Introduction: The Promise of ECAC

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This book began with a heat wave. Sitting under a tree to escape a sweltering July afternoon in Houghton, where Michigan Tech had twenty years before nurtured some of the earliest initiatives in writing across the curriculum (WAC) and a decade before had published the first issues of *Computers and Composition* (C&C), a group of summer scholars chatted about ways to extend to our colleagues across the curriculum what we were learning about computer-supported writing. Among us were WAC and writing center program directors and staff as well as writing teachers.

This place, these people, and the time were right for *Electronic Communication Across the Curriculum*. Here, in 1977, eighteen people from fifteen disciplines at Michigan Tech, where Art Young chaired the Humanities Department, had met at the Keweenaw Mountain Lodge for WAC sessions conducted by Toby Fulwiler and Robert Jones. In the summer of 1980, Cindy and Dickie Selfe arrived at Michigan Tech from Texas and by 1983 were putting together small clusters of computers to support writing. Fascinated by the student-centered dynamics, they subsequently established two computer labs. In these labs, every summer for the past decade, teachers from around the United States and from several other countries have gathered for two weeks for the workshop directed by Cindy Selfe, familiarly known as "computer camp" and more formally as Michigan Technological University's Computers in Writing-Intensive Classrooms. At this workshop, where the discussions include both writing instruction and writing that supports instruction, many of the teachers who attend are active in writing centers, technical communication, distance learning, and other programs where they work with colleagues to design instruction that uses WAC theory and practice with electronic communication as the medium. For-

tunate coincidence had brought to Michigan Technological University that sum-
mer of 1995 three teachers from dissimilar institutions whose ideas about the
future of WAC and C&C were remarkably alike and whose enthusiasm for that
conjunction would become *Electronic Communication Across the Curriculum*:
Art Young of Clemson University, one of the founders and principal theorists
and practitioners of the writing-across-the-curriculum movement; Dickie Selfe
of Michigan Technological University, manager of one of the nation's early
computer-supported writing facilities and an instructor/rhetorician interested in
the practical aspects of teaching with technology as well as issues of access and
authority in electronic environments; and Donna Reiss of Tidewater Commu-
nity College, a Virginia writer-editor and composition-literature teacher who
also conducts faculty workshops in computer-supported communication in En-
glish and across the curriculum.

The three of us conceived *Electronic Communication Across the Curricu-
lum* as a response to a transformation in our culture that has significant implica-
tions for teaching and learning in higher education. As our communities and
our schools at every level move online, educators are looking for ways that new
technologies can help students learn biology, history, management, math, ac-
counting, art, engineering, philosophy, and English, some of the disciplines
represented in this volume. At the same time, educators are looking for applica-
tions that encourage students to communicate, think critically, and collaborate—
to become literate, lifelong learners. Recognizing that resources in education
vary widely, this collection emphasizes ways to use and to share the most widely
available, most accessible, and most affordable electronic tools and also pre-
sents some of the technically complex, expensive forms of information tech-
nology that support instruction in any discipline and across disciplinary
boundaries. Included are word processors; electronic mail; newsgroups; MOOs,
MUDs, and other synchronous conferencing systems; multimedia development
systems; and World Wide Web (WWW)-related applications. Classroom teach-
ers; teachers in training; program directors for writing, technical communica-
tion, professional development, and communication across the curriculum; deans;
librarians; and directors and support staff for instructional technology will find
in these chapters practical models for institutional and departmental programs
and for assignments within and across disciplines. Before we review these mod-
els, some initial observations about WAC history and recent explorations of
electronic communication systems will help illustrate how we have reached
this educational moment.

WAC-Computer Connections

Writing across the curriculum, with its goals of improved learning and commu-
nication, began on college campuses in the 1970s as a response to the belief that

college students, working professionals, and all citizens need sophisticated writing abilities in order to succeed in the "information age" with its increased emphasis on knowledge, communication, and human services. While some people might have predicted that reading and writing would be less important in the age of videos and computers, just the opposite has proved to be true. In many ways, personal and professional success in the electronic age demands more rather than fewer sophisticated literacy skills. For most professionals, computer literacy has come to be defined not as the ability to read specialized codes, operate sophisticated equipment, or write computer languages but rather as facility with computers to aid thinking, communicating, remembering, organizing, number crunching, predicting, and problem solving. College administrators and instructors in all disciplines express doubt that college students are developing the reading and writing skills necessary to participate in a rapidly expanding knowledge industry as they proceed through upper level and graduate level courses; employers express concern that the communication abilities of recent college graduates are not what they should be in order to establish and build successful careers in business, science, public service, and other areas.

