Appendix 18

Videotaped Excerpts From Leading-Edge Experts

(The FSS 01 Highlights Videotape Can Be Purchased Per Instructions in Appendix 19)

Education Technology for Music
Monday, June 1: 8:00 a.m. to 12:30 p.m.

Robert Winter, Professor of Music, UCLA, Los Angeles, CA 90024, (310-206-8144). Dr. Winter is a scholar/pianist best known to the public for his national broadcast live-music series on Mozart and Beethoven for American Public Radio as well as his interactive multimedia music productions of Beethoven's "Ninth Symphony" and Stravinsky's "The Rite of Spring" for Voyager Company.

Winter (1) The world is in a paradigm shift in the late age of printed text.
Winter (2) Books are on their way to becoming anachronistic.
Winter (3) Beginning of something new --- a paradigm shift as significant as the Guttenburg printing press around 1450.
Winter (4) Scholarship will become less dependent upon finding information and more dependent upon creativity and cleverness in knowing what to do with it.
Winter (5) Electronic text is not "fixed" in the same sense as electronic text. Electronic text may be revised by authors or readers (students).
Winter (6) Text is deep and important for communication of intangible concepts.
Winter (7) Hypertext is a form of Greek narration --- a nonlinear, non fixed medium.
Winter (8) Deconstruction is a form of nonlinearization of text.
Winter (9) Illustration of how nonlinear hypermedia of Brandenberg Concerto makes it like Bach never heard it and scholars never understood it until the new age of hypermedia. We can now understand it better than ever before.
Winter (10) Illustration of dual screen Mozart quartet bringing each instrument on interactively into the performance --- shows how Mozart built up a line.
Winter (11) Laser disc is a dinosaur in light of emerging technologies in hypermedia production where video will be compressed into computer storage and linked via networks.
Winter (12) Hypermedia overcomes language barriers in learning. Professor Winter mentions how his Pacific Rim (Asian) students having a terrible time in his traditional theory courses now excel in the multimedia versions.
Scientific Visualization and Renaissance Teams
Tuesday, May 26: 8:00 a.m. to 12:00 p.m.

Donna Cox, Faculty of Art & Design and Associate Director of the National Center for Super computing Applications (NCSA), University of Illinois, 405 North Matthews Ave., Urbana, IL 61801, (217-244-0072). Among her many accomplishments, her computer animation film Venus & Milo has won various national and international awards.

Cox (1) Each of the related paradigm shifts in history are featured by information explosion and flow.

a. Paleolithic to Neolithic --- each technological thrust "information flows."

b. Guttenburg Press proliferated ideas, readership, and authoring from the Dark Ages.

c. Eastman's camera filled our homes and libraries --- proliferating images and creation of culture.

d. Vacuum tube --- radio and TV.

e. Graphics computer workstation.

Cox (2) Each paradigm shift increased collaboration in the progress of art and science.

Cox (3) Visualization set the stage for the scientific revolution --- Galileo.

Cox (4) Visualization in era of super-computers helps us to make sense out of data and complex phenomena. Illustration on simulating a thunderstorm using real world data and differential equations.

Cox (5) Many other illustrations of scientific and artistic visualization, including movie animation generated by Wavefront software.

Network Technology for Multimedia Learning
Thursday, May 21: 8:00 a.m. to 12:00 noon

William Graves, Associate Provost for Information Technology, Professor of Mathematics, and IBM Fellow, University of North Carolina at Chapel Hill (also Executive Director of the Institute for Academic Technology), P.O. Box 12017, Research Triangle Park, NC 27709, (919-560-5031). Dr. Graves was featured in The Chronicle of Higher Education (January 8, 1992).

Graves (1) Calls the paradigm shift a Yogi Berra "fork" in the road, along which there is no turning back.

Graves (2) Quotes Pat Batton, a Librarian at Columbia University, asserting that full paradigm shift cannot be realized until hypermedia can be linked to international networks. A decade later, her quotation takes on greater meaning.
Graves (3) Illustrates Multimedia ToolBook authoring of full motion video (Martin Luther King, Jr. speech) into a hypertext electronic presentation.

