bible.
- A lesson hook:** An active and engaging introduction to the lesson. A quick way to engage the students and arouse their interest in the lesson to ensure so that they become actively involved in the learning. If a revision step is needed from a previous lesson, the teacher should provide some motivation for learning before beginning this step.
- A learning procedure that includes *Introduction, Development, and Conclusion*:** Bloom’s Taxonomy encourages higher-order thinking skills since it provides a logical way to organize learning.¹¹
- The Four H Teaching Strategy:**
 - *History* – listening and discovering;
 - *Head* – learning and knowing;
 - *Heart* – loving and responding;
 - *Hand* – living and giving.
- An interactive reading of the Bible:** A meaningful reading of the biblical passage being studied that involves both the teacher and the students.
- Stimulating conclusion idea(s):** Restates the main points of the lesson and aids in evaluation of a student learning. This is the final “punch line” of the Bible lesson.
- The 3P Storytelling Technique to learn and practice when telling a story.**¹² Helps the teacher become a convincing storyteller who has not only memorized the story, but also shares the transcendent and loving God.
- Personal evaluation:** Occurs at the end of the lesson. The teacher celebrates what went well in the lesson, ascertains how effectively the lesson indicators were achieved, and identifies areas that need additional development.

tention to learning styles, which cater to individual student learning needs;

3. The Learning Procedure (or Lesson Plan), which outlines the proposed teaching process and the implementation of *The Four H Teaching Strategy*;

4. The storytelling outline, which provides evidence of a multisensory, modality-based, engaging, and planned instructional experience;

5. The conclusion section, which provides a time for reflection and personal application for all students; and

6. The teacher’s personal-evaluation section, which enables him or her to celebrate the positive aspects of the lesson while also determining the sections that need further development.

Reading a Bible story from the textbook is not the most dynamic way to engage students in the Bible lesson, so to encourage and assist teachers to become effective and engaging storytellers, the *3P Storytelling Technique*¹³ has been included in the Checklist. Sometimes, Bible stories are told without any reference to the Bible or any indication of where the story is located. To ensure that these two important Bible concepts are not overlooked, the Checklist includes an interactive Bible reading¹⁴ and the location of each Bible passage.

“Heart” Questions and Discussion Starters

The reflective questions in Box 3 can assist students to make the *Heart (loving and responding)* connection between the Bible lesson and its personal relevance and application. A simple “Yes/No” question can become a reflective question when “Why/Why not” is included (e.g., see Question 4 in Box 3). Some questions in the list are designed for personal and private reflection, while others may be supported by group reflections and interactions.

Box 3. Examples of *Heart* Questions and Discussion Starters

1. How would your life be different if you really took this passage seriously?¹⁵
2. Do you have a relationship with Jesus? If so, what does it mean to you?
3. Explain which character(s) in the Bible passage remind you of Jesus. Why?
4. Are you like/unlike any of the characters in the Bible passage we read today? Why/Why not?
5. What part(s) of this Bible passage demonstrate God's love? Why?
6. Ask yourself: "What is God saying to me through this passage?"¹⁶
7. What is the Good News for you in this Bible passage?
8. How will you respond to the spiritual truths that you have uncovered in this Bible passage? Why?
9. How can learning about people in the Bible help you to be more like Jesus?

Hand Questions and Discussion Starters

To assist teachers in applying the *Hand* phase (*living and giving*) of the *Four H's*, each question in Box 4 includes examples that could be implemented in a supportive classroom environment. Please note: These examples cover a range of cognitive stages, so check age-appropriateness before implementation.

History and *Head* Evaluation Ideas

The examples listed in Figure 2 demonstrate the variety of available interactive, multisensory activities that can be used to assess the information gained from the *History* (*lis-*

Box 4. Examples of *Hand* Questions and Discussion Starters

1. How can you share this special message and God's love with others?

Develop a list of ways to share the special message from the current Bible story about God's love in a kind way; role play non-confrontational interactions; create personal diary recordings of how you and your classmates have shared God's love with others; invite a non-Christian friend to Sabbath school or church.

2. How can you make your community (home, school, church, town) a better place? Why should you do this?

Organize students to share God's love in community-service programs and through engaging in social-justice issues: e.g., sharing random acts of kindness; mentoring a younger child; making cookies and delivering them to a homeless shelter with a Bible verse included; preparing a surprise "Thank You" party for the school janitors; volunteering at an animal shelter; assisting a fellow student who is physically or mentally challenged; preparing food parcels for the disadvantaged.

3. How might you explain and demonstrate God's love to a friend?

Discuss this question as a class, then divide into small groups to develop and record ways the students think would be appropriate to share God's love with a friend: e.g., explain what Jesus means to you on a personal level; give your friend a Bible if he or she doesn't have one and wants one; share a personal testimony or answered prayer). Discuss ways to do that, and then engage in experiences demonstrating God's love (e.g., being respectful of someone's personal opinion, listening without being judgmental, choosing to participate in unselfish service opportunities).

4. Why is it important to learn about Bible people and their stories?

Discuss the impact of Bible stories for 21st-century students by researching the consequences of King David's involvement with

Bathsheba—particularly highlighting the effects of his actions on his descendants; research the results of Ruth's faithfulness on her descendants; compare a well-known current local "hero" and his or her lifestyle choices with those of a Bible character.

5. What is the difference between "being" and "acting like" a Christian?

Ask the students to form small groups and discuss the role of social media in influencing personal Christianity; discuss with students how to develop Christian discernment; with student collaboration, create a set of media-viewing guidelines for Christians: e.g., Internet sites, videos, films, video games, etc.

6. What is your role in the Cosmic Conflict?

Create a collage of all the events in the newspaper for one day that illustrate the Cosmic Conflict; identify how the Cosmic Conflict is evident in the classroom; brainstorm ways the class can witness to their peers about the Cosmic Conflict.

7. Explore some community activities in which you could become involved in order to share the Good News in practical ways.

Construct a list of activities in which the class can collaborate to share the Good News in the neighborhood and then follow through with these ideas: e.g., raise money for a local charity; collect religious library books for a needy Christian school; prepare get-well cards with a Bible promise written inside and deliver them to the local hospital.

8. Explain why you think this story is in the Bible.

Use the sensory modalities to answer this reflection through music, art, drama, writing, poetry, etc., and perform the production at a school assembly, the local church, a retirement village, a preschool, a local fair, etc.

Figure 2. Examples of *History* and *Head* Evaluation Ideas

1. **True or False Quiz:** Students create questions based on the story and place them in a box. One child is chosen to draw a question from the box and read it to the rest of the class. The person who answers the question correctly then chooses and reads the next question from the box.
2. **What/Who am I?** A student chooses a character from the Bible story in the lesson and gives clues that help his or her classmates guess who is being represented.
3. **Stump the Expert:** One at a time, the students ask an “expert” (a child chosen from the class) questions about the Bible passage/story until he or she is stumped, after which the questioner takes the place of the “expert.”
4. **Place the objects in the correct order:** Students arrange the Bible objects in the sequence in which they occurred/appeared in the story.
5. **Round Robin¹⁷ Story:** While seated in a circle, the students re-create the Bible story, one sentence at a time. The first person introduces the story with a single sentence, after which the person to his or her right adds another sentence, and so on, going around the circle as many times as necessary until the story is completed.
6. **Drama:** Students dramatize a portion of the Bible story, after which their classmates guess what section they have portrayed.
7. **Sing or create a song:** Students sing or create a song on the topic of the day’s Bible lesson.
8. **Puzzle:** Students design a word/picture puzzle about the Bible passage.
9. **Interview:** Two students are selected, one to act as an interviewer, the other as the Bible character.
10. **Story cube:** Write the main ideas of the Bible passage on the sides of a cube¹⁸ and ask each student, in turn, to roll the cube and tell what happened before or after the main idea on the face of the cube facing him or her.
11. **Place the Bible character(s) on a timeline:** Draw a timeline on butcher paper (teacher) and post it at the front of the classroom. Ask the students to place the characters from the current Bible passage in the correct right timeslot. This can be a cumulative activity that continues throughout the year.
12. **Find the town/country/city:** Each student has access to a world map or Bible lands map. Challenge them to see who can find a specified town, city, or country first as you call out the name. The winner chooses the next location.
13. **Incorporate De Bono’s six thinking hats¹⁹:** Use the six thinking hats to analyze and discuss an issue raised in a Bible story (e.g., Matthew 21:12, Jesus turning over the money tables in the temple).

tening and discovering) and *Head* (learning and knowing) phases of the Bible lesson.

Introduction to Sample Bible Lesson Plans²⁰

The lesson plans in Tables 2 and 3 demonstrate how the *Checklist for a Quality Bible Lesson* can be applied.

A Sample Bible Lesson Plan for Ages 4 to 6 (see page 22)

This lesson uses the parable of the

lost sheep to explore with young children the concept of God’s love as represented by Jesus as the Good Shepherd. The lesson uses the analogy of the child being like the sheep in the story and Jesus as the Good Shepherd (the word Farmer is often used as well, since many shepherds were also farmers) who loves all His sheep and cares for them.

Suggestions for Planning a Lesson for This Age Group:

- Because children 4 to 6 years of age are concrete thinkers and have a limited vocabulary, explain everything simply and at the concrete level using modality-based and sensory learning resources;
 - Keep the Bible story engaging, simple, graphic, fast-moving, and short, as this age group has a limited attention span;
 - Because most children don’t live in an agrarian society, the relationship between shepherd and sheep needs to be explored through multisensory experiences;
 - Give the children time to respond to the story, in their own way, by using multisensory resources to help them “wonder about” and retell the story;
 - Provide each child with an easy-to-read Bible so he or she can interactively read the story with the teacher.

A Sample Bible Lesson Plan for Students Ages 12 +

The second lesson plan (see Table 3 on page 23) explores the Old Testament Book of Amos and was prepared for students age 12 and above. It employs the same concept of interactive and multimodality-based learning as in Example 1 (Table 2), but the learning level is more advanced, with greater academic and reflective requirements, an increasing complexity of tasks, and different age-appropriate learning-outcome expectations.

Tips for Planning a Lesson for Students Ages 12+:

1. If students are going to be able to explain why they believe what they believe and give a reason for their faith, then it is vital to include reflective thought opportunities, through the inclusion of WHY questions, at this stage of cognition and faith formation;
2. Small-group discussions and an understanding of the relevance of Bible study will empower students to (1) stay engaged and on task and (2) become reflective thinkers;
3. As students mature through this

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Table 2. A Sample Bible Lesson Plan for Ages 4 to 6

A BIBLE LESSON PLAN (30 MINUTES)

Learning Focus:	Jesus loves me and cares for me just as a farmer/shepherd looks after and cares for his sheep.		
Outcome:	The student appreciates Bible stories portraying aspects of God's character and redemptive action.		
Indicators:	<p>At the end of this lesson, each student will be encouraged to:</p> <ul style="list-style-type: none"> • Express personal views about the actions of a Bible character (<i>Head</i>); • Attempt to read Bible stories in a suitable publication (<i>History</i>); • Outline the main events in the parable of the Good Shepherd (<i>Head</i>); • Discuss the spiritual concept that Jesus wants to look after us because He loves us (<i>Heart</i>); and • Apply the spiritual concept by discussing how he or she will share this story with friends (<i>Hand</i>). 		
Learning Context:	This lesson is another in a series of Bible lessons illustrating stories Jesus told about God's love in terms a young child can comprehend.		
Learning Resources:	1. Bible 2. Jigsaw puzzle	3. Box for soft toy 4. Soft toy—lamb, shepherd puppet	5. Bible storybook: "Where's the Lost Sheep?" ²¹

LEARNING PROCEDURE

Introduction:

3 minutes

Displaying/Questioning

- Pray.
- After hiding one piece of a jigsaw puzzle somewhere in the classroom, hand out the rest of the pieces to the members of the class, and ask them to assemble the puzzle. When they discover that one piece is missing, have them search for it. After they find the missing piece, discuss briefly how this relates to the story in today's lesson.
- Say: "At the end of today's story, we'll see if you can tell what animal went missing in the story."