In the 1980s the concept that was implicit in WAC from its very beginnings—that all language abilities were interrelated and vitally important—was explicitly recognized. Writing across the curriculum (WAC) became communication across the curriculum (CAC) at many colleges and universities, as in Clemson University's Communication Across the Curriculum program and Radford University's Oral Communication Across the Curriculum program, a complement to Radford's longstanding successful WAC program. While continuing to envision writing as central to the academic enterprise, such CAC programs emphasize speaking, visual communication, reading, critical thinking, advocacy, social negotiation, and problem solving across the curriculum. Thus in the 1990s, with increased access to e-mail, the World Wide Web, and other forms of electronic communication, the evolution of WAC into CAC continues in the area of electronic communication across the curriculum (ECAC).

The conceptual bases for WAC, CAC, and ECAC have common origins: the use of written, oral, and visual language in ways that support learning as well as communication and the use of interactive pedagogy that promotes active learning. Most early WAC programs followed the pioneering work in England of James Britton, Tony Burgess, Nancy Martin, Alex McLeod, and Harold Rosen, who sought to establish programs on two of the primary functions of written language: (1) writing to learn, in which the main goal of the writing is to help writers learn what they are studying, and (2) writing to communicate, sometimes referred to as "learning to write," in which the main goal of the writing is to help students learn to communicate to others what they are learning and what they have learned. In theory and in practice, of course, these two functions often overlap in important ways depending upon the purpose, audience, and

context for writing, especially with electronic writing, as you will discover in reading about specific practices in this volume.

Perhaps because postsecondary schools have been assimilating CAC concepts into their curricular design, educators everywhere are incorporating writing to learn and assigning writing in their disciplines whether or not they've ever participated in or even heard of WAC or CAC programs. But the technologies themselves also seem to be facilitating this process. The most basic applications of the Internet involve writing, and every student who uses these tools is participating in an activity that might be characterized as communication in or across the curriculum. Those educators interested in interactive distance education, in contrast to pedagogy that relies primarily on taped or live broadcasts of lecture presentations, have been in the forefront of electronic communication across the curriculum, for "in on-line curricula there's no escaping writing and no teacher thinks of it as an 'extra responsibility,'" says Chris Thaiss, coordinator of the National Network of Writing Across the Curriculum Programs (1996, 8). Indeed, the technology seems tailor-made for implementing CAC learning strategies: "What is e-mail but the epistolary pedagogy so often used by WAC advocates? Now students use writing-to-learn letter exchanges not only across classes and campuses but across the world. What are newsgroups and chat rooms but tools for the kinds of collaborative conversation and composition WAC has modeled?" (Reiss 1996, 722). It's not surprising, then, that many CAC directors and computer-supported writing teachers have become interdisciplinary instructional technology leaders at their institutions. The conjunction of CAC and C&C is further evident in the agenda of the 1997 national conference on writing across the curriculum, where for the first time a hands-on computer workshop, *WAC and the Electronic Classroom: A Multidisciplinary Workshop on Computer-Supported Writing to Learn*, was offered by teachers from several disciplines in secondary and postsecondary education (Chavez et al.). The 1999 conference also will feature at least one similar session.

But the influence of technologies has not changed the basic tenets of CAC. Indeed, we expect these technologies to extend our ability to institute CAC concepts like writing to learn and collaborative learning. Electronic media also can extend our ability to expose students to a variety of purposes and audiences as well as to spread students' involvement in complex communication projects across the curriculum and across their tenure at our institutions. These CAC tenets should guide our use of communications technologies that allow groups of people to "speak" at the same time, synchronously, or to contribute to an ongoing conversation at times that best suit their schedules, asynchronously. However, as this volume illustrates, the technologies themselves may well change the scope and nature of our CAC efforts. As Trent Batson, one of the early developers of computer-supported collaborative writing and current Director of Academic Technology at Gallaudet University and director of the Epiphany

Project for professional development, and Randy Bass, Director of the Center for Electronic Projects in American Culture Studies, remind us, "Although the technology may not have been necessary for a focus on [the learning] process or collaboration (or an appreciation of views of the social construction of knowledge), it may be necessary for the realization of those efforts" (1996, 43). After all, when engineering and technical communication students design a multimedia teaching environment, they are learning the content as they communicate with text, sound, and images (see Selber, this volume). When students in Rhode Island debate issues in international business with their counterparts at universities in Turkey and Germany, they are writing to learn as well as to communicate with a specialized audience of students whose own language is not English; in turn, their debate partners sharpen their critical skills and practice their English with an authentic audience (see Shamoon, this volume). And of course, business courses throughout the United States now simulate the business world's project-based teams with online activities (see Saunders, and Venable and Vik, this volume).

