Preface

INTRODUCTION

The use of videoconferencing is a growing factor in education and instructional technology. The majority of schools and higher education institutions now access, or plan on obtaining, some form of videoconferencing technology. Equipment ranges from low-end Webcams attached to classroom computers to mobile high-end carts complete with cameras, microphones, high definition monitors, and wireless access as well as interactive electronic field trips supplemented by online archived resources. Current and prospective uses in K-12 classrooms also are wide-ranging; they include direct, supplemental, and enrichment-based videoconferencing that may be student-to-external providers, student-to-student, student-to-teacher, and teacher-to-teacher. Higher education also is now beginning to understand the value of videoconferencing and its potential in preservice and in-service education. Uses now being piloted include preservice teacher preparation and in-service for practicing professionals. Examples of applications are: live preservice teacher observation of master teacher practices, supervision of student teaching, and cross-building/district coaching and modeling. External and informal educators are determined to not be left behind in this movement; many see videoconferencing as a way of expanding their mission and meeting the need of the millennium generation. Faced with only limited resources, they have a need for best practices in developing and offering videoconferencing services to schools that will have both provider and receiver goals.

Multiple resources are being developed that will assist teachers, administrators, and higher-education faculty to plan the use of the equipment or assist in the design and implementation of curriculum that uses videoconferencing; however, there currently is no text or “one source” available that discusses how videoconferencing is, will, or could impact the total field of education. This book proposes to provide the reader with that resource; our goal is to bring together, in one volume, perceptions, practices, and evidence supporting the use of videoconferencing in educational settings. To meet that end, we have solicited chapters from key stakeholders in the process. This includes: advice and best practices from some of the most active and advanced external providers in the United States; input from teachers who, after in-depth use, have found videoconferencing to be of extreme value in their classrooms; information from administrators and policy-makers on how to support and sustain the process; research-based data that document positive outcomes; and novel uses by teacher preparation programs that will prepare the next generation of educators. Each of these chapters offers a separate, unique voice on the role of videoconferencing in K-12 education, and provides the reader with an overview of best practices and future trends.
ORGANIZATION OF THE BOOK

This book is organized around key themes relating to the concepts and practices of K-12 education and videoconferencing. Following is a brief summary of each of the sections.

Section I: What is K-12 Videoconferencing?

In Chapter I, Newman introduces the concept of videoconferencing in K-12 education by providing an overview of what it is and why it should be used. In discussing “What is videoconferencing?”, she presents the six major types of videoconferences that are found in the K-12 settings, provides an overview of their major characteristics and the roles of participants, and briefly discusses the benefits of each type. When addressing “Why should videoconferencing be used?”, Newman summarizes the benefits of involvement in the voices of teachers, students, and providers.

Section II: Bringing Providers to the Camera

This section presents key aspects of videoconferencing from the points-of-view of external providers who are actively involved in the process. Their unique view offers a series of models and best practices that can be used by other providers, and also offers educators with a look at the process from the other side of the camera.

In Chapter II, Leach, Morrissey, and Alvarado present a model that can be used by other providers in developing their videoconferencing capacity. Based on their experiences with The Virtual Outreach Program at the Michigan State University Museum, they document the shift from an experts-based model to one which is focused on learning content through object-based learning and dynamic inquiry in a collaborative community. Revisions in pedagogy, philosophy, and content are explored at each level and supported by the literature and best practice standards that shaped these changes. Throughout this chapter, the museum virtual field trip is presented as a partnership between the classroom, museum experts, and distance-learning providers, working together to create meaningful virtual learning experiences for K-12 students.

In Chapter III, Fawn Warner, from the Discovery Center of Springfield, expands on this theme by providing an overview of the development process, issues and challenges, and future goals of a distance-learning program that provides lessons to K-12 classrooms across the country. Specific topic areas include technology and equipment, establishing partnerships, working with K-12 school districts and educators, expanding a program, and staffing needs.