DEVELOPMENT

11 minutes

Narrating/Explaining (*History*)

Narrate the story from the farmer's/shepherd's perspective using the props at the appropriate time.

Orientation	<ul style="list-style-type: none"> • Jesus, seated on a hill, tells a story; • Farm yard and sheep; • Farmer/shepherd looks after the sheep;
Complication	<ul style="list-style-type: none"> • Farmer/shepherd takes sheep to a new field; • One sheep goes missing;
Resolution	<ul style="list-style-type: none"> • Farmer/shepherd looks for lost sheep; • Farmer/shepherd finds sheep;
Conclusion	<ul style="list-style-type: none"> • Farmer/shepherd takes lost sheep back to the field.

5 minutes	<p>Questioning/Discussing (Heart)</p> <ul style="list-style-type: none"> • In the story, what animal went missing? • Who went to find it? • Have you ever been lost? • How did you feel when you were lost? • Who went to find you? • Why did they look for you? • Jesus is like our parents and the farmer/shepherd in the story because He loves us and wants to look after us. • Teacher sings: “Jesus Is the Shepherd”²² Jesus is the shepherd. Guess who I am? Such a lovely secret I’m His little lamb. • Let us bow our heads and say, “Thank You” to Jesus for loving us.
7 minutes	<p>Directing and Interacting</p> <ul style="list-style-type: none"> • Interactively read the story from the Bible (Luke 15:4-6) (<i>History</i>). • As they read the story, ask the students to look for several words (e.g., farmer, Jesus, sheep, shepherd) in their Bible that have been written on cards and given to various class members. Every time his or her word is read, the child holds up the appropriate card. • A child retells the story using the soft toy (<i>Head</i>). • One child will act out the story of being lost, and another child looks for the lost classmate (<i>Head</i>).
CONCLUSION	
4 minutes	<p>Displaying/Discussing/Sharing/Questioning</p> <ul style="list-style-type: none"> • Read an interactive book about the lost sheep (<i>History</i>). • Ask: “How can you share this Bible story with your friends?” (<i>Hand</i>). • Students and teacher sing together, “Jesus Is the Shepherd” (<i>Heart</i>).

Table 3. A Sample Bible Lesson Plan for Students Ages 12+

A BIBLE LESSON PLAN FOR STUDENTS AGES 12+ (55 MINUTES)²³	
Learning Focus:	What does the Old Testament prophet Amos have to say that is relevant for people living in the 21st century?
Outcome:	The student explains how the Bible passages in Amos illustrate God’s yearning for His children to choose Him and live.
Indicators:	<p>At the end of this lesson, each student will be encouraged to:</p> <ul style="list-style-type: none"> • Express personal views regarding the Book of Amos and its main theme (<i>Head</i>); • Read a Bible passage in a suitable publication (<i>History</i>); • Outline the main points of the story of Amos (<i>Head</i>); • Discuss the spiritual concept that God gives us the choice to respond to or reject His love (<i>Heart</i>); and • Participate in a discussion regarding the relevance of this story for today’s society (<i>Hand</i>).

Continued on next page

Learning Context:	This lesson is another in a series of Bible lessons discussing our relationship with God and our role in the Cosmic Conflict, especially the role of decisions and their consequences.
Learning Resources:	<ul style="list-style-type: none"> • Bible, Bible atlas, Bible commentary, Bible dictionary • YouTube video: <i>The Choices We Make</i>: https://www.youtube.com/watch?v=8aoOAXqX6tA • Internet for researching the story of Amos (if available)
LEARNING PROCEDURE	
Introduction:	
3 minutes	Displaying/Questioning <ul style="list-style-type: none"> • Pray. • Play video clip (56 seconds): <i>The Choices We Make</i>. • Say: Which Old Testament minor prophet encouraged the Israelites to “Seek the LORD and live”? (Amos 5:6, NIV).²⁴ Discuss responses (<i>History, Head</i>).
DEVELOPMENT	
10 minutes	Directing/Researching/Sharing <ul style="list-style-type: none"> • Divide the class into four-person Jigsaw Groups to research background information on the prophet Amos (<i>History</i>).²⁵ Students are to report their findings to their group. Use the Internet and Bible resources to assist the students in their discovery learning. • <i>Expert Group 1: What is the physical setting and location for this Bible prophet and his story?</i> • <i>Expert Group 2: What was the Old Testament time frame for this prophet?</i> • <i>Expert Group 3: Who was prophesying to God’s people at the same time?</i> • <i>Expert Group 4: Describe what this prophet looked like and his heritage, and give Bible references to validate your description.</i>
20 minutes	Questioning/Discussing/Reading/Displaying <ul style="list-style-type: none"> • What is the message Amos was giving to the people of Israel? <p>Ask each group to read and summarize the main theme of their allocated chapter (Chapters 4, 5, 6, 7, 8, and 9) (<i>History</i>).</p> <ul style="list-style-type: none"> • Discuss each chapter theme with the entire class. List the recurring issues. What do you notice? Why did this occur? (<i>Head</i>). • Discuss: Do you hear pity or anger as Amos proclaims his prophecy? Verify your response from the Bible (<i>Head</i>). • Display: The chiasmic structure (mirror structure), an ancient literary pattern used in the Book of Amos demonstrates that at the heart of Amos’ prophecy is not a message of doom but one of hope²⁶ (<i>History</i>).
12 minutes	Discussing <ul style="list-style-type: none"> • Discuss in groups of two: “Divine threatenings are really conditional prophecies, their fulfillment or nonfulfillment being conditioned by our wrong or right action.”²⁷ How do you react to this quote? Why? Read Amos 9:11-15 (<i>Heart</i>). • How relevant is Amos’ appeal for us today? What have you learned from this prophet? How would you feel if you were referred to as someone who oppressed the poor and crushed the needy (Amos 4:1)? (<i>Heart, Hand</i>).

CONCLUSION

10 minutes

Displaying /Discussing/Questioning

- Divide the class into groups. Give each group a different-colored De Bono hat to discuss the statement and then complete the chart.²⁸ “The values and principles found in the Bible are relevant not only to their original audiences, but to us today”²⁹ (*History, Head, Heart, Hand*); OR ask:
- How do we make a decision to have a personal relationship with Jesus? Discuss (*Heart*); OR ask:
- How can we be like Amos in the 21st century? Discuss and then list results in a Discussion Web³⁰ (*Hand*).
- Silently and prayerfully consider this statement: “God does not force the will or judgment of any. He takes no pleasure in a slavish obedience. He desires that the creatures of his hands shall love him because he is worthy of love. He would have them obey him because they have an intelligent appreciation of his wisdom, justice, and benevolence”³¹ (*Heart*).

Continued from page 21

stage, there should be less teacher talk and more allocated time for student discovery learning, sharing, and wondering;

4. Because learning lacks meaning and purpose until applied, this age group requires real-life opportunities to share their faith through a variety of interactions, both inside and outside the classroom.

Conclusion

Teaching Bible lessons in the 21st century can be both daunting and challenging. Sometimes it seems that Adventist educators have an overwhelming responsibility, but we can call on supernatural help. Jeremiah 33:3 reminds teachers, “Call to me and I will answer you and tell you great and unsearchable things you do not know” (NIV).

If the next generation of young people is to embrace Christ as their personal Savior, they must, from infancy, have learned to know and love the Scriptures. By providing and engaging in an active multisensory, modality-based learning environment (*The Four H Teaching Strategy*), as described in this article, teachers can be assisted in their goal to introduce students, of all ages, to Jesus as their Friend, Guide, and Savior.

More than 100 years ago, Adventist teachers were reminded that: “The teaching of the Bible should have our freshest thought, our best methods,

and our most earnest effort.”³² This statement and its aim are still relevant and crucial in the 21st century, but we cannot rely on the previous generation’s methodology to reach contemporary students. Today’s young people and children live in a constantly changing society; have unique lifestyle issues, and experience the world differently from previous generations. So Adventist teachers have been admonished to constantly seek for the “best methods” and ideas to meet these contemporary challenges while also ensuring that Bible teaching “has our freshest thought.” Students will see that Bible teaching is relevant, appropriate, and meaningful for all age groups and learning abilities when it engages the teacher’s “most earnest effort.” God has asked teachers to sow the seed. He has promised that He will look after the harvest.

Finally, it is the goal and prayer of the author that both student and teacher will have a transformational encounter with Jesus as they interactively study the Bible together through the multisensory experiential environment of *The Four H Teaching Strategy*. ✍

This article has been peer reviewed.



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with permission from the publisher and author. For more information about the book, see <http://avondaleaustralia.spiffystores.com/collections/books>.

NOTES AND REFERENCES

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In 2014, the North American Division (NAD) unveiled its new science series for grades 1 through 8, *ByDesign: A Journey to Excellence Through Science*.¹

The inquiry model on which the curriculum is based requires significant changes in the way science has been taught in Adventist schools in the NAD. Students will be immersed in the study of Creation, grounded in the biblical foundations of the Adventist worldview, and have daily opportunities to explore science, health, and nature through active learning.

With this in mind, we have prepared this article. Based on our more than two decades of experience teaching science and science methods (RLD), and reading and literacy intervention skills (TO), we strongly believe that literacy-instruction strategies, effectively applied, can enhance com-

Using Literacy Support Strategies to Enhance Reading Comprehension in Science

prehension and complement the learning experience. Adventist educators are familiar with Ellen White's inspirational words: "It is the work of true education to develop this power [to think and to do], to train the young people to be thinkers, and not mere reflectors of other people's thought."² For far too long and in too many schools, science has been taught using some version of the following sequence: Students read from the

textbook, complete worksheets, take quizzes and tests, and only occasionally participate in hands-on activities. Using this common method does not train our students for inquiry, nor does it enhance engagement or foster true learning, due to the lack of opportunity for students to actively interact with content and grapple with concepts.

In order to enhance the likelihood that students will learn

BY R. LEE DAVIDSON and TAMMY OVERSTREET

more about science and how to think deeply, the new textbooks have integrated several features into the text. One that I (RLD) want to highlight is the integration of faith and biblical principles. Most sections have some aspect of our faith included. It is important that teachers incorporate these when working with their students. If teachers ignore these, the students will view them as unimportant.

The new textbooks are built around the concept of inquiry. According to the National Research Council (NRC): “Inquiry is a multifaceted activity that involves making observations; posing questions; examining books and other sources of information to see what is already known; planning investigations; reviewing what is already known in the light of experimental evidence; using tools to gather, analyze, and interpret data; proposing answers, explanations, and predictions; and communicating the results. Inquiry requires identification of assumptions, use of critical and logical thinking, and consideration of alternative explanations.”³ While this is true of science, we shouldn’t limit these skills to this subject matter. Every aspect of life—including spiritual life—needs to be inquiry based, and teachers need to model these skills throughout the curriculum.

