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The Pilot for AE21 Distributed Education

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arch 1997 marked the beginning of a bold new experiment in K-12 Adventist education. The North American Division (NAD) Technology Planning Committee was seeking to bring curricular and staff resources to small, isolated schools across the division. They wondered if emerging communication technologies could be used to build learning communities that spanned the division.

About the same time, a small group of Southern Union educators set out to help the classroom teacher integrate the “new” teaching practices outlined in the NAD’s Focus on Adventist Curriculum for the 21st Century (FACT21) using a curriculum model identified as AE21 (Adventist Education for the 21st Century).¹ “We must keep up with the fast pace of change we experience in our increasingly global community. . . . We must transform our institutions of learning from Pre-K through college, to ensure that we are preparing students for *their future*, not for *our past*,” charged Eugene Brewer, Florida Conference vice-president for education.

The Southern Union proposed an AE21 Small School Distance Learning Pilot. After many months and much work, this bold new venture moved from concept to reality.

The project team, under the direction of the NAD union directors of education, focused on a combined mission: “to provide all Adventist young people, regardless of geographical boundaries, a unique and distinctive Adventist education using innovative teaching strategies.”

The team identified five major goals (see Page 11) for the three-year pilot, and asked Judy Anderson, a professor in the School of Education at Andrews University (Berrien Springs, Michigan), to do an ongoing research study of how effectively the pilot met these goals.

B Y E L A I N E P L E M O N S

Year I: 1997-1998

In the fall of 1997, students from eight one-teacher schools² enrolled in the pilot, with Greg Thompson (Mr. T.) as the on-camera teacher. A corner of the Florida Conference Office curriculum library was designated as the interactive, self-operative studio/classroom of the future. Fifty-seven students from across the division began an adventure that would change their lives and the lives of each teacher involved with the pilot.

The experiment began with a grant from Education Management Group (EMG) equivalent to 200 hours of digital satellite time, using the EMG infrastructure. The eight schools were each outfitted with a satellite dish and a digital receive station,³ including a large-screen computer monitor. This permitted two-way audio and one-way video. Students could see Mr. T., and hear both the teacher and other students from the pilot schools. The standardized equipment package also included a color laser printer and a fax machine. Through each school's connection to a local Internet Service Provider, students could download each day's activities and research various topics from the AE21 World Wide Web site. "Computers" was no longer a 40-minute class before returning to their "regular" schedule, but became a useful tool for learning. "Everything I do has something to do with the Internet," said Tokie, an 8th-grade student from Rapid City, South Dakota. "It's like having a hundred libraries at my fingertips."

Following the AE21 curriculum design model, integrated units of study covered the traditional content of grades 5-8 science, social studies, language arts, and reading classes. Use of NAD curriculum guides ensured the inclusion of all necessary content. The on-camera teacher did the planning, developing, instructing, and assessing of student learning for those content areas. Students faxed or E-mailed their assignments to the Florida studio, while the on-site teacher and/or facilitator provided visual supervision and classroom management.

An early journal entry from Aracelia, a 7th grader in the Franksville, Wisconsin, school, contrasted this school year with previous ones: "We have more equipment and more hands-on work. We have more responsibilities—We have complications! We work more as a group. We have new people. Our teachers get *cooler* every year!!"

On-site teachers quickly began to see changes in the lives of students, due in large part to the new instructional strategies. "As I look back at the last two weeks, there have been

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Online teacher Charity Pitton discusses an assignment with students.

some rough spots (mostly technological), but mostly it has been exciting to see the way it has all come together. I am especially impressed by

Original Pilot Goals

- **Develop integrated units** that teach the life understandings of the four domains (physical, mental, spiritual, and social) of Adventist education.
- **Provide a cost-effective alternative** for school staffing.
- **Make available communication and information resources** to students in small Seventh-day Adventist schools.
- **Model innovative teaching strategies** using integrated units of study.
- **Establish a worldwide communication infrastructure** to serve isolated Seventh-day Adventist schools.