One national initiative that recognizes this conjunction of CAC and C&C is Steve Gilbert's Teaching, Learning, Technology Roundtable (TLTR) project through the American Association of Higher Education (AAHE). In its publication *Change*, the AAHE promotes institutional efforts toward a collaborative learner-centered curriculum, and technology is one of the linchpins of such efforts. In the March/April 1996 issue, Gilbert reflects on changes taking place on campuses, including the collaborative learning fostered by conferencing software familiar to writing teachers, "an unusually felicitous convergence of pedagogy and technology" (17). And at his seminars and workshops, Gilbert credits the decade of computer-supported collaborative writing in English studies for developing instructional applications of information technology that can be applied across the curriculum. As a further tribute to this convergence of Communication Across the Curriculum with Computers and Composition, Cynthia Selfe of Michigan Technological University, one of the pioneers of computers and composition, received the 1996 Educom Medal Award for faculty whose contributions to educational technology improve access for students and teachers and improve the quality of instruction—the first woman and the first English faculty member to be so recognized. *Electronic Communication Across the Curriculum* demonstrates this broad base of instructional technology with programs, cross-disciplinary partnerships, and individual disciplinary projects.

A Changing World

Our interest in the technological manifestations of CAC does not come from the academic community alone. We recognize that computers, and the networks that connect them, will continue to have a substantial impact on every aspect of

our culture. Already, almost every issue of education-related publications fore-
sees massive change in higher education concurrent with cultural changes
brought on by information technologies. In his 1995 survey of computers in
higher education, for example, Kenneth C. Green reports a dramatic expansion,
more than double since 1994, in the use of electronic mail (1996b). His 1996
survey shows that 25 percent of courses at responding campuses used elec-
tronic mail (1996a). Popular publications like *Newsweek* and *USA Today* and
the *Chronicle of Higher Education* have regular features and sections on infor-
mation technology that routinely provide e-mail addresses and World Wide Web
addresses. It's no longer surprising, therefore, that newspapers and computer
magazines have gone online, that one of our country's first magazines, the one-
hundred-plus-year-old *Atlantic*, has a Web edition, or that both plain text and
hypertext scholarly journals are proliferating online, some of the e-journals ref-
ereed as rigorously as their print counterparts.

Responding to such transitions in information media, *Electronic Communi-
cation Across the Curriculum* offers models of instructional applications of in-
formation technology for institutions entering or expanding the ever-changing
environment of technology initiatives and CAC programs. The projects in this
collection will help individuals, programs, and even entire institutions revital-
ize their programs or initiate alliances between CAC practitioners and technol-
ogy specialists. Along with CAC pioneer Barbara Walvoord, we believe that
these initiatives are possible because with new technological tools "lines blur
between writing and other forms of communication and between classrooms
and other learning spaces" (1996). This volume recognizes and responds to that
dissipation of genre and disciplinary boundaries with practical, adaptable class-
room, college-wide, and intercollegiate practices.

A Difficult Medium

As we encourage colleagues, departments, and students to invest time, money,
and expertise in electronic, cross-curricular endeavors, we are as keenly aware
of the risks involved as we are of their educational potential. Our response is,
we hope, proactive. For instance, because we come from such differing institu-
tions—a large, comprehensive, four-year university; a medium size, techno-
logical university; and a multicampus community college—we understand the
disparity of access to technology in higher education among institutions and
among departments within institutions. Nonetheless, we find reassurance in the
alliances forming as teachers and technicians share information and ideas. Many
of the educators represented here have confronted inequalities. They have de-
veloped creative ways of dealing with them and have become advocates for
wider student and faculty access through interdisciplinary computer labs and
free or inexpensive student Internet accounts.