Within every unit of study in each grade level, the *ByDesign* curriculum incorporates many activities, such as structured and guided inquiry Explore-a-Labs, that lead students to ask questions and engage in critical thinking. For example, the 1st-grade textbook includes a structured inquiry Explore-a-Lab that poses this question: “What gives a ball more speed?” (p. 272). The lab instructions are as follows:

“Roll a ball across the room. Use a stopwatch to measure the time it takes. Measure the distance traveled. Roll the ball at different speeds from the same spot each time. Record the time it takes.”⁴

During and after this lab, the teacher can dialogue with students about their experience and use this knowledge to help them enhance their understanding of classroom and textbook instruction.

A guided inquiry Explore-a-Lab entitled, “How Does Your Brain Perceive Moving Images Viewed Through a Vertical Slit?” (p. 146) from the 6th-grade textbook proceeds as follows:

“Using a knife, carefully cut a slit in the cap of a mailing tube 2.5 cm (1 in.) long and 3 mm (0.1 in.) wide. Replace the cap. Hold the tube so the slit is vertical. Close one eye and look through the open end of the tube. Keeping the body still, sweep the tube in an arc while looking through the slit. Try again at a different speed. What do you see? How does this activity explain how moving pictures work?”⁵

While space constraints do not allow us to reproduce the more complex activities included throughout the *ByDesign* series, these two short examples provide a glimpse into its approach to inquiry learning.

At first, this approach may seem intimidating to the teacher, as students may ask questions for which he or she does not know the answers. It may seem much safer to stick

to the book so everyone has a reference for the “right” answers. However, when the teacher sees himself or herself as an inquirer rather than the source of all “right” answers, science can become very enjoyable, as students and teachers work together to find answers to their own questions, driven by natural curiosity. When teachers model this approach for their students, it becomes a very powerful example of learning through discovery

With inquiry activities being an integral component of this program, readers may wonder if the textbooks are still necessary. While over-reliance on the textbooks is ineffective, the body of scientific knowledge contained in textbooks provides foundational knowledge that the students need to know. To truly discuss and understand science, the students must begin using the vocabulary of science. This article discusses methods for helping students understand—not just memorize—the scientific concepts presented in the textbook and reinforced by the activities. The ability to learn from a textbook is crucial for student success, especially as they proceed into high school and college. While teachers may be tempted to focus on the many activities in the *ByDesign* books, they should also help their students learn from their textbooks and improve their reading skills.

Why Do Students Need Literacy Support in Science?

Sometimes teachers fail to realize how vocabulary-intensive many science textbooks are. Yager⁶ found that the number of new vocabulary terms presented in secondary science textbooks is higher than that recommended for junior high and high school foreign-language classes. The *ByDesign* textbooks do not approach this level of vocabulary density, but they still have a significant vocabulary load. The 6th-grade *ByDesign* textbook, for example, has approximately 360 vocabulary words that are to be explicitly taught and many other words within the text that students likely may not know. Similarly, there may be many spiritual concepts in the text that are unfamiliar to students. Teachers have a crucial responsibility to skillfully use formative feedback and assessment⁷ to ensure that students truly understand what is being taught.

With the high concentration of vocabulary words in textbooks, teachers may be tempted to have students create vocabulary cards and then memorize the definitions or even complete worksheets containing questions at very low levels of thinking. While this method may be efficient in the short term for rote regurgitation of facts on tests or quizzes, it does not ensure that students understand the concepts or retain the words in long-term memory. In this article, we present methods designed to go beyond memorization to ensure understanding. We also urge that the teachers’ manuals be examined, as they provide many different ideas on how to approach the text material. The methods described below are not limited to the *ByDesign* textbook program but may be used in any subject containing extensive vocabulary.

Strategies to Enhance Comprehension of Science Textbooks

Strategies abound for improving reading comprehension in content-area reading.⁸ Some strategies that we have found suc-

successful at the K-12 levels are: concept mapping, SQ3R, selective underlining, and using quick writes with academic word walls.

Concept Mapping

Concept mapping,⁹ a visual content-area reading strategy, requires students to grapple with the relationships between the various aspects of the topic of study. (The concept map in Figure 1 uses terms from a *ByDesign* unit, but this strategy can be used in any content area.) Concept maps, as well as other techniques explored in this article, provide scaffolding for individual students to construct their own meaning based on

in groups, they increase the connections between facts, which enables them to better synthesize and hold ideas in long-term memory due to the increased number of connections or links to previous knowledge. Third, creating a concept map requires students to interact with content and learn at many of the different levels of Bloom's Taxonomy.¹¹ This type of learning activity leads to higher levels of thinking, stimulating students to go beyond simply remembering and understanding to engage in analyzing, evaluating, and creating.

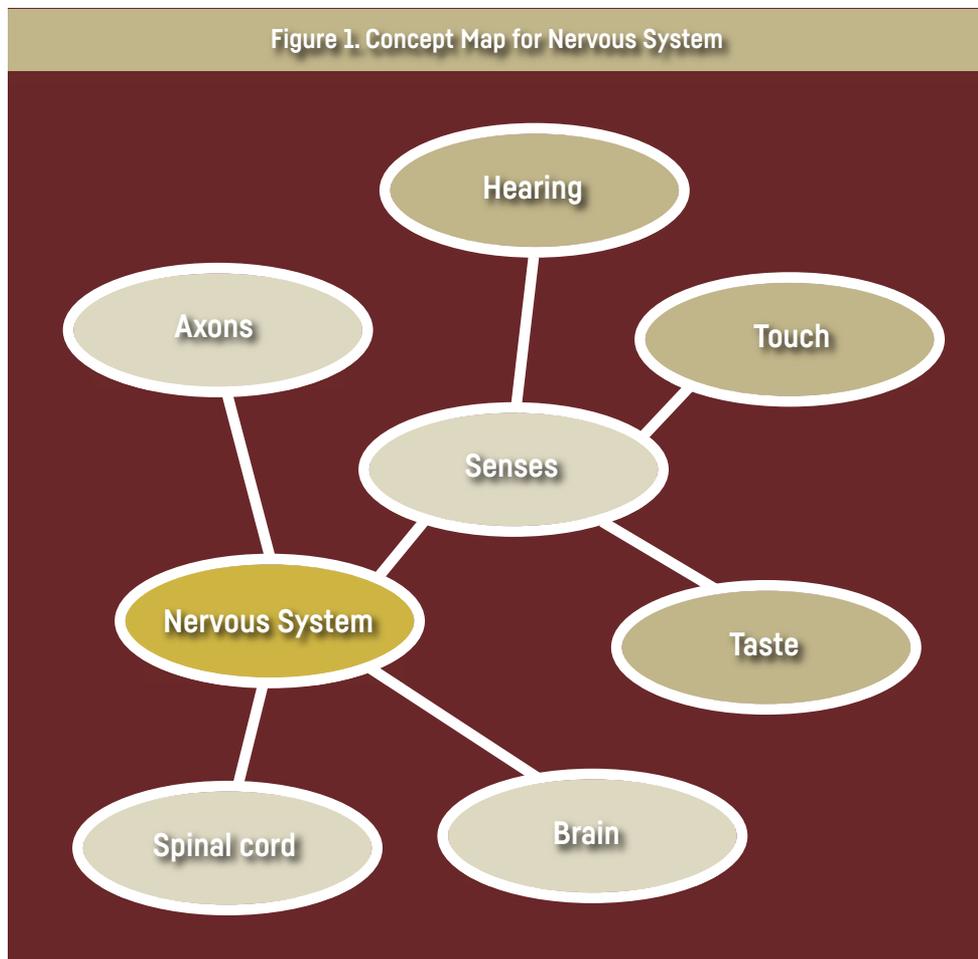
Another advantage of creating concept maps is that areas requiring further teaching and review will be more readily identified by teachers and students. When students are asked to create the maps without using their textbooks or other resources, gaps in understanding will be visible. This formative assessment task leads to true understanding and enhanced results on summative assessments, and serves as an important reminder that not all assessment must lead to a grade. One of the benefits of this approach: It gives the students sufficient time to master the subject without penalizing them if they do not master it as rapidly as their classmates. (See <http://www.edweek.org/ew/articles/2015/11/11/should-formative-assessments-be-graded.html> for more information on the disadvantages of grading formative work.)

SQ3R

Another useful method for increasing student comprehension in content area reading is SQ3R, an acronym that represents the following learning sequence: *Survey, Question, Read,*

Recite, Review. In the first step, *Survey*, students inspect the chapter by viewing the titles, headings, picture captions, and graphs to get an idea what they will be studying. This can help students start a mental or actual concept map, which they complete during subsequent steps. The next step is *Questioning*. Students generate questions about the chapter. For optimal learning, students must be able to create good questions, yet many of them find this difficult. Many resources are available to enable teachers to help students learn how to question. For example, The Right Question Institute¹² is a good source of information on how to formulate questions. When students can create good questions about the topic under study, they are ready for the next step. Returning to the earlier example of a concept map created from words in a *ByDesign*

Figure 1. Concept Map for Nervous System



their prior knowledge and understanding of current texts and content. Each student in a class may create significantly different concept maps than his or her peers, but each map, whether created individually or collaboratively with peers, will enable students to construct knowledge. Teachers should ask students to explain how they made their connections, since this process leads to deeper and more refined understandings.

Concept maps are useful in several ways. Based upon the learning theory called constructivism,¹⁰ concept maps build upon the principle that memorization of individual, unconnected facts does not increase understanding; instead, new learning must be connected to previous knowledge about which students have gained a thorough understanding. Second, as students create concept maps either individually or

unit on the nervous system, a teacher might conclude that students are ready to read if they formulate questions such as “What do axons do in the nervous system?”

The next steps in the SQ3R sequence are *Read*, *Recite*, and *Review*. In the *Read* step, students look for answers to the questions they formed after surveying. Students must be taught to set different purposes when reading nonfiction, like their science textbooks. They should read this type of text carefully, monitoring their comprehension and stopping to reread if they have difficulty understanding the content. In the *Recite* step, ask students to say aloud or write the answers to the questions they generated earlier. Remind them to use their own words to answer the questions and to check their answers against their notes for accuracy.

The final step, *Review*, constitutes an ongoing process. After each section, the students are asked to consider how their reading connects to what they previously knew. They can reread notes they have taken, revisit headings to see if they can still summarize what they learned in that section, and add to ongoing concept mapping.¹³ When I (TO) taught this to my students a few years ago, they complained that it was too much work. But several came back a few years later and told me they were glad they had learned it because it really worked.

Selective Underlining

Often, students are prohibited from underlining in textbooks because the books will be reused in subsequent years. However, selective underlining,¹⁴ a process in which the reader underlines or highlights elements of the text that are crucial to understanding, can aid the learning process. Photocopying and distributing some pages from a textbook allows students to practice this technique without reducing the value of the textbook for subsequent students. Another option is to have the students use the highlighter in the electronic version of the *ByDesign* textbook.

To increase the effectiveness of this method, teachers should vary what they ask students to underline. Students can underline (1) the topic sentence of each paragraph; (2) vocabulary words, along with their in-context definitions; (3) ideas about which they would like to know more; or even (4) each concept from which they can draw a spiritual lesson.