Graves (4) Illustrates the Martin Luther King Jr. electronic hypermedia text by Karen Swan, History Professor, at SUNY Albany. Illustrates interactive controls by readers and use of time lines in history.

Graves (5) Illustrates French listening and cultural comprehension hypermedia book by James Knoblett at the University of North Carolina. The Knoblett hypermedia database is an example of the way in which future educators will attain international reputations for creating and continuously updating networked learning materials.

Graves (6) Labs using hypertext control of laser discs are outmoded because it takes one laser disc per user. Compressed video in central server computers allow multiple users on the same server.

Graves (7) Idea of putting literature bases on Internet is foreign to frightened publishing companies. Mentions Coalition for Network.

Graves (8) Growth rate on Internet is at least 11% per month, although others calculate a 20% monthly growth rate.

Graves (9) Illustrates how he can run this desktop computer in Chapel Hill using Internet connection in a Trinity University electronic classroom.

Graves (10) Illustrates nationwide searches for information libraries on Internet, importing graphics screens of current weather of the world, and uses anonymous FTP sites such as the IAT at UNC.

Multimedia Training of Juries on Technical Matters in Courts of Law
Friday, May 29: 10:30 a.m. to 12:30 p.m.

Bruce Hahn, Founder and President of Ozz Research, 9420 Research Boulevard, Echelon 3, Suite 100, Austin, TX 78759, (512-794-8590). Mr. Hahn graduated summa cum laude from Princeton followed by graduate studies in the School of Communication at the University of Texas. He was formerly vice-president of Research and Development of HAL Systems & Services of Dallas. His specialty is architecture of complex technical information and multimedia communications.

Hahn (1) Japanese multibillion dollar project on data mining called Noah (in flood of data).

Hahn (2) Billions of dollars change hands in courtrooms due, in large measure, to hypermedia explanation of masses of data in expert testimony. His work has been featured on CBS and ABC television networks.

Hahn (3) Printed text on training people to sail was shown to be much less effective than hypermedia training.

Hahn (4) In an Apple Corporation patent protection lawsuit, the judge refused to let the case run on for a year. Each side had only one week. Apple hired Bruce’s company to use hypermedia to explain complicated issues in one week.
Hahn (5) For training and litigation, hypermedia presentations must be driven by scientific and engineering data and facts. Artistic freedom is constrained by reality in these areas.

Hahn (6) Presents illustrations of hypermedia presentations that won in court --- car hit by train in South Carolina, bike path in Austin, grain elevator explosion in Corpus Christi, etc., juries found these to be exceptionally helpful in understanding complex sequences of events.

Hahn (7) In youth of recent decades we have created "perceptual instruments" who are much less impacted by traditional learning (lectures and readings) than by electronic interactive learning that is more kinetic. Educators will be more effective in joining in than in fighting the creation of these electronic perceptual instruments.

Hahn (8) Shows how live video coverage may distort perception vis-a-vis a hypermedia presentation that remains faithful to the data.

Hahn (9) Shows how his client, Levi Strauss, finds hypermedia much better than traditional training in terms of benefit/cost criteria for training 100,000 workers worldwide.

Hahn (10) Finds some "third world" nations leapfrogging the USA in this technology for teaching in schools. Also, Hahn contends that academics worldwide are lagging behind industry and government in authoring hypermedia learning and training materials.

Hahn (11) Discusses "Structures of Intellect" test batteries for optimal delivery of training and education. The testing takes place in a hypermedia lab to determine what mode of teaching works best --- text, video, audio, etc.

Using Movies to Teach Drama From Laser discs
Wednesday, May 27: 10:00 a.m. to 12:30 p.m.

Dennis Huston, Professor of English, Rice University, P.O. Box 1892, Houston, TX 77251, (713-527-8101 Ext. 3583). In addition to receiving the Wilbur Cross Medal from Yale Graduate School in 1990, Dr. Huston has been popularly featured in Newsweek (December 10, 1990), The Chronicle of Higher Education (December 6, 1989), the "CBS Good Morning Show" (July 6, 1990), and the Oval Office of the President of the United States (January, 1990).