In Chapter IV, Patty Petrey Dees from the Center for Puppetry Arts explores the roles and benefits of videoconferencing from the content provider’s perspective. The content provider as “field expert” is discussed, along with the benefits of providing nationwide outreach to K-12 educators and students via a cost-effective, interactive media. Applications of videoconferencing are addressed in addition to the perceptions of the provider in such areas as the needs of the K-12 educational community, methods and tools for presenting successful virtual field trips, and evidence of impact through informal teacher feedback and a professional study conducted in 2000.

In Chapter V, Sharon Vatsky, from the Solomon R. Guggenheim Museum, discusses a collaborative provider-teacher process of developing of a videoconferencing lesson that focused on her organization’s unique architectural structure. This project involved a working partnership between Vatsky and three teachers that lasted a year and a half, culminating with the launch of a videoconference lesson. In this
chapter, she describes the process of collaboration and the added value that the inclusion of educators brought to the process.

In Chapter VI, Emily Diekemper Hansen, from the Indianapolis Zoo, provides the final voice of providers in this volume by offering a delightful look at what it means to be an external expert on a day-to-day basis. Noting that we often allow the pressures and challenges of our jobs to interfere with being able to enjoy our work, she recounts some of her own personal experiences that show that it is quite possible to love your job and to find humor and enjoyment in each day while creating a positive and unique experience for students through technology.

Section III: Bringing Teachers to the Camera

This section highlights the role of videoconferencing from the teachers’ point of view. Written by those who are “in the trenches”, these chapters offer advice to educators on how to start the process and offer best practices in implementation.

In Chapter VII, Jennifer Hahn, a middle school teacher in a suburban district, presents the process of videoconferencing with external providers from the teacher’s side of the camera. She summarizes the steps necessary to conduct a videoconference, including how to contact and select external content providers and how to prepare for, conduct, and follow-up on its use. She also examines the benefits of developing lasting relationships with experts in the field, and how to use their resources to create an interactive research-based classroom environment.

In Chapter VIII, Tuttle, a former instructional technology specialist for a school district, provides a framework for improving student learning in K-12 classroom videoconferencing. He describes how educators can use the “Understanding by Design” model to scaffold learning and assessment before, during, and after the videoconference, and provides specific examples of each step.

In Chapter IX, Bidjerano and Wilkinson, specialists in learning theory and instructional design, discuss collaborative classroom videoconferencing as a means of enhancing and enriching classroom instruction in light of social constructivist learning theory. Distinctive types of collaborative classroom implementation projects with supporting examples, as well as affective outcomes associated with student learning, are presented and discussed. The chapter concludes with a summary of the best practices in the utilization of collaborative classroom projects.

Section IV: Building and Supporting a System of Videoconferencing

This section provides readers with an overview of the infrastructure needed for successful K-12 videoconferencing. In these chapters, three long-term experts in the field offer their advice on how to develop and sustain an active videoconferencing program that will aid all children.

In Chapter X, John Falco examines the role of leadership, especially the specific aspect of building level administrators, in supporting and sustaining effective videoconferencing programs. Written in the voice of a knowledgeable administrator, he describes how interactive videoconferencing can provide an opportunity for schools to bring content-area experts from anywhere in the world into the classroom to engage students in real-time learning. Based on his extensive experience with technology and videoconferencing, he describes best practices in instructional leadership that reflect a commitment to collaboration, professional development, appropriate technical support and infrastructure, and inclusion of external resources.

In Chapter XI, Bose and De Angelo provide the readers with a clear and concise look at what is needed in terms of equipment and classroom design if videoconferencing is to be efficient and effective. They
define and discuss key components of the *technological infrastructure* needed to support videoconferencing within the schools’ K-12, such as connectivity needs and essential hardware requirements, including computers, cameras, audio essentials, and operating controls, and how to decide which equipment and methods are best for different settings.

In Chapter XII, Bowman, Hernadez, and Miller-Vice take the reader back to the broader but equally important implications of *policy issues* related to the use and future of videoconferencing at the elementary through college levels. This includes issues such as ownership, content, and access, as well as current and future state, federal, and international policies that guide the use of videoconferencing. Noting that the future is at hand, they advise us to be aware of these key issues and to provide input into decisions that will affect the education of future generations.