This method can be augmented by using different colors of highlighter for varying purposes. For example, students might use one color highlighter for topic sentences and another for important vocabulary words. When I (TO) last read the book *Education*, I highlighted with green all the references to nature. This technique helps students learn that their underlining should be targeted to text that specifically needs attention. Stu-

dents who are not taught this skill will often underline too much material, negating the effectiveness of this strategy.

Another option for using this technique could be used in schools where each student has a tablet or laptop. Various applications,¹⁵ such as iAnnotate or PDF Max, allow students to create notes and to highlight PDFs.

Academic Word Walls and Quick Writes

Many elementary teachers have used *academic word walls* and *quick writes* in content-area teaching. An academic word wall (AWW) is different from the word walls typically seen in elementary classrooms, which usually contain high-frequency

words.¹⁶ AWWs are collections of content vocabulary words placed on the wall of the classroom. These words are used to preview, practice, and review vocabulary, thereby providing the students with many opportunities for meaningful exposures to the words.

A *quick write*¹⁷ is a brief writing sample created in response to reading or instruction. Teachers using this strategy ask their students to respond to a prompt for a short period of time, usually less than 10 minutes. Quick writes allow students to think critically while manipulating content and vocabulary and organiz-

ing their learning in meaningful ways. Reading students' quick writes helps the teacher assess their synthesis of learning and understanding of key concepts.

Here is a recommended sequence of instruction for using an academic word wall with the second chapter of the 7th-grade *ByDesign* textbook.¹⁸ First, make cards for the vocabulary words for each lesson in the chapter, being sure that the cards are large enough to be seen from every student's desk. Different-colored cards could also be used to include spiritual lessons from the chapter. (Make only one set of cards. The students do not create cards at this point.) Write the words from each chapter section using a different color marker or a different color paper/cardstock. The cards for the five lessons from Chapter 2 might include the following vocabulary words:

Lesson 1: *symmetry, bilateral symmetry, radial symmetry, and asymmetry.*

Lesson 2: *sponge, spongin, regeneration, cnidarian, and annelid.*

Lesson 3: *mollusk, mantle, radula, bivalve, echinoderm, endoskeleton, water-vascular system, and tube foot, Proverbs 6:6-9: sluggard.*

Lesson 4: *arthropod, exoskeleton, antenna, molt, complete metamorphosis, and incomplete metamorphosis.*

Lesson 5: *ocelli, compound eye, olfaction, pheromone, and chromatophore.*

Before teaching Lesson 1, post its vocabulary words on the

Asking the Right Questions.

Teaching students to ask the right questions is beneficial in all areas of life, including religion. We want students to be able to ask good questions about their beliefs. Only by doing this can the beliefs become theirs and not just of those of their parents or the teacher.

academic word wall. Introduce the words to the students, pronouncing each word and asking the students to repeat them. Tell the students to pay careful attention to these words since they will see them in the upcoming lesson. While teaching Lesson 1, refer to the academic word wall when each vocabulary word appears in the lesson. At the completion of Lesson 1, ask the students to close their textbooks and take out a sheet of paper to do a quick write. Instruct them to write as much as they can remember about the lesson, using as many words from the academic word wall as possible. A typical amount of time for a quick write would be three to five minutes; however, let the students' developmental level guide you when choosing the appropriate time for this task.

At the end of the allotted time, collect the quick writes and read them later in the day. Recognizing the value of this activity as a formative assessment, many teachers choose to give students a standard number of points for completing the assignment, or give points for completion of specific parameters, such as the number of sentences or number of vocabulary words used. This activity enables students to solidify their understanding of the lesson's concepts through manipulation of the vocabulary in a non-threatening setting. Before the next day's lesson, choose a few quick writes that adequately synthesized the lesson's content to share with the class.

Before science class the following day, review the vocabulary words by reading the words on the academic word wall for that lesson with the students. Next, read the chosen quick writes aloud, noting that you selected them because they provide a good review of the lesson's content. Often, students who did not fully understand the lesson will greatly benefit from hearing its concepts explained in the words of a peer. (Since some adolescents would prefer not to receive public recognition, teachers may choose not to identify the writers of those quick writes they read aloud.)

Each day, repeat the paired use of the academic word wall with quick writes. As summative assessment time approaches, ask the students to do a comprehensive quick write using as many words as possible from all lessons to review what they have learned.

Teachers could also ask students to use the words from the academic word wall in their science journal assignments. Incorporating important vocabulary into their writing about inquiry activities will enhance the usefulness of this important tool.

porating important vocabulary into their writing about inquiry activities will enhance the usefulness of this important tool.

Ensure Successful Strategy Use Through Modeling

The strategies for increasing students' comprehension of science curriculum and other content-area reading introduced in this article, as well as the many other strategies, are taught best through *modeling* along with *teacher think-alouds*. In order to help make thinking and strategy use explicit, use a document camera to project written or electronic text while teaching the various skills and modeling how to use them. Too often, teachers ask students to try something they have never tried themselves and/or have not demonstrated in class.

When teachers illustrate and describe how to use a particular method and show how a strategy can be useful for increasing learning, students will be much more likely to master and use that skill. Narrative text is often easier for readers to understand, so stories are a schema that can be used from very early childhood. However, the processes that enable readers to understand nonfiction text like the *ByDesign Science* textbooks are often more difficult for readers to grasp, making the teacher's role in helping develop those skills and processes more crucial.²⁰

Conclusion

While science teaching should be inquiry-based at both the elementary and secondary levels, textbooks and other text-based materials are still an important part of the learning process. Each of the methods included in this article offers an important tool for a teacher's instructional practice and for the student's strategy toolbox. Teachers should ensure that each method is taught and

its use scaffolded until the students can use it with ease and success. However, over time, teaching several methods offers greater likelihood of success, as each student will naturally prefer and learn more using one method than another.

We have had success with each of these methods with students at many grade levels. As they became more proficient in strategy usage, our students' comprehension increased, and their ability to use their textbooks as tools for learning and inquiry improved. Observing as students articulate complex science concepts with appropriate vocabulary while participating in meaningful inquiry with *ByDesign* materials and texts will

Helpful Suggestions for Selective Underlining

The Pilot FriXion™ pen,¹⁹ available at many stores or on Amazon.com, uses the friction from the motion of erasing to generate heat that causes the highlighter ink to disappear, leaving no marks or eraser dust. Use of this device might alleviate the concern of highlighting within the actual textbook and will eliminate the need to make multiple copies of the text for underlining practice. While the pen should be tested for use before implementation with new textbooks, it could prove useful and highly engaging for students.

make it clear that teaching them how to use these strategies was worthwhile. Furthermore, these strategies will also benefit students as they read textbooks from other subjects. Teachers will need to recognize that some methods take longer for students to fully understand and to acquire the benefits. However, teaching students to successfully learn from textbooks can be rewarding, not only in the class where these methods are taught, but also when students move on to higher grades or to college and report how crucial those study skills have been to their academic success. Further, in a world where science is often taught with worldviews that are antagonistic to Adventist beliefs, improving students' ability to read with high levels of comprehension and to inquire and think deeply in all they learn is an aspect of education that we must address. ✍

This article has been peer reviewed.



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SUMMER BRIDGE

Helping Prospective College Students Build Bridges to Success

For the past four summers, Southwestern Adventist University (SWAU) in Keene, Texas, has offered a “summer bridge program,” an intensive three-week session designed to help at-risk students prepare for college.

Summer bridge programs have become increasingly numerous and important across the United States, as a growing number of students are applying for college without having adequate college-level skills in key areas, especially reading, writing, and math.¹ At SWAU, the Admissions Committee (composed of the vice-president for academic administration, the vice-presi-

dent for enrollment, the director of admissions, and several faculty and staff members) selects students to invite to the Summer Bridge program and grants them admission for the fall semester on the condition that they participate in three weeks of planned activities.² All invited students meet one, but

not both, of the two academic entrance requirements for regular admission (GPA and SAT/ACT scores).³ The program focuses on helping the students close the gap between their current skills and the skills necessary to do well in non-remedial college classes. The participating students also receive one unit of academic credit (in kinesiology) for the three-week program.⁴

A Description of the SWAU Summer Bridge Program

The program has four primary classroom instructors: one each for reading, writing, math, and study

BY RENARD DONESKEY and JAYNE ANN DONESKEY



Summer Bridge students visit the Fossil Rim Wildlife Center in Glen Rose, Texas, where more than 1,000 animals and 60 different species make their home.

skills. These instructors are regular SWAU faculty members who have a separate summer contract for working with the program. Amy Rosenthal, vice president for academic administration, noted that “Faculty are chosen based on the discipline and their interest in remediation. One of the strengths of the program has been the consistent participation of the original group of faculty and staff, which has allowed us to reflect on and adjust program components in an effective way.”⁵ Others involved in the program include a coordinator for reading and writing, student tutors/mentors for both the English and the math components, support staff from the Center for Academic Success and Advising (CASA) and other volunteers who assist in workshops and field trips, comprising a total of approximately 13 people working in the program. This

number has remained stable for the three years of the program, with consistent participation by the same classroom instructors and support staff.

Modeled after the wholistic approach that has proved successful in other summer bridge programs, the SWAU summer bridge program is designed to engage participants in all aspects of a successful college experience.⁶ The students, even those living close to campus, are required to live in the dorms and become a part of the campus life. In addition to courses that help them build academic skills in math, reading, and writing, students learn much more: how to study for college-level exams, how to eliminate test anxiety, and how to pay for college (through financial advising), and how to form friendships and build connections to faculty members, staff, and administrators. In other words, the students’ ability to learn new material in college is placed within a social realm—they learn in groups, in classes, with friends, and from others such as

peers or student mentors, as well as from teachers.

Summer Bridge Program Based in Social Constructivist Theory

The interactions incorporated in the summer bridge program are grounded in a social constructivist model of learning, a wholistic approach derived from the theories of the Russian developmental psychologist Lev Vygotsky, who said that the best learning is constructed by groups of learners in socio-cultural environments.⁷ Vygotsky theorized that optimum learning happens when people work together in groups on meaningful tasks. A constructivist approach⁸ frames the learning process in a building metaphor that involves the creation of knowledge through interactions by people with different perceptions and values.⁹ This concept views knowledge as constructed and created rather than being transferred,

transmitted, or copied. A constructivist frame for learning braids together activities such as reading, writing, speaking, and listening into the process of building knowledge rather than seeing them as separate skills.

In keeping with this theoretical framework, SWAU's Summer Bridge program focuses on three academic areas: math, reading, and writing, but also incorporates worship, study skills, and social interactions among students, teaching faculty, staff, and administrators. The students move as a cohort throughout their days in the program, and Summer Bridge personnel have noticed continued camaraderie among the Bridge students for the rest of their freshman year.

The weekly schedule includes five academic days, plus an additional day designated for special social activities, such as field trips to places like the Fort Worth Museum of Science, an animal reserve, a baseball game, a swimming pool party, or a go-kart track (these have varied over the years, but we include about three such events each summer). On Sabbath, students participate in non-mandatory worship services and visit the homes of Summer Bridge faculty members and administrators for food and social activities.