Huston (1) Importance of involving students in productions of Shakespeare and then analyzing the taped productions.

Huston (2) The texts of Shakespeare are fixed. It is the performances and artistic interpretations of that text that mushrooms and evolves throughout time. The best way to study performances is to study the video footage over and over, often comparing contrasting interpretations.

Huston (3) Stresses importance of making students work in groups.
Huston (4) Finds students tremendously knowledgeable about movies (movie literature) that can be put to use in education adapted to their expertise and interests.

Huston (5) Students can see things in full motion video that they can't or won't see in text. What is important is to make every frame have a message from a storyboard.

Huston (6) Illustrations from clip of The Last Picture Show, showing horse being carried in the back of a pick-up. This is a schematic paradigm as to what the entire movie is about.

Huston (7) Illustration from the Dawn of Man in "2001, A Space Odyssey" on how the simplest tool in prehistoric times becomes a spaceship.

Technology for Curriculum Planning, Knowledge Facilitation, Quality and Lifelong Learning
Monday, May 25: 8:00 a.m. to 4:30 p.m. (Including Breakout Sessions in Mac Lab)

William Norris, Founder & Chairman Emeritus of Control Data Corporation
Mary Ellen Tisdale, Executive Director of the William C. Norris Institute
Marilyn Martin, Education Specialist at the William C. Norris Institute
245 East 8th Street, Suite 815, St. Paul, MN 55101, (612-225-1433)

Norris (1) Mr. Norris reviews his lifelong social actions (building Control Data plants in inner-city ghettos) and actions for linking technology with education.

Norris (2) Technology plays a vital role in making education accessible to all persons in society (young and old) and in providing level playing fields at entry levels into the education process.

Norris (3) Technology will become vital in progress of education in modern society.

Norris (4) Corporate training applications of technology are proceeding at a much faster pace than university applications in classrooms.

Norris (5) The Norris Institute K-12 Consortium aims at helping all students proceed through a "comprehensive personalized education" plan in which teachers become learning facilitators using newer technologies.

Field Trip to Southwest Research Institute: Multimedia Development and Virtual Reality, Friday May 22 (2:30-5:00 p.m.).

SRI (1) SRI develops multimedia training materials for government agencies and private corporations.

SRI (2) Defines and explains virtual reality and intent to immerse learners in more realistic environments.
   a. Vision --- 3D interactive with body movements (roll, pitch, yaw).
b. Touch --- ability to change switches, driver vehicles.

c. Audio --- needs more than stereo. It must have sound relocation so that user can determine direction of the sound (direction and altitude).

d. Haptic feedback --- tactile feedback to overcome ghost-like aspects of VR.

e. Temperature

f. Smell

SRI (3) Trinity faculty took turns entering a three-dimensional VR cyberspace.

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Mind Science and Virtual Learning

Thursday, May 28: 8:00 a.m. - 11:30 a.m.

J. Wesley Regian, Senior Scientist for Intelligent Training Branch of the Technical Training Research Division, Experimental Psychologist, Armstrong Laboratory, Brooks Air Force Base, AL/HRTI, San Antonio, TX 78235, (210)-536-1110-x2034. In addition to running a virtual reality laboratory, Dr. Regian is a noted scientist in such areas as human learning and memory, human cognition, spatial ability, psychometrics, artificial intelligence, hypertext, hypermedia, and computer-based training. He has received four Air Force Performance Awards in addition to the 1990 AFHRL Scientific Achievement Award.

Regian (1) Reviews several large-scale empirical research studies of teaching styles and class sizes, and illustrates how hypermedia technology provides gains in the direction of having one teacher for every student (to obtain the benefits of private tutoring at a more reasonable cost).

Regian (2) Illustrates "intelligent tutoring systems" that he helped develop (including simulation ITS).

a. Air intercept/controller training ITS

b. F16 troubleshooting ITS

c. Microeconomics ITS

d. Computer programming (LISP, Pascal, etc.)

e. Boiler operations.