**Section V: Videoconferencing and Teacher Preparation**

When we think about videoconferencing and K-12 education, we cannot omit the preparation and training of those who are or will be teachers. These chapters deal with the role of videoconferencing in preservice teacher preparation and in-service professional development, offering innovative uses and examples of best practice in the transfer of knowledge on how to teach.

In Chapter XIII, Barnett, Truesdell, Kenyon, and Mike describe an innovative and powerful role for videoconferencing in enhancing teacher education programs. They describe how Buffalo State College uses videoconferencing to *link preservice teachers in a higher education program* with Pre-K–12 urban schools. Mediated observations of real classrooms are integrated into a traditional on-campus course via videoconferencing allowing preservice teachers to observe teachers in the field without having to travel off-site or be an influence in the classroom. In addition, teachers at the field site are available to debrief students and help them reflect on successful practices.

In Chapter XIV, Spaulding and Ranney provide an overview of videoconferencing that can be used by higher education faculty when describing the process to preservice teachers. They offer a brief history of videoconferencing and discuss some of the various ways in which it can be implemented, noting some of the benefits that it can bring to the learning community, and some of the challenges that many educators, eager to use this technology, have experienced.

In Chapter XV, Tuttle expands on the potential uses of videoconferencing when preparing higher education students for the field of teaching. Through the use of multiple real-life examples, he focuses on the various types of videoconferences and the types of engagements that can occur that will inform the teaching process. He advocates for the transformation of teacher preparation classes into ones in which students have more in-depth and comprehensive experiences that will prepare them, through videoconferencing, for their future teaching.

In Chapter XVI, Mountain addresses the use of videoconferencing as a means of supporting in-service teacher professional development. She begins by addressing how adults learn, the need for quality professional development in education, the different types of professional development being provided, and examples of how videoconferencing can be used to make this process more effective and cost-efficient. She concludes with a call for more embedded professional development, offered via videoconferencing, as a means of serving the needs of individual teachers and buildings.
Section VI: The Impact of Videoconferencing: Does it Help?

This section provides readers with in-depth evidence of the benefits of videoconferencing in K-12 educational settings. Based on years of experience, hundreds of uses, and thousands of students, the authors put forth evidence and examples of the impact of videoconferencing on student learning.

In Chapter XVII, Newman begins the discussion by presenting findings from a series of quasi-experimental studies that compared student outcomes for those who received technology-supported videoconferencing with those who did not. Her findings indicate that students who participated in videoconferencing had higher scores on cognitive indicators, were more motivated to learn the material, and were more interested in learning about related topics than were students who received parallel instruction via traditional classroom techniques.

In Chapter XVIII, Barbanell addresses the value-added outcomes that result from use of provider-based interactive videoconferencing and supporting resource. She offers a solid foundation for understanding the impact of the process on student learning, and presents an overview of approaches to structuring interactive programs to enable comprehensive, systemic change in student encounters with and understanding of curriculum content.

In Chapter XIX, Martin expands these discussions by relating her experiences in promoting the creative use of videoconferencing in schools in Northern Ireland over the past ten years. Rich in examples, this chapter demonstrates the potential of videoconferencing in assisting educators in being inclusive of different needs and learning styles and in extending and enriching students’ learning experiences. Readers who want a full overview of the potential of this medium will find this chapter helpful.

Section VII: The Future of K-12 Videoconferencing

In Chapter XX, our final voice is heard. Silverman describes and offers potential solutions to the issues of access, equity, student achievement, pedagogical strategies, and the integration of emerging communication and media technologies that, if deployed, can transform videoconferencing to become a high performance tool for teaching and learning. Noting that the millennial generation, with unique characteristics that distinguish it from generations that have gone before, must have the skills and knowledge to live and work in a global, diverse, and politically-charged world, he urges us to deploy videoconferencing to its fullest capacity and to seek out new ways that will further expand our horizons.

SUMMARY

It is our hope that you find this volume useful and that it helps to expand your knowledge and value of the process of videoconferencing in K-12 education. We believe this tool is transforming education in ways that we have only begun to realize, and that the future of education will be found on both sides of the camera. We welcome your feedback on this material, your examples of how you use videoconferencing now and in the future, and most importantly, any new and creative uses that you might develop.

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