

## INTRODUCTION

The mission of SAS inSchool is to provide educators and students with high-quality, content-rich, interactive, Web-based courseware that effectively conveys topics and concepts. We know that computers can enhance classroom instruction and learning in each of the major curricular areas, if the programs are well-designed from both a pedagogical-curricular perspective as well as a technical design view. Our focus is strictly on education, not “edutainment.”

## PANEL DISCUSSION TOPICS

Translating this mission into reality presents numerous challenges:

- Curricular goals are sometimes at odds with, or can not be met by, available technologies.
- Other constraints require team members to compromise on the original product vision.
- Assumptions about implementation and interface design.
- The collaboration and communication that is required throughout the development process.

A curriculum specialist discusses the challenges she faces, including how to identify content that is suited to the medium, as well as content that does not merit multimedia treatment; how to translate traditional classroom instruction into a more effective multimedia experience; and how to revise treatment and/or scope without compromising either the content or the product’s educational value.

A software developer examines the technical considerations that had to be addressed before product development began, as well as those issues that emerged during production cycles. Decisions regarding computing platforms, appropriate use of available technologies, and reliance upon plug-ins were made early on, and had implications for later courseware design. As products were developed, the advances in, and idiosyncrasies associated with, various technologies resulted in the inevitable challenges of integrating product components, responding to the quirks of new third-party product releases, and maximizing performance.

Finally, an interactive multimedia designer reviews the design considerations for each product, including identification of the target audience, establishment of the artistic vision, design of the interface, and use of appropriate and effective multimedia. It is important to recognize that the overall design of a product determines its effectiveness in communicating with the user. The visuals that a designer creates help set the tone for a project and enable the user to establish a connection with the content. Learner characteristics, such as special needs, intellectual ability, and learning style, place valid constraints upon design that must be addressed without negatively impacting the product’s aesthetic value.

The panel addresses specific curricular, technical, and design issues, including:

- How should or can student assessment be handled within a unit of study?
- How can courseware be designed to match multiple potential uses?
- Should answers be provided for student exercises, and should they be password-protected?
- How can quality video and audio be delivered via the Internet?
- Can voice recognition technology be integrated with the Internet?
- How can a large amount of content be navigated most effectively?
- How can interface design optimize the readability of onscreen elements?

## Deborah L. Gray

Deborah Gray has nine years of classroom experience. She has taught chemistry, physics, and numerous science electives, and she was science department chair at Enloe High School in Raleigh, North Carolina, a magnet school for academically gifted students. She earned her BS and MAT degrees from the University of North Carolina at Chapel Hill.

Ms. Gray is a curriculum development specialist at SAS inSchool, a division of SAS Institute Inc. Initially, she developed the science and health curricula for Cary Academy, a private secondary school. Currently, she serves as a science content specialist for the division’s production of multimedia courseware for secondary education.

Using her content knowledge and understanding of educational principles, Ms. Gray provides leadership in identifying those science topics that are the best candidates for digital technology support. She has defined manageable templates and developed content treatments that make effective use of multimedia.

“As a high school chemistry teacher, except for modest attempts to develop interdisciplinary units, I had sole responsibility for the instruction that my students received. Determination of content, how it was to be presented, what the student’s role in the learning process needed to be, and how student achievement was to be assessed, were all decisions that I was responsible for making.

“I have been faced with many challenges in making the transition from the classroom to the educational software arena. Successful product development requires a different approach to ‘teaching,’ and my new responsibilities often necessitate my assuming a student role, in order to develop new skills and understanding.

“In my role as a curriculum development specialist, working on Web-based courseware for the secondary education market, I have had to relinquish much of the control, which I used to have over the educational process, to my colleagues. In so doing, I have been afforded the opportunity to work in a collaborative environment where the end product reflects the synergy that results from the melding of individual talents and perspectives.”

### Jim Begley

Jim Begley is a software developer with the SAS inSchool division of SAS Institute Inc., where he has focused on science and math products, system architecture, and technology evaluation. He has also developed visualization software and graphics interfaces at SAS. He previously worked at Data General Corporation, where he developed graphics toolkits and computer-aided design tools. He earned a bachelor's degree in information and computer science from the Georgia Institute of Technology in 1983 and a master's degree in computer science from the University of North Carolina at Chapel Hill in 1993.

“During my career as a software developer, I've had the pleasure of working on interesting projects in a number of areas: computer-aided design, molecular modeling, 2D and 3D graphics APIs, and data visualization. Web-based educational software, however, offers a unique set of technical challenges.

“First and foremost, we must realize that technology is a tool for conveying the educational content. Content is king, and all the technologies chosen for use in a product must serve the king. The coolest and latest technologies have no place in our products if they do not help us achieve our educational goals.

“For software to be used in secondary education, we must recognize that the intended market's computing platform is as diverse as its level of computing expertise. We must be careful that our software runs in a variety of environments and is easy to install, maintain, and update.

“Many of the Web technologies are new, so we accept the challenge of gaining experience with the tools while simultaneously trying to create production-quality software. And since these Web technologies change rapidly (many are made available before they are truly sound), we must be flexible and ready to evaluate the latest releases for bug fixes, new features, and stability.

“Many of the technologies are very good at doing one thing, like displaying text or playing video or animating graphical elements, but they must be made to work together as part of a cohesive educational package. We must get disparate technologies from different (and sometimes competing) companies to work together well enough to create the impression of a unified whole.

“Finally, we've got to be sure that our products perform at the level our customers expect at their installation. Tuning and optimization are important steps in the development process that can be easily be put off until it's too late.

“By meeting these technical challenges, we can create unique educational products that illustrate and illuminate.”

### Deanna Scinta

Deanna Scinta earned a master's degree in computer graphics design and an advanced certificate in interactive media design from the Rochester Institute of Technology. She has more than six years of experience developing interactive CD-ROM titles, corporate Web sites, and kiosk presentations. One of the products she co-designed was CatWorks, an educational CD-ROM of a digital cat dissection for secondary school and college students. Since 1997, she has worked as an interactive media designer at SAS inSchool, creating Web-based courseware for secondary education. Currently, she is the lead designer for English courseware, the company's external Web site, and school administration applications. She also played an integral role in the development of the SAS inSchool corporate identity.

“As an interactive media designer on product development teams at SAS inSchool, I create Web-based courseware for secondary education. Through this experience, I have encountered the design challenge of creating an artistic vision for content developed by curriculum specialists. This challenge was complicated by the complex needs of the target audience and their often-limited access to high-end technology. We addressed this problem through interface design, by utilizing appropriate multimedia techniques within the technological constraints.

“To resolve these issues, it was necessary to have a strong understanding of a product's content. This helped to achieve the aesthetic tone of the product, to develop a relationship between the content and interface design, and to determine appropriate usage of multimedia to not only engage users, but to also attain the desired learning objectives.

“In addition, it was essential to maintain open communication among team members during development cycles. At times, compromises were made to refine the product vision, meet deadlines, and adapt to technology constraints.

“As a result, the development team has created dynamic interactive products that continue to evolve into a unique final form. As an interactive media designer, it is my job to rise to new challenges as we enrich our product line.”