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the transformation, that I have observed in the students . . . They can sense that what is happening here is of vital interest to them, and they are throwing themselves into the pilot with genuine enthusiasm," noted Gary Garvin, on-site teacher in The Dalles, Oregon.

The results and feedback received continued to drive what came to be called AE21 Distributed Education.

Year II: 1998-1999

In an effort to reduce costs and involve more students, the Adventist Communication Network partnered with AE21 to provide a new techno-

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Dr. Judy Anderson of the Andrews University School of Education, in Berrien Springs, Michigan, works with the curriculum development team on a unit dealing with alleviating world hunger.

Following the AE21 curriculum design model, integrated units of study covered the traditional content of grades 5-8 science, social studies, language arts, and reading classes.

logical infrastructure. The satellite system was replaced by Lucent Technologies 128k ISDN video conferencing.⁴ Now students and teachers could both hear and see one another. This technology allowed group conferencing as well and visual collaboration between schools. New schools entered the program, swelling the student enrollment to nearly 115. Grade 9 was added to serve about 25 students at eight of the 24 sites.

The new equipment was well received and used. Teachers were no longer tied to one expensive studio in Florida. They could be anywhere. An ISDN line could be connected to the Polycom camera. Guests with video-conferencing equipment could tie into the group from anywhere, thus providing additional human resources: Nancy Pinter taught 9th-grade science and math from her home in Nazareth, Pennsylvania. Gary Garvin taught a weekly science lab during one 5th- to 8th-grade unit from The Dalles, Oregon. Guest lecturers included a National Aeronautics and Space Administration scientist and several Adventist Development and Relief Agency workers.

The decision to change to the new delivery system was made the last week in July, during the annual teacher-training session, which created some problems. The increased enrollment offered several challenges and opportunities for learning. With double the enrollment and the same on-line instruction time, some students had more difficulty feeling connected. The broadcast schedule was adjusted so that only a few of the schools were on-line at one time. This increased student attention and interaction, but decreased the weekly broadcast time for each school.

By December 1998, the team could focus

on the curriculum, rather than the technology challenges. One school withdrew, finding that the schedule changes interrupted the lower-grade program too much. By January, both the curricula for grades 5-8 and grade 9 had become more stable, and a revised schedule had resulted in better-quality student work. However, responding to a higher volume of student assignments became a major challenge. These experiences helped planners to formulate an acceptable teacher-student load for distance-learning instructors.

As the program ended, the 9th-grade students came together in rural Arizona to participate in a community experience at Holbrook Indian Mission. The bonds forged throughout the year were evident as the group met face to face for the first time.

Year two proved to be a turning point for the program. The two-way real-time video conferencing helped build community among geographically diverse students and brought meaning to the Internet activities. An end-of-the-year note faxed to Mr. T. from the "Panthers," a student group in Richardson, Texas, summed it up: "We had a great year in the AE21 program with you! You and the staff made it so we could have fun and learn at the same time. We enjoyed joining up with the other schools and organizations. We'd like to thank you for a fun and wondrous year."

Year III: 1999-2000

The demand for a complete secondary program spurred growth in year three. Thirty sites across the United States were now participating. A 10th-grade program was added for the returning students, and the teaching staff was restructured. Mr. T. began full-time technical and instructional support. Nancy Pinter taught grades 5 to 8 (Program 58), while Charity Pitton and Jack Carey taught the 9th- and 10th-grade "Freshmore" program.

The Florida Conference sponsored an additional 11th- and 12th-grade pilot program in partnership with Forest Lake Academy, which provided secondary accreditation. The Florida Academy Network System (FANS) required additional part-time certified teachers, so they were brought in electronically from as far away as Silver State Adventist School in Reno, Nevada.