The academic days begin with an early breakfast at 7:30 a.m. in the student center where Summer Bridge faculty, staff, and administrators prepare and serve the food and present worship talks. After worship, the students spend an hour in physical exercise and then attend classes and tutoring sessions in math, followed by lunch with their tutors and teachers in the university cafeteria. After lunch, they visit the Center for Academic Support and Advising (CASA), where they work on study skills and discuss various aspects of academic success. Later in the afternoon, they attend writing and reading classes and tutoring sessions. Each academic day ends between 5:00 and 5:30 p.m., with the students having the evening for study, free time, planned activities, or socializing with their cohorts. In sum, the three-week program contains 12 intensive academic days, one day each for pre-tests

and post-tests, and several days devoted to worship and social activities.

The Results of the Enrichment Program

Each student participating in the Summer Bridge program is given two tests at the beginning of the three-week session: the Maple test (math) and the Nelson-Denny Reading Test (reading). At the end of the program, they take three tests: the Maple, the Nelson-Denny, and a writing sample test. Their scores on these tests are then used in determining the courses in which they will enroll for the fall semester.

During the 2013 program year, mathematics scores showed dramatic improvement. The students' Maple post-test average was 8.28, quite a contrast to their pre-test average of 5.12, a differential of 3.16.¹⁰ The average score increase was 11.68 percent. Of the 23 students in the 2013 enrichment program, 19 improved their math score.

The improvement was similar for reading. The pre-test average on the Nelson-Denny Reading Test was 9.88, slightly below the sophomore high school level.¹¹ Some individuals scored considerably lower. Nine of the 23 students were reading below the 9th-grade level before instruction began. The post-test average (after instruction) was 11.39, representing an average improvement of slightly more than 1.5 grade levels. For teachers who taught the reading course, these scores were very encouraging.

In subsequent years, the results were very similar, with the students showing

large gains in both reading and math skills. Table 1 shows the average student improvement in reading and math for all three years of the program.

Retention and the Summer Bridge Program

According to a study done on retention levels and summer bridge programs, "the strongest predictor for retention is passing a developmental reading course. College-level reading comprehension and reading strategies are essential for students to be able to read and understand their college-level textbooks."¹² At Southwestern Adventist University, we have seen a similar trend. Our retention rate for the Year 1 Summer Bridge cohort was 100 percent from fall to spring, 11 percentage points higher than the freshman class as a whole. Sixty-eight percent of the 2013 cohort returned for their sophomore year, the same percentage as for the regular-admission freshmen.

This high rate demonstrates a number of important things. First, Summer Bridge students achieve high enough grades in the fall semester that they are able and willing to continue in the spring. Second, the perfect retention rate in 2013 indicates that these students find the environment at Southwestern Adventist University conducive to pursuing their goals—even more conducive than the average non-Bridge freshman. Third, the "cohort" concept begun in Summer Bridge introduces students to campus life, and they enter

Table 1. Summer Bridge Assessment Results*

Year	Assessment Results			
	Reading Pre-test	Reading Post-test	Math Pre-test	Math Post-test
2013	9.88	11.39	5.12	8.28
2014	8.27	9.25	5.7	7.6
2015	9.4	11.4	3.76	8.24

* Note: The reading test (Nelson-Denny) uses a grade-equivalency score; therefore, the 9.88 score for the 2013 reading test represents the average student's level (below the 10th grade). The math test (Maple) does not use a grade-equivalency scoring system.



Summer Bridge students acquire skills essential for a successful college experience by collaborating with peers, working in groups, and learning from others such as student mentors.

the university with already-established friendships and a study routine that enables them to succeed and stay in school. In brief, the philosophical framework of constructivist and wholistic principles works well in this Summer Bridge program, using the assessments of both grades and retention.

Summer Bridge Students' Success After Participating in the Program

What are students' goals in attending a bridge program? In a study by Wathington et al., the authors note: "Students commented during focus group sessions: 'I didn't want to take any remedial classes,' and '[my primary goal in the program was to] just get a higher grade and . . . not to take the remedial classes.'¹³ With this in mind, bridge students' definition of success may differ from the institu-

tion's measures of success. In the first SWAU Summer Bridge program (2013), two students out of 23 scored high enough on the post-instruction Maple test to avoid remedial math, seven students avoided taking developmental reading, and 11 students avoided remedial writing and entered a regular freshman composition course.

The 2013 Bridge students who were required to enroll in remedial courses had good results in their remedial courses, but mixed results in their non-remedial courses the remainder of their freshman year. Of the 23 students in the 2013 Bridge program, 12 placed into RDNG 011 Developmental Reading; all of them passed the course. Of the students coming out of Summer Bridge, 71.4 percent of those who took the remedial writing course Composition Review received a grade of C- or higher. Further, 83.3 percent of the Bridge students who took the

non-remedial freshman composition course received a C- or higher. Clearly, the Summer Bridge program helped students close their skills gap in reading and writing. In mathematics, 75 percent of students who took the remedial algebra course passed the class with a C- or higher; 40 percent of students who took the college-level algebra course got a C- or higher. In total, 9.5 percent of the Summer Bridge students successfully completed a college-level math class with a C- or higher within two semesters, excluding three students who withdrew.¹⁴

While the success rate in math, when measured by a passing grade in college algebra, is not high, 19 of the 23 enrichment students had Maple pre-test scores of 5 or less, with 13 as the cutoff score to get into regular college algebra. Students with very low

math scores may simply not be remediated quickly enough to find success within a year of entering college, at least with the remediation initially offered in the Summer Bridge program.

Summer Bridge and Continuing Assessment

The university, based on this 2013 assessment, made modifications in both subsequent Summer Bridge programs (2014 and 2015) and in the way math instruction had been delivered, starting with the fall 2014 semester. SWAU increased its math tutoring opportunities for the 2014-2015 school year and piloted a section of a college math course that supplements regular instruction with computer-aided instruction. Regarding overall academic success, as measured by GPA averages, we noted that the average fall semester GPA for the Summer Bridge students was no different than the average GPA for the regular-admission freshmen, though in the spring semester the average GPA (2.29) for the Summer Bridge students was lower than the average GPA (2.93) for the regular-admission freshmen.

Other tweaks were also made in the program based on our assessments. Several of these changes affect the non-academic elements of the program. After the first year, we instituted a dorm room curfew of 10:30 p.m., as the students tended to socialize (gathering in dorm lobbies, for example) until very late at night or even into the early morning hours, leaving them so fatigued by the afternoon classroom sessions that they had trouble staying alert. With the same curfew in place the following summers, we noticed improved concentration during the afternoon sessions. Further, we began offering fewer weekend social events, building in rest days, particularly on Sundays.

Given the wholistic approach to Summer Bridge, we were also interested in the students' own assessment of their learning abilities. As Holschuh and Paulson note about literacy instruction: "We view postsecondary literacy instruction not as a set of

"My confidence in reading has grown a lot during this class because my boundaries have expanded, and I have a better comprehension of the meaning behind the words. The skills I have learned in this class have helped me very much in other college classes I am currently taking."

technical skills to learn, but as a constructive series of connections that take place within the context of college. That is, this instruction takes place in a social network in which students must be able to critically examine their role in the network and how to navigate this aspect of society."¹⁵

Part of our assessment of the program, then, addresses these issues of networking and navigating the college domain. Beyond the standardized test scores, we also have evidence that the students succeeded on affective levels as well. In reading courses, the students kept a reading journal. Below are sample entries from late in the fall 2013 semester as the students looked back on their experiences in reading:

• "I was shy and now I feel comfortable because everyone in the class needs help in the same things as me

as well. I feel confident now to be able to read."

• "My confidence in reading has grown a lot during this class because my boundaries have expanded, and I have a better comprehension of the meaning behind the words. The skills I have learned in this class have helped me very much in other college classes I am currently taking. I have been able not only to read but actually comprehend what lessons in textbooks are saying, and as a direct result my grades have risen."

• "Surprisingly enough, I read a lot more now. I don't know if that is because I never tried to read much in high school, but I have been reading a lot more, and I don't get tired quickly of reading. I do believe between this reading class and my writing class, I have become more open minded to reading for school. Now I can see myself as a moderate reader, and possibly even reading more for fun. A lot of the skills learned here in the class will be brought over with me throughout my time of schooling and further."

These sample comments reveal that most students not only improved on their test scores and made passing grades, but also changed their attitudes. They began to see themselves differently as readers and as students. This changed attitude continued with the students as they moved through their academic career. One student, now a sophomore, who attended the Summer Bridge program in 2014 noted:

"My experience with Summer Bridge has affected me greatly in my schooling. I was able to get more acquainted with the campus and some of the staff. I was able to see what some of my college classes might be like with the preparatory classes in Summer Bridge. I was also able to have already accomplished the mindset needed for college way ahead of time before any of the other freshmen. I believe Summer Bridge did prepare me well, and because of it I have been successful in all of my classes since then. Attending this program also gave me a friend base that otherwise wouldn't have happened if I did not attend this program."¹⁶

In his comments about the program, the previous student noted all three areas we focus on during the Summer Bridge program: academic preparation, involvement in campus life, and the formation of friendships that provide support.

As Matthew Kilian McCurrie, an instructor in a summer bridge program at Columbia College in Chicago, stated:

“Many of the young people who enter Summer Bridge report that being treated like a student, like a reader and writer, was a first step for them in defining success and an important aspect of the Summer Bridge program. Part of the value in the Bridge program has always seemed to be its ability to draw in students who felt alienated or silenced in high school or in their lives generally and give them a space to reposition themselves as successful students.”¹⁷

Clearly, summer bridge programs not only improve students’ academic skills in math, writing, and reading, but also improve their attitudes about themselves as well.

Implications for Seventh-day Adventist Institutions

Based on the information above, we can assert that the Summer Bridge program at Southwestern Adventist University has succeeded beyond our expectations. The students’ math, reading, and writing skills all improved. In each of the three summers, some students improved enough to avoid at least one remedial class. The monetary benefit for some of these students represents a savings of thousands of dollars, even taking into account the \$400 fee¹⁸ for the Summer Bridge program.

Academically, then, for the university and for the students, the program succeeded. But there is another measure of success worth noting. These were students who, without Summer Bridge, would not have been admitted into Southwestern Adventist Univer-

sity. We may well ask ourselves where they would have gone. With low standardized test scores and/or low high school GPAs, it might have been difficult for them to get into any Seventh-day Adventist college or university, or other four-year institution. In other words, if they hadn’t come to the Summer Bridge program, they probably would have gone to a community college, trade school, or perhaps not continued with their education at all.

As administrators and teachers think about the mission of Adventist institutions, we should seek ways to accept students who want to attend an Adventist institution even though they don’t have college-level skills in all areas. Philosophically, we must find ways to balance the issues associated with accepting such at-risk students with the mission of the Adventist Church and the importance of keeping students in an Adventist environment. Further, we must consider how we can best help such students succeed if we do accept them into our colleges and universities. Southwestern Adventist University’s Summer Bridge program has been an important step in addressing some of these important questions.

Recommendations

Based on our experiences at Southwestern Adventist University, we believe other Adventist institutions should consider implementing a summer bridge program. As Adventists, our ideal goal must always be to meet the needs of students who desire a Christian education. But students applying to Adventist schools, like their counterparts across the United States, are increasingly less academically prepared for college.¹⁹ Colleges and universities with no mission emphasis beyond offering high-quality education face these same problems. Some have decided to turn students away or to insist that they “get up to speed” before initiating a transfer. Many other colleges and universities though, without any spiritual emphasis or calling at all, have created opportunities for students by creating summer bridge programs. How can we as Adventist educators do less? Our role as both educators and

Adventists is to help as many students as we can, and let them have a chance at the opportunities that only a college degree can provide. Of course, we also must maintain high academic standards. A summer bridge program can help meet both these goals. ✍

This article has been peer reviewed.