Regian (3) Discusses flight simulation and how future ones will become "smart."

Regian (4) Describes his sophisticated virtual reality lab at Brooks AFB. His VR lab allows two people to interact in the same reality built for two (RBT) cyberspace. It has audio and tactile features.

a. One of his projects is air intercept control in a VR cyberspace.
b. VR training is vital given the goal of the USA to stay ahead of other nations in sophisticated military training.

c. VR allows training with less cost and risk to humans and property.

d. Discusses space disorientation and sickness in VR.

Regian (5) Where is VR headed?

a. Entertainment is the big money future.

b. Learning and training can be more realistic and motivational.

c. VR learning is closer to real-world experience.

d. VR is heavily visual and highly linked to hypermedia approaches using color, sounds animation, etc.

e. Situated learning (where learning extends to varied situations) is better that inert learning.

f. VR is cost effective in terms of costs and risks of real-world hands-on training.

Regian (6) Explains intriguing idea of how VR users can experience an out-of-body experience and become somebody or something else (like in a dream). This relates to Dick Cutler's presentation.

Virtual Systems as Learning Environments
Friday, May 29” 8:00 a.m. to 10:00 a.m.

Dick Cutler, Ph.D. Student in Center for Research in Communication Technology of Society, University of Texas in Austin, 1613 Weathersfield Road, Austin, TX, 78703-3326 (512-471-5826). Among other things, Dick produced 24 instructional programs for classes, libraries, and public access television.

Cutler (1) Operating in virtual reality or other forms of cyberspace is much like learning to drive a car.

Cutler (2) Virtual reality cyberspace can be entirely verbal rather than video graphic.

Cutler (3) Focus of research is on multiple-user dimensions (MUDs). The MUDs network is centered at The University of Colorado.

Cutler (4) The key feature of cyberspace is immersion into a world of constructed reality.

Cutler (5) This raises entirely new concepts of social community in constructed realities.

a. When society tuned into early days of radio it was “sharing a virtual community.” People "constructed" their own visualizations of a shared reality.
b. People reading the same book are "sharing a virtual community."

Cutler (6) Cyberspace may have varying degrees of interactivity (Including Multimedia Beethoven and Stravinsky) in constructed realities.

Cutler (7) Interaction if a bridging process.

Cutler (8) Modern technology allows us to shift time and space in constructed realities.

Cutler (9) Surveillance may help us regain our sense of community.

Cutler (10) Teaching in MUDs cyberspace brings about greater interactions between instructor and students, interactions between students, and access to networked learning resources.

Cutler (11) Focus on teaching in MUDs is to experience more collaboration in learning and research.

Cutler (12) Illustration of a MUDs study where students enter a cyberspace costume shop and define their own persona. What is amazing is how immersed people can and want to become in a totally verbal space that leaves the visual reality to imagination.

Cutler (13) Danger is that students tend to become overly addicted to becoming immersed in cyberspace.

Workstation Demonstration for Rendering Interactive Compact Discs (CD-Is)
Friday, May 22, 8:00 a.m. to 10:00 a.m.

Barry Horton, OptImage, 23121 La Morita, Mission Viejo, CA 92691 (714-859-9162).

Horton (1) Laser discs are presently used in hypermedia computer presentations for segments of full-motion video.

Horton (2) With new compression technology (DVI, Fractal, Linkway, Quicktime, etc.) the laser disc will probably be replaced by full-motion video files on hard drives. This still requires a computer!

Horton (3) CD-I may be the Trojan Horse that brings interactive learning and entertainment into households not having hypermedia computers.

Horton (4) Since over 300 million audio CDs were sold last year, consumers may upgrade their machines for video CD-Is that play on television sets.

Horton (5) Television screens are not good for text displays. Interactive learning materials for CD-Is will replace much of the text with audio overlaid on graphics and full-motion video.

Horton (6) Hand-held portable CD-I players are just coming on to the market. These have color LCD video screens. They can also be plugged into regular television sets.
Horton (7)  Barry demonstrated a workstation on which professors can generate their own CD-I interactive learning materials.