Technologically, the partnership with ACN continued for both Program 58 and Freshmore. While providing needed stability, this allowed planners to focus on curriculum design. In an effort to cut future costs, and after exploring various delivery options, the FANS program

adopted an Internet Protocol group video-conferencing software package called Classpoint.

The five schools participating in FANS were equipped with a high-speed Internet connection, a multimedia computer, and a desktop camera. Throughout the year, various adaptations helped improve the audio quality and solve some of the problems associated with using the Internet. Early morning classes went fairly well, but as the Internet became busier, the quality of conferencing deteriorated rapidly. Planners had hoped that this technology would become standard for all AE21 sites in Year IV, but by January, it was obvious this technology would not work for wide-scale implementation at this time.

These 11th-grade students and their on-camera teachers came together for social and academic interactions four times during the school year at Forest Lake Academy. Students loved this part of the program, which allowed them to be part of a larger group.

The Freshmore students participated in another mission trip, this time serving Washington, D.C. They worked with community volunteers to help clean up national parks, built a water purification rain garden for the Anacostia Watershed Project with the Environmental Protection Agency, and served as docents for elementary students visiting Earth Day 2000 activities.

Highlights

Community-service experiences are a hallmark of the instructional design of the AE21 curriculum. The other major highlights have occurred in student growth and staff development.

Curriculum Model

As teachers develop the yearly curriculum, they look at needs in the local and global community and then assess the skills and processes required to get students involved. Units combine real-life experience with content skills and objectives from the NAD Curriculum Guides to make learning relevant to the students' lives.

From its inception, the project sought to re-design curriculum from content specific to interdisciplinary, using service and community outreach as the reason for and the application of all learning. The success of this curricular design has led the NAD Curriculum Committee to begin adapting the AE21 units of study for use in all of its 5th- to 8th-grade classrooms. Although technology application skills are taught through this program, they use technology as simply a tool.

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The 1999-2000 Freshmore students participated in community clean-up activities in the Washington, D.C., area.

Students immediately recognized the relevance of an integrated approach to learning. Kira, an 8th grader from Ithaca, Michigan, wrote, "I did not do as much learning last year because I was just told, but you have me do it so I understand a lot better!" She ended her response with a paraphrase of a quote, "Tell me, I'll forget. Show me, I may remember. Involve me, I'll learn."

Student Growth

Student growth was assessed in three areas: academic, spiritual/social, and technological. The findings are presented below:

1. Academic Growth. To showcase their learning at the end of each unit, students develop a portfolio that includes both key assignments as well as written reflections on what they learned, how they would improve the assignment if they did it again, and why the assignment was important to the *Life Understandings* and/or the *Core Commitments* of the unit. Portfolios provide evidence of academic achievement in

- writing skills;
- use of technology—level of sophistication of content organization, graphics, charts, resources gathered, etc.; and
- application of content knowledge—ability to explain the purpose of the assignment, prepare and give presentations, plan community-service activities, etc.

When students took standardized tests each

In an effort to reduce costs and involve more students, the Adventist Communication Network partnered with AE21 to provide a new technological infrastructure.

year, nearly all had gained at least a year in most content areas. Jonathan Sumner, an on-site facilitator from Wisconsin, said, "For the two years since we started using AE21, the yearly growth is staggering. I am a truly a believer in this process!"

2. Social/Spiritual Growth. While this is a difficult area to measure, responses from parents, students, and teachers (both on-site and on-camera) have been mostly positive.

Students say they have made progress demonstrating their collaborative achievements as on-site teachers incorporate the principles of cooperative learning with all grades.

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Sandy Romero types her homework for the AE21 program.

The actual teaching, discussing, and self-evaluating related to the AE21 areas Habits of the Mind (HOMs) and Christ Like Qualities (CLQs) get frequent praise from parents, teachers, and students as one of the most positive aspects of the program. Students are consistently asked to evaluate their personal growth in these qualities, and to tell how they use them in their daily lives. Their personal-growth profiles indicate progress in these important aspects of the AE21 program.