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nia. She has made recent presentations on reading at the Association of Literacy Educators and Researchers and the Literacy Research Association. Mrs. Doneskey also teaches reading in the SWAU Summer Bridge program.

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1. Ray Fields, "Towards the National Assessment of Educational Progress (NAEP) as an Indicator of Academic Preparedness for College and Job Training" (2014): <http://www.nagb.org/content/nagb/assets/documents/what-we-do/preparedness-research/NAGB-indicator-of-preparedness-report.pdf>; Kelsey Sheehy, "High School Students Not Prepared for College, Career" (2012): <http://www.usnews.com/education/blogs/high-school-notes/2012/08/22/high-school-students-not-prepared-for-college-career>. All Websites in the endnotes were accessed on June 21, 2016.

2. In 2013 through 2015, the program was called CORE Enrichment. Starting in the summer of 2016, the bridge program will be called Summer Bridge to more clearly differentiate it from regular freshman orientation. In this article, we refer to the program by its new name. The program costs the student \$400 to attend, with additional funding coming from the Southwestern Union Conference, the university, and for the summer of 2016, a grant from the Independent Colleges and Universities of Texas.

3. The regular admissions standards required a high school GPA of 2.25, coupled with a combined ACT score of 17 or a combined SAT score of 820.

4. In the summer of 2013, 23 students were invited to attend the summer bridge program; two other students also participated, though their standardized test scores and GPAs would have allowed them regular admittance. Their parents heard about the program and asked if they could attend to get a jump start on college. Therefore, a total of 25 students participated in the program. In 2014, 23 students attended the program; and in 2015, 24 students attended.

5. Amy Rosenthal, personal communication, March 4, 2016.

6. See, for example, Heather Wathington et al., "Getting Ready for College: An Implementation and Early Impacts Study of Eight Texas Developmental Summer Bridge Programs," *National Center for Postsecondary Research* (October 2011): <http://www.postsecondaryresearch.org/1/a/document/DSBReport.pdf>.

7. Lev Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge: Harvard University Press, 1978), pp. 79-91.

8. For a discussion on the compatibility of constructivism with Christianity, see

Austin C. Archer's article, "Constructivism and Christian Teaching," *The Journal of Adventist Education* 64:3 (February/March 2002):32-39: <http://circle.adventist.org/files/jae/en/jae200264033208.pdf>.

9. Nancy Spivey, *The Constructivist Metaphor: Reading, Writing, and the Making of Meaning* (San Diego: Academic Press, 1997), pp. 1-3.

10. These figures represent a raw score and therefore cannot be compared to grade levels. The Maple test uses a range from 1-25. Students with a score below 13 are enrolled in remedial math.

11. The Nelson-Denny scores are reported as a grade equivalency, meaning the grade level at which the students are reading (based on U.S. national averages). A 10.3 score represents a student reading slightly above the 10th-grade level, or at the sophomore level in high school. A score of 13 would mean that the student was reading at the freshman level in college.

12. David S. Fike and Renea Fike, "Predictors of First-year Student Retention in the Community College," *Community College Review* 36:2 (October 2008):80.

13. Wathington et al., "Getting Ready for College: An Implementation and Early Impacts Study of Eight Texas Developmental Summer Bridge Programs," op. cit., p. 37.

14. To place these results in context, the remedial math class at SWAU had recently

been changed from a two-semester sequence (Introduction to Algebra and Intermediate Algebra, with each course meeting five days a week) to a one-semester course (College Algebra) meeting three days a week. Further, students had to make at least a C- in the current course to move into the non-remedial college algebra.

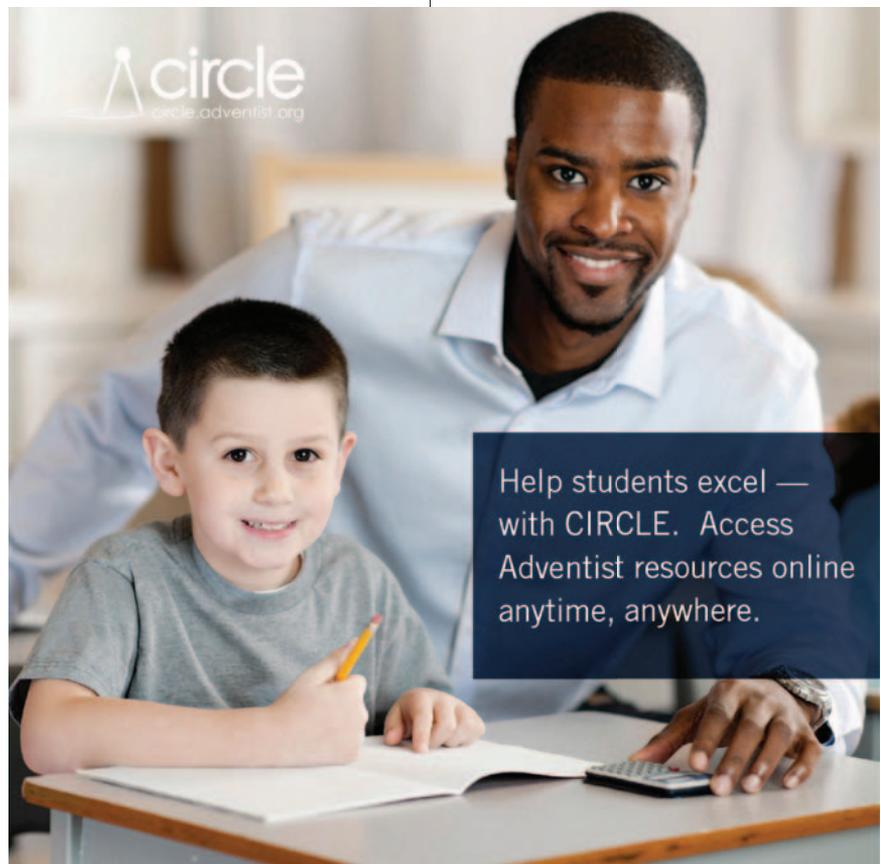
15. Jodi Patrick Holschuh and Eric J. Paulson, "The Terrain of College Developmental Reading," *College Reading & Learning Association* (July 2013): <http://www.nade.net/site/documents/breaking%20news/TheTerrainofCollege91913.pdf>.

16. Jerome Poindexter, personal communication, March 14, 2016.

17. The program fee of \$400 includes accommodation in the residence halls and meals at the university cafeteria; courses in math, reading, and writing; one college credit in physical education; tutoring and career counseling; and social activities and field trips.

18. Matthew Kilian McCurrie, "Measuring Success in Summer Bridge Programs: Retention Efforts and Basic Writing," *Journal of Basic Writing* 28:2 (2009):44.

19. Fields, "Towards the National Assessment of Educational Progress (NAEP) as an Indicator of Academic Preparedness for College and Job Training," op. cit.; Sheehy, "High School Students Not Prepared for College, Career," op. cit.



Chimpanzees, Genes, and



EPIGENETICS:

If we encounter evidence from science that challenges the biblical creation account, how should we respond? As Adventist educators, we can't shield our students from challenging information, but we have a responsibility to guide them to think clearly for themselves and to critically evaluate what they read or hear.

Some scholars allow evolutionary science to guide their understanding of theology, attempting to make their theology fit the latest scientific paradigms. But recent episodes in science remind us that this is not the wisest approach. Even scientific research publications are often challenged within a short time by the findings of other researchers, and this can be seen in the subject of evolution. Science is a fascinating and productive process of discovery, but it is a very human endeavor and has its limits, especially in the scientific study of ancient history.¹

In the mid-1800s, a living cell was thought to be like a bit of jelly with a few things floating in it. Scientists viewed life as based on a simple cell that could change and evolve easily along the path toward complex life. Since then, we can point to well-known events that mark significant growth in under-

Changing Views of Inheritance

standing of life. Gregor Mendel's experiments with garden peas (1856-1863) laid a foundation for the field of genetics, although it took several decades to become well known. This was followed by the neo-Darwinian synthesis (or modern synthesis, basically the union of Mendelian genetics, Darwinian natural selection, and paleontology), which remains the predominant

theoretical influence for evolutionary biologists.²

Another milestone was James Watson and Francis Crick's 1950s discovery of the structure of the DNA molecule. After that, it seemed that human beings now understood the instruction book that determined all the structures of cells and living organisms, and what directed the process of development from an egg to a mature animal. But that was a premature conclusion.

Advances in Biochemistry and Molecular Biology

We could refer to the past half century or so as the era of biochemistry and molecular biology, with its exponential growth in knowledge about the basis of life. Over the past 30 years, scientists have discovered that the complexities required for carrying out the necessities and vibrant activities in each cell are astound-

BY LEONARD BRAND and CARL PERSON

ing. Much of what is happening inside of a cell can't be directly observed but must be ferreted out with clever biochemical detective work. It has been enjoyable to attend research seminar presentations by molecular biologists and to learn about the increasingly insightful logic and laboratory procedures they use to discover what is going on in the recesses of a minute living cell.

This detective work by the scientific community has periodically received significant boosts from new analytical equipment such as high-speed ultracentrifuges and spectrophotometers, and combined with new techniques that fuel advances in understanding, enable scientists to dig deeper into the complex structures and processes of life. The use of gene-sequencing procedures has enabled scientists to discover the sequence of nucleotides in DNA in order to define the exact information in the genetic library of each organism. The mapping of the complete sequence of the human genome by 2004 was an impressive breakthrough.³

In time, it became evident that having the human genome sequence was only the tip of the iceberg. In fact, in some ways, we are just beginning to understand the biochemical symphony that is constantly underway in every living cell. Until fairly recently, it was believed that the instructions in DNA provided one-way control over the processes in the cell. DNA directed the formation of RNA, which made proteins. This concept was considered the central dogma of molecular biology.⁴ Scientists identified two types of genes, *coding genes* with the instructions (or code) for making specific proteins, and *non-coding genes*, which were sometimes called “silent genes” because they didn't seem to do anything. Many of the non-coding genes were considered “junk DNA”—functionless leftovers from the process of evolution that could mutate and evolve into new genes, producing new proteins and eventually new structures and physiological processes in the course of evolution.

Then researchers discovered another category of genes—regulatory genes, which regulate or control the coding genes by encoding a protein, RNA, or microRNAs (mRNAs). There is much more to that control process, but let's not get ahead of our story.