3. Technology skills. This area has been one of the strongest, yet most vulnerable and stressful aspects of the program. Clearly, there has been tremendous growth in the teacher and student use of a wide variety of communication technologies. But the growth has not come without pain—more for some than others.

Portfolios show students' increased expertise in gathering and organizing information and ideas and developing appropriate, attractive, and creative presentations. Software used includes word processing, multi-media presentation, spreadsheets, database, computer graphics, and Web-page publishing. They have become comfortable with Lucent Conferencing Polycom units, scanners, fax machines, and Internet searches.

Staff Development

"I have grown more in the past two years as an on-site AE21 teacher than in the past 10. AE21 has taught me how to focus curriculum on an idea that incorporates the ideals of every-

thing we hold true as Adventists . . . I benefited so much from the interaction between on-site teachers, AE21 staff, and other important educators that have been brought on board to ensure our success," wrote Vicki Turner, an on-site facilitator.

Nearly all teachers, even those who chose to leave the program, said that AE21 had helped them learn: (1) new technology skills, (2) instructional strategies for teaching higher-order thinking skills, (3) ways to integrate curriculum and make the content of the subject more relevant to the student's world and life experiences; and (4) strategies for collaborative learning.

Teachers appreciated the summer training sessions and the bi-weekly video conferences between on-site facilitators and AE21 personnel, when they could ask questions in a safe environment and develop the necessary skills to apply the AE21 program strategies in their other classes.

Quotes From On-Site Facilitators

"After watching this process in my students over the past two years, I can say that every child goes through an intense transitional time with this program, a love-hate relationship. It takes a while for the independent thinker and learner to surface and grow, and their growing pains are severe! At the end of the first year of AE21, both students and teachers were . . . so overwhelmed and drained that we had no idea how much we had all learned . . . [The second year,]

students began to see that this curriculum change was a battle FOR them, not against them. We have all been wonderfully surprised at how well this [second] year has gone. The staff meetings have helped tremendously to make the transition. I learned so much by talking to the others who were also involved in this pioneering adventure!"

"I will never teach the same! After watching the incredible growth of my students due to the teaching strategies used by AE21 teachers, I have begun to incorporate them into my classroom. My students are now learning to THINK! I have always considered myself a good teacher, but I can see now how much more I can give when I facilitate the students to teach themselves. What a gift AE21 has been to all of us."

What We Have Learned

So, what have we learned about distance education via communication technologies in Adventist schools? Teachers, students, and staff would all say, "Much!" Was the pilot successful in meeting its goals? "Absolutely," says Gerald Kovalski, director of education for the Southern Union and the NAD's director of the AE21 pilot. "In recent years, Adventist education has re-evaluated its practices and broadened its scope in order to prepare students for the real world. What we have learned in the AE21 Distributed Education Project Pilot [will have a] great impact on future educational initiatives."

Here is a synthesis of what we've learned about the program:

- Effective K-12 education can be delivered through communication technologies. There is a market for distance education, particularly in grades 9 to 12. But distance education is not the answer for all students. Those who are not self-directed learners will need considerable support in this delivery mode.

- On-camera teachers can develop relationships with distance students that promote academic, spiritual, and personal growth and build successful learning communities. (This has been especially helpful for students in small schools and/or isolated geographical locations.) To maximize live student/teacher connections, synchronous video and audio sessions must be combined with asynchronous content that is archived on a Web site. (Hence, the student/teacher ratio must be kept within reasonable boundaries.)

- The curriculum must be carefully crafted to use a variety of instructional strategies in order to meet the needs of diverse learners. It must include student interaction. The video ses-

sion should be used to bring meaning to the learning.

- There is a steep, intense learning curve connected with this delivery mode for both elementary and secondary levels. It takes time for students to develop the necessary skills in technology, self-directed learning, and independent thinking, as well as the social skills of group interaction.

- The effectiveness of the on-site facilitator has a direct correlation with the overall success of the program. The on-site teachers/facilitators need training to understand the curriculum content, instructional processes and assessment, the delivery technology, and their roles and responsibilities. Follow-up training should occur at least bi-weekly so teachers can share concerns about current issues, respond to questions, and build community.

- If *location, location, location* is the rule in real estate, then *communication, communication, communication* is the rule for successful distance learning. Everyone's roles and responsibilities (parents, students, school boards, teachers, facilitators, pastors, constituencies, conference staff, program administrators, etc.) must be clearly described. There must also be consistent follow-through on these role expectations.

- Consistent communication must occur between and among students and teachers. Feedback to and from teachers and peers (discussions of content, process, and assignments, as well as assessment data) must be promptly posted to the Web in a password-protected format so that it can be accessed by teachers, students, on-site facilitators, and parents.

- Teacher load is different than in a traditional setting. Contrary to early expectations that teachers could manage large numbers of students via the World Wide Web, our research has revealed that effective learning requires high levels of written interaction. Therefore, for secondary instruction, we recommend that teacher load not exceed 100 students. (This can be 100 students/one credit, 33 students/three credits, etc.) For the elementary level, we found that relationships with and among students could work fairly well with about 50 students. Beyond this number, feelings of inclusion and connection diminished. However, with even 50 students (in three content areas), teacher support was needed to provide the necessary feedback for successful instruction and learning.

- Technology will always be developing. If it works, it is probably obsolete! Decisions about changing technology delivery should be made

after observing how it functions in specific environments. Installation should occur at all sites at least a month before school starts. Full-time technical support is needed for on-site and on-camera teachers and students.

The Future

The North American Division continues to support and encourage additional developments and applications in distance learning. During the past three years, it has become obvious that distance learning is here to stay. Marilyn Eggers has now joined the staff of the NAD Office of Education as coordinator for distance education and director of TAGeducation, a joint project of TAGnet and ASI. TAGeducation aims to serve as an online learning portal to connect church members worldwide to Adventist distance-learning opportunities offered by various organizations.

The Florida Conference is now leading out in AE21 Distributed Education. Many new students are finding it possible to access Adventist secondary education. Nancy Melashenko, the new director for AE21's three programs, continues to nurture the vision and meet the demand for this type of program around the globe.⁵

Because of the foresight of many educational leaders, Adventist-education is now positioned to be a leader in the use and application of distance-learning technologies and the pedagogy of online learning. ☞

Elaine Plemons served as the founding coordinator of the AE21 Distributed Education Project. She recently joined the staff of Florida Hospital College of Health Sciences, in Orlando, Florida, to coordinate an educational-development project for health professionals.

The two-way real-time video conferencing helped build community among geographically diverse students and brought meaning to the Internet activities.

REFERENCES

1. AE21 is a curriculum initiative begun in the Potomac Conference in 1993. More information can be found on pages 10 to 15 of the December 1997/January 1998 *Journal of Adventist Education*.
2. Schools participating the first year: The Dalles, Oregon; Rapid City, South Dakota; Franksville, Wisconsin; Ithaca, Michigan; Fairview Village, Pennsylvania; Berkeley Springs, West Virginia; Deland and Gainesville, Florida.
3. The digital receive station included a large (32") computer monitor with CPU holding the necessary software (and the wiring from the satellite dish) to receive a digital satellite signal from the dish, a digital phone to hook up to the audio configuration in the Florida studio so that participants could hear one another through the satellite signal, along with a wireless mouse and keyboard—and a laser printer, color printer, fax machine, and necessary table equipment to hold everything.
4. An ISDN line is a special high-speed telephone line—a land line as opposed to a satellite signal.
5. To learn more about AE21 programs, visit their Web site at <http://www.ae21.org>.

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These AE21 Freshmore students served as docents for elementary pupils at the Earth Day 2000 program on the Mall in Washington, D.C.