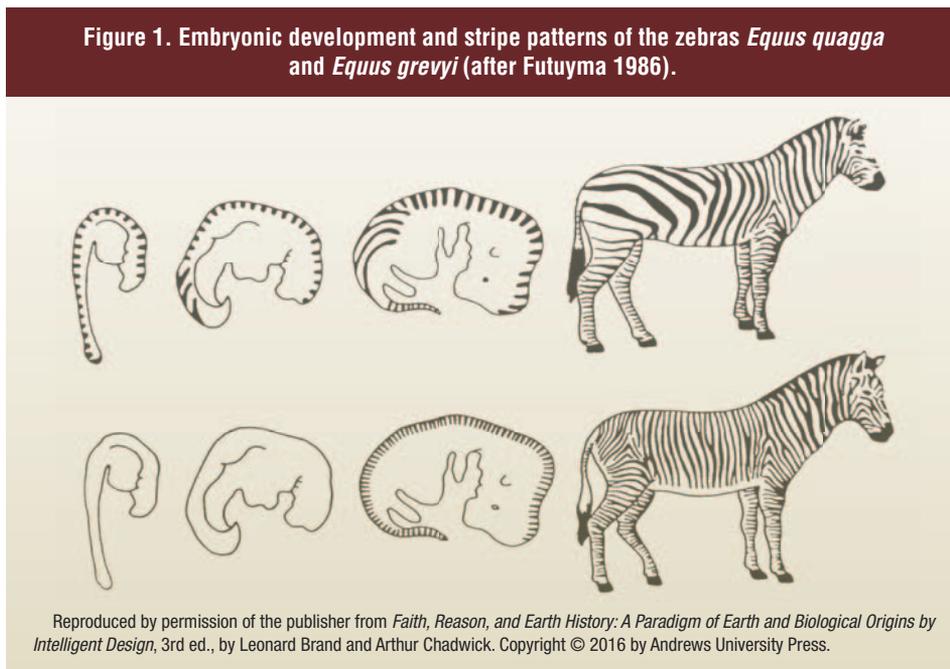
Regulatory Genes and “Junk DNA”

Small influences on the actions of regulatory genes can result in large changes in an animal, including controlling the timing of embryological development and thereby changing the phenotype. A simple example appears in the study of zebras. Timing of embryonic events apparently controls the stripe pattern in some zebras. The black-and-white stripe patterns on the lower back of the zebra *Equus quagga* are stretched out and

unevenly spaced. This results because the back part of the embryo grows faster than the rest of it after the pattern is established. The stripe pattern in Grevy's zebra, *Equus grevyi*, is not established until after that differential growth is completed. Consequently, the stripes in the adult of this species are more evenly spaced (see Figure 1).⁵ This change in the developmental process is known as heterochrony, which is simply a change in the timing of a developmental process.

Other discoveries have contributed to improved understanding. The human genome is 98 percent non-coding DNA. If this is all junk DNA, it would imply that very little of our genome is functional. But over the years, regions of DNA formerly thought to contain junk DNA have been found to be regulatory regions, which control the action of coding genes.⁶ This change in thinking reached a turning point in September

Figure 1. Embryonic development and stripe patterns of the zebras *Equus quagga* and *Equus grevyi* (after Futuyama 1986).



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of 2012 at the completion of the massive government-funded ENCODE genetic-research project. After intensive study of the human genome, some 30 papers were published, which recognized that most of the formerly tagged “junk DNA” is functional and consists of types of regulatory regions.⁷ There are still vast unknowns regarding the genetic system, and future research may show that essentially all DNA is functional.

Some evolutionary scientists have criticized the ENCODE conclusions,⁸ but their objections are based on evolutionary theory, not on observation. In deciding how much credence to give such criticisms and their underlying theory, remember that science is always a continuing search for understanding, and it is often wise to wait for new data to provide better answers to our questions, rather than concluding that a particular discovery is the “final word.”

All those regulatory genes and the biochemical pathways associated with them are not only functional, but important in controlling how, when, and where the coding genes make their

proteins and how each protein integrates with other “building materials” in the cell. This can be compared to how engineers determine when and where to use bricks and other building material in a construction project. The same bricks can become part of a doghouse or a palace. The engineers are the regulatory system that decides how to use bricks to build the appropriate structure. In living cells, the regulatory genes, formerly interpreted as junk DNA, are the engineers that manage the activity of coding genes. This is truly a paradigm shift in progress. As a result, “junk DNA” is no longer a useful concept.

Epigenetics and DNA Functioning

In recent years, rapidly advancing knowledge in biochemistry and molecular biology has been forcing a re-evaluation of evolutionary theory. Information-bearing molecules like hormones, DNA, and proteins are astonishingly complex. Rather than a single (DNA) information system, the genetic system has in recent years become vastly more complex because of the discovery of cell processes referred to as *epigenetics*. The blossoming field of epigenetics is revolutionizing genetics.⁹ Epigenetics, which means “above the genes,” is the study of processes outside of DNA that affect how DNA information is interpreted.

DNA code contains vast amounts of information, but layers of additional control systems manage and regulate how the DNA is expressed. DNA is like a hard drive containing a massive amount of information, but this information is managed by the epigenetic system. DNA cannot do anything by itself. It requires the epigenetic complex of RNAs, proteins, etc. to direct and control how the DNA information is to be interpreted as it is put to work in the cell.¹⁰

The epigenetic system does not just read and blindly apply the DNA information. It uses information that the organism’s sensors have detected from its environment, and combines this with the DNA information to determine how to use the DNA to respond appropriately to the environmental cues.¹¹ In this process, millions of chemical side groups in each cell, including methyl and acetyl, can be attached to specific places on DNA and associated molecules, and serve as chemical tags or markers that turn genes on or off, controlling whether each gene will be active, and if so, when and how. Genes are not always completely on or off—the tags also act like dimmer switches, varying the genes’ level of activity. Additional levels of intracellular management control where and when these tags will be associated with the DNA.

A great example of epigenetic control involves the hormone cortisol. The reduction in this stressor in domesticated dogs has a large impact on the difference between domesticated dogs and wild wolves or foxes because of its involvement in these animals’ development. At a Silver Fox farm in Soviet Russia, Dmitry

The epigenetic system does not just read and blindly apply the DNA information. It uses information that the organism’s sensors have detected from its environment, and combines this with the DNA information to determine how to use the DNA to respond appropriately to the environmental cues.

Belyaev, a Russian scientist, wanted to develop a more easily managed breed of foxes.¹² Belyaev allowed only certain foxes to breed, selecting for only one factor, signs of tameness, i.e., lack of fear or aggressiveness toward humans. After only 10 to 18 generations, the foxes had changed their behavior and were much tamer. But this was only the beginning! They had also changed physically and physiologically. They developed floppy ears, shortened, curled tails, as well as a more dog-like snout (broader and shortened), piebald coat color (a black-and-

white pattern), and began to sound like dogs. Some females came into estrus twice a year instead of once, as in wild foxes.

Why these changes? Since the *only* thing that was originally sought after was tameness, why the other domestic dog-like changes? Belyaev’s selection for tameness changed the level of cortisol, a stress hormone. He found that the formation of cortisol was delayed during development in the “tamer” foxes, which played an important role in development. This resulted in the retention of certain fox “puppy” features in the adults (paedomorphosis), including floppy ears and curled tails. The puppies were also much more likely to seek out human companionship, due to a youthful lack of adult stress responses. The animals also became sexually mature at a younger age. All of this equals heterochrony—a difference in the timing of developmental processes. These changes did not result from mutations but from a change in how the DNA information was interpreted and applied. We are all familiar with the extreme variation in body shapes and other features in breeds of dogs, which is interpreted as the result of a similar process to that seen in the fox experiment.¹³

The complexity and details of this system are just beginning to be understood. Epigenetic processes have the amazing quality of allowing environmental cues to influence changes in cells and organisms without any change in their DNA.¹⁴ Epigenetic tags alter the activity of certain genes, and these alterations have a distinct influence on physiology, anatomy, and even behavior of animals. The DNA doesn’t change, but epigenetic tags control how the information in DNA is used or not used. The old idea of genetic instructions going only from DNA to RNA to protein, but never in the other direction, is now known to be false. As one molecular biologist has described it, the amazing system inside of a cell “decides” how the DNA will be expressed.¹⁵

Unto the Third and Fourth Generation

These intracellular decisions, influenced by environmental cues, can be passed on to offspring for several generations. We can propose that this incredible epigenetic system was created to allow living organisms to adjust to environmental condi-

tions. However, when the environment contains destructive elements, as it often has since the entrance of sin into our world, the epigenetic results can be unpleasant.

Stress, nutrition, and other aspects of a mother's experiences during pregnancy can alter her young through epigenetic processes, with the results lasting through the offspring's lifetime, and can even affect several succeeding generations.¹⁶ This brings to mind the Bible statement "punishing the children for the sin of the parents to the third and fourth generation."¹⁷ A recent epigenetics article in the prestigious scientific journal *Nature* was even entitled "Epigenetics: The Sins of the Father."¹⁸

An example of how epigenetics affects offspring for several generations comes from World War II. The Dutch Hunger Winter, or the Dutch Famine, occurred near the end of the war in 1944-1945, when German military took revenge on the uncooperative Dutch people by blockading part of their country during most of that winter, preventing them from receiving food or other supplies. More than 20,000 people starved to death, and the rest of the population was reduced to a starvation diet containing as little as 30 percent of the nutrition needed by a human body.

National health records revealed that children born during or soon after the Dutch Famine had specific health defects, depending on what portion of their embryonic development occurred during the famine.¹⁹ If a mother experienced the famine during the last few months of pregnancy, her baby was born small, remained small all of his or her life, and had a lower chance of obesity than normal. These children never fully recovered from their poor pre-birth nutrition. Those mothers who experienced the famine only during the early months of pregnancy usually had normal birth-weight babies who experienced higher-than-normal rates of obesity later in life as well as other health problems. Some of these effects were evident even into the second generation. Although the grandchildren of the malnourished mothers²⁰ did not experience the famine, they were affected by the epigenetic carryover from a previous generation.

An experiment with mice revealed epigenetically inherited behavior persisting for more than one generation. Mice were exposed to the mild odor of acetophenone, a chemical with a sweet smell. At each exposure to this odor, they received a mild shock to their foot several times a day for three days. They became fearful and would freeze whenever they smelled the odor, even if they did not receive a shock.

The mice in the experiment were then mated with females that had never been exposed to acetophenone. Their offspring, when mature, were exposed to the same

odor but without any shock. The young mice were more sensitive to this odor than other odors, and were generally startled by any noise when exposed to the odor. Their offspring, the grandchildren of the initial experimental mice, showed the same behaviors. All three generations had an enlargement of the brain structure where the odor-sensitive neurons connect with the olfactory bulb. This supports the conclusion that epigenetic inheritance can persist through several generations.²¹

In another well-documented study, exposing mice to an environmental toxin produced effects on epigenetic inheritance for several generations. Pregnant laboratory mice were given a dose of the fungicide vinclozolin. Their male offspring were born with testicular defects and reduced fertility. These effects lasted for at least four generations, despite no further exposure of the mice to the toxin. Research showed that the defects did not result from DNA mutations but were epigenetic effects.²²

In some cases, epigenetics has been shown to underlie microevolutionary changes, including cyclic variation in the size of beaks of Galapagos finches in response to variations in the available food supply.²³ Also, blind fish living in dark caves are not sightless because of mutations to their eye genes, which are all functional. The blindness is caused by epigenetic processes that turned off the eye genes.²⁴

A Challenge to Neo-Darwinism

Evolutionary scientists have been reticent to accept the notion that environmental factors could influence inheritance because it is difficult to reconcile this with Neo-Darwinian theory. For inheritance to be affected by the environment seemed like Lamarckism, in which an organism passes on characteristics acquired during its lifetime (an idea proposed by Jean Baptiste Lamarck, a contemporary of Charles Darwin). This concept is not compatible with Neo-Darwinism, but accumulating evidence supports the reality of heritable environmental effects on the genome.

Why is this a problem for evolution to explain? If life forms arose with no designer or Creator, all new biological changes must begin as the result of random mutations, followed by natural selection. The mutation process must be random, meaning that it cannot comprehend what the animal needs, or it would be apparent that someone, somewhere in the process, knows what changes need to occur. But the new findings indicate that beneficial, inheritable changes can be initiated by environmental influence (now called Neo-Lamarckism), further indicating that the genetic/epigenetic system is designed to recognize, in a non-random way, what

Recommendations for Further Reading

The following sources are recommended for deeper study of the issues discussed in this article:

Leonard Brand and Arthur Chadwick, *Faith, Reason, and Earth History: A Paradigm of Earth and Biological Origins by Intelligent Design*, 3rd ed. (Berrien Springs, Mich.: Andrews University Press, 2016), specifically chapters 8 and 10.

Leonard R. Brand and Richard M. Davidson, *Choose You This Day: Why It Matters What You Believe About Creation* (Nampa, Idaho: Pacific Press Publ. Assn., 2013).

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Stephen C. Meyer, *Darwin's Doubt: The Explosive Origin of Animal Life and the Case for Intelligent Design* (New York: HarperOne, 2013).

changes will be beneficial. Evolutionary scientists generally ignore this evidence,²⁵ or discount it, or assume that somehow they will be able to explain it.

Natural Genetic Engineering

James Shapiro, an eminent molecular biologist and committed evolutionary scientist, recently published a book entitled *Evolution: A View From the 21st Century*.²⁶ His message is that molecular biology research in the past few decades has shown a level of complexity and cellular sophistication that is incompatible with Neo-Darwinian random mutations and natural selection as a means of change in living organisms, since it extends beyond minor variations. When sensors in the cell detect environmental cues, the molecular complex within the cell uses these cues to make decisions about how to interpret the DNA information and respond to the environment. Shapiro calls this natural genetic engineering and regards the evolution of intracellular system as a mystery, along with the origin of life. Traditional Neo-Darwinians criticize him, but he says, “their criticisms are philosophical, not scientific,”²⁷ and lack empirical evidence and support. Their reliance on random mutations as the engine for evolution does not stand up to the growing evidence. The cell, Shapiro concludes, is too sophisticated for random mutations to be an effective process for evolutionary change. He has not become a creationist, but he is honestly trying to deal with the evidence in ways that are compatible with his worldview.

What Chimpanzee Genes Can Tell Us About Theology

This growth of knowledge about genetics brought with it an episode that can help us understand the proper relationship between science and the Bible. In 2005, after scientists sequenced the chimpanzee genome, some geneticists determined that chimpanzee genes and human genes were 98 to 99 percent similar (comparing only genes that are found in both species).²⁸ It would seem, then, that humans are hardly any different genetically from a chimpanzee, and evolutionists asserted that this proved that humans and chimps had obviously descended from common ancestors.

How could Christians argue against this evidence? Even before the final analysis of the chimpanzee genome, books were being published that struggled with the implications for Christians of this 98-percent similarity.²⁹ Many Christians accepted the discovery as further evidence against biblical creationism, but it turned out to be an instructive case study in how to respond to troublesome evidence.

Sometimes it is wise to deal with such evidence by just waiting for future discoveries because the ongoing progress of science very often has surprises for us. That was a wise approach in this case. The first clue came from considering the context of that 98-percent similarity. The original study of the chimpanzee genome in 2005 was not based on the entire genome, but only a selected portion, and was done in a way that emphasized genes that code for protein. Thus, researchers studied only a fraction of the genome, the part that

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is more similar. However, the part of the genome that is expected to show the important differences would be the former junk DNA, which includes the regulatory part of the DNA.³⁰ Also, a later comparison of the human and chimpanzee male Y chromosome (the male sex chromosome) revealed that this chromosome in the two species “differ[s] radically in sequence structure and gene content.”³¹

As we discussed above, scientists found that all this non-coding DNA was not junk at all, but important, functional, regulatory, or structural nucleotides.³² Rather than the human genome being mostly functionless junk, it is actually a massive, sophisticated control system with a complex of proteins and various types of RNA and chemical tags that direct the activity of the protein-coding genes. These epigenetic factors tell when, where, and how much of each protein is to be produced, and how they will connect to one another to make the parts of cells and of animal bodies. How naïve of us not to have realized long ago that such a control system was essential.

Similar bricks can be used to make a doghouse or a palace. In a similar way, proteins can be used to make a human, a chimpanzee, or a mouse depending especially on the instructions provided by the regulatory genes and epigenetics. A striking example of this principle has been demonstrated with the *Pax6* gene that manages the development of the eye. Genes like this, which control development, are common to all Animalia. When the *Pax6* gene is removed from a mouse and placed in the area of fly DNA where the jaw of *Drosophila* (a fruit fly) is supposed to form, it causes the formation of a compound fly-eye—not a jaw or a mouse eye but a fly-eye!³³ It is obvious that this gene is so similar in mice and flies that the developmental system in the fly recognizes the mouse gene as if it were a fly gene. But since the genetic system in the fly is designed to make fly parts, not mouse parts, the fly cells make the eye of a fly.

In like manner, the human genetic/epigenetic system is designed to use its proteins to make a human, not some other animal. We could expect it to still make a human, even if our protein coding genes were 100 percent similar to chimp genes, which they aren't. These new genetic insights help explain how humans can be radically different from chimpanzees in spiritual, mental, and fine motor skills in spite of the similarity of our protein-coding genes.

There is a significant lesson in this, for our view of theology. In 2005, we could have decided that our theology must accommodate the genetic evidence for human and chimpanzee evolution from common ancestors, as many Christians have done. Or we could base our theology on the Bible, stay with the Genesis creation account, and predict that new scientific discoveries will resolve more of our uncertainties.

If we take the first approach and make contemporary scientific interpretations our standard, science is likely to move on and leave our theology without a foundation, just like the demise of junk DNA, which, within a period of a decade, left an empty place in the theories of those who took current discoveries too seriously. Additional scientific findings are building a stronger case for accepting creation.

Conversely, those who were willing to wait patiently for new insights in genetics were rewarded by discoveries that greatly reduced the proposed reasons for accepting evolutionary conclusions about human and chimp relationships.

Today, other aspects of science are used to support the theory of all of life evolving from common ancestors, but we suggest that it is wise to wait to see what science will discover next, since the biological evidence for evolution of new organisms or physiological systems is running into increasing difficulty.³⁴

Darwin's theory was developed at a time of great biological naïveté combined with a rebellion against religious authority.³⁵ Parts of the theory of evolution, including microevolution and speciation, are still valid and well supported. But modern discoveries in genetics and epigenetics are introducing more and more serious problems for the theory that major groups of organisms have arisen by evolution. However, evolution textbooks and technical scientific publications continue their persistent, authoritarian claims that life arose without a designer and diversified by processes of naturalistic evolution.³⁶ It is becoming increasingly evident that these claims depend more on evolutionary or naturalistic assumptions than on evidence. More than ever before, it is not sufficient to just read and accept published claims, especially in assumption-dominated subjects like origins. It is imperative that we encourage our students to learn to critically evaluate scientific interpretations before accepting them. ✍

This article has been peer reviewed.



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Dr. Brand teaches courses in Philosophy of Science and Origins, Vertebrate Paleontology, and Mammalogy. Other classes he previously taught include Animal Behavior, Taphonomy, Ichnology, Rocky Mountain Field Geology, and Dinosaur Biology and Fossil Record. He has co-authored several books such as Faith, Reason, and Earth History: A Paradigm of Earth and Biological Origins by Intelligent Design; Beginnings; The Prophet and Her Critics; and Choose You This Day: Why It Matters What You Believe About Creation.



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Continued on next page

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Teachers are to “. . . consider the highest good of their students as individuals, the duties that life will lay on them, the service it requires, and the preparation demanded.”⁸ This is not a humanly directed task; it requires partnership with the divine—God, through the Holy Spirit. To partner with the divine is a “noble work”⁹—one of building character, both teacher and student, and it is work that “cannot be completed in this life, but will be continued in the life to come.”¹⁰

And yet, this is what we as Seventh-day Adventist Christian educators are called to do every day! Individually and collectively, we engage in thinking about how best to prepare our students to live in this world, while anticipating a future world. When we look at our students, do we see them as they are, or as what they can become? Do we prepare them for the world in which they live, or the world they will inhabit 10, 15, or 20 years into the future? What skills and dispositions will we need to focus on so that we can empower them to succeed? And, when we look in the mirror, what will we do with what we see reflected there?

The task may seem difficult and overwhelming; however, we have help. We have a cheerleader who says “You can do it!” In Jeremiah, we’re told: “Call to Me, and I will answer you” (Jeremiah 33:3 NIV),¹¹ and in James we’re reminded that “If any of you lacks wisdom, you should ask God, who gives generously to all” (James 1:5, NIV). From navigating the challenges of teaching in a postmodern world (John Wesley Taylor V) to following after the Master Teacher (Laszlo Gallusz) or wrestling with scientific discovery (Leonard Brand and Carl Person), we have the assurance of divine assistance. And when implementing new strategies or programs (Barbara Fisher, R. Lee Davidson and Tammy Overstreet, and Renard and Jayne Ann Doneskey), we have the assurance of wisdom and insight. Above all, when interacting with our students, let’s see them as God sees us now and as Mr. Gatewood saw the countless children that crossed his path each day—as characters fit for the kingdom. With

whole-souled, large-hearted devotion, we can each continue to grow in Him, and “. . . more fully to reflect . . . the light of the knowledge of His glory”¹² for eternity.

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1. Guy Larry Gatewood taught 5th and 6th grade at Ruth Murdoch Elementary School, Berrien Springs, Michigan.

2. Ellen G. White, *True Education* (Nampa, Idaho: Pacific Press Publ. Assn., 2000), p. 171.

3. The significance of not only remembering names, but also pronouncing them correctly, is not lost on students and contributes to their sense of belonging and acceptance within the community of learners. The act of taking the time is what counts. See Corey Mitchell’s commentary, “A Teacher Mispronouncing a Student’s Name Can Have a Lasting Impact,” *The Rundown* (May 16, 2016): <http://www.pbs.org/newshour/rundown/a-teacher-mispronouncing-a-students-name-can-have-a-lasting-impact/#.Vzs1c5IEbhE.mailto>. Another useful resource is <https://www.name-coach.com/>, a program designed to assist in name pronunciation.

4. Volunteering in Mr. Gatewood’s classroom helped me complete the Pathfinder Investiture Achievement program: <http://www.pathfinderonline.org/classes/overview>. I later worked as his reader until graduating from high school.

5. Parker J. Palmer, *The Courage to Teach: Exploring the Inner Landscape of a Teacher’s Life* (San Francisco: Jossey-Bass, 2007), p. 2.

6. *Ibid.*, p. 3.

7. White, *True Education*, op. cit., p. 174.

8. *Ibid.*, p. 13.

9. *Ibid.*

10. Ellen White’s expansive thoughts on the value of seeing our students as what they might become are well stated in *Counsels to Parents, Teachers, and Students* where she encourages every teacher to “see in every pupil the handiwork of God—a candidate for immortal honors. He [the teacher] should seek so to educate, train, and discipline the youth that each may reach the high standard of excellence to which God calls him [or her]” (Mountain View, Calif.: Pacific Press Publ. Assn., 1943), p. 229.

11. Jeremiah 33:3; James 1:5. All Scripture quotations are taken from the Holy Bible, New International Version®, NIV® Copyright © 1973, 1978, 1984, 2011 by Biblica, Inc.® Used by permission. All rights reserved worldwide.

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**THE JOURNAL OF
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