Teachers themselves face dilemmas as they embark on ECAC projects. These authors are collaborating on technology-intensive interdisciplinary projects that are not easily accounted for in tenure and promotion guidelines across our campuses, though we hope recent efforts by organizations like the Modern Language Association and the National Council of Teachers of English will help committees see how important it is to begin revising those guidelines (Schwartz et al. 1995; Katz, Walker, and Cross 1997). In a survey of fifty-five institutions of higher education on the logistics of using and maintaining technology-rich labs and centers, teachers suggested that they often had little or no prep time or release time for innovative, technology-rich courses which they almost universally considered more work than typical courses. Those same teachers often found themselves primarily responsible for the technical support of students and often responsible for the systems that the teachers themselves were using (D. Selfe 1996). Our hope is that books such as this will lend educational momentum to these efforts and that by taking risks with new technologies, we can smooth the way for more substantial technical support along with curriculum development, scholarship, and computer-assisted instruction.

At an institutional level, integrating electronic communication activities and projects across the curriculum often involves competing sets of motivations between teachers and administrators. In an analysis of the impact of communication technologies on higher education, Kenneth C. Green and Steven Gilbert ask a pertinent question and provide their own answer:

> Will information technology (IT) lead to the kinds of productivity gains and associated cost savings touted by its most ardent advocates? Alas, not soon, and certainly not soon enough for those both in and out of academe understandably eager to control instructional costs or for the evangelists who promise that information technology will enhance faculty productivity. (1995, 2)

They conclude that content, curriculum, and communications—rather than productivity or economic savings—are the appropriate focus of and rationale for campus investments in information technology (21). Because we concur, we have tried to produce a book where concerns with content, curriculum, and communication are foregrounded, where projects and programs are contextualized, and where authors were encouraged to be forthright about the challenges they observed. The excitement and commitment they felt will be obvious as you read. It is their intention and ours to take advantage of new electronic media, confronting its challenges as we go.

Made in the Shade: Unique Features of ECAC

By the time we three came together to seek shade from the unseasonable afternoon sun in Houghton in June 1995, the use of computers for communication

across the curriculum was becoming more widespread and influential on col-
lege campuses, propelled into the cultural mainstream by increased access to
and lowered prices for personal computers as well as by aggressive technologi-
cal initiatives from many institutions. *Computers and Composition (C&C)* had
evolved from a collection of short pieces on grammar checkers and word pro-
cessors to an international print and World Wide Web journal that includes pro-
vocative articles on research, learning theory, and cultural literacy. Clearly, the
time was right for CAC to connect with C&C.

What we soon realized and what the response to our call for proposals—a
call publicized entirely online—reinforced was a wealth of work already in
progress. A biology teacher had joined an English teacher to develop electronic
science journals; an art class in one state had collaborated with a writing class
in another state to produce a print publication on racism; online engineering
and business projects had expanded into curricular models for entire depart-
ments and institutions; debates were taking place across countries and conti-
nents; philosophy students were philosophizing for each other as well as their
teachers; and students were taking responsibility for public relations by devel-
oping World Wide Web sites for their college. Because the impact of computers
on writing instruction has been well documented elsewhere, we have not in-
cluded chapters strictly on writing courses. And while we appreciate the merits
of discipline-specific software like anatomy and physiology modeling pack-
ages, physics simulations, or multimedia history programs, our inclination to-
ward shared resources and collaboration drew us and the contributors to those
more widely available communications platforms that schools, colleges, and
(more and more frequently) homes are using.

Just as computer-communication tools have generated new ways of writing,
the teachers who have used these platforms have chosen a variety of formats
and voices for their contributions here. Some resemble the professional writ-
ings typical of their own disciplines; others have the more casual tone and dic-
tion of a magazine article or after-dinner speech; still others attempt to reproduce
the multivocal nature of electronic mail and conferencing with chapters that
contain dialogue more like a drama or a transcript than like a traditional book
chapter. The voices of students as well as teachers are represented throughout
the collection in a variety of contexts. Featured in many chapters is electronic
mail. Neither postal mail nor spoken conversation, though it shares some char-
acteristics of both, e-mail has already influenced the typography of a traditional
composition studies print journal, *CCC,* in an article that is groundbreaking
both for its dialectical nature and for its efforts to simulate a variety of media: In
"Postings on a Genre of Email," Michael Spooner and Kathleen Yancey use
interlaced columns to visually represent the conversational nature of their dis-
cussion and cite snippets of e-postings. Whether or not e-mail is a new genre,
our students using this platform as an instructional tool achieve one of the cen-
tral objectives of CAC: "The medium allows us to claim what is ours—as it

makes the audience real" (1966, 265). If we could have done so, we would have made the audience of this book "real" by incorporating a World Wide Web discussion forum into our text; instead, we have a companion Web site. The Web is a format that didn't exist five years ago but that now links readers of this book and of the book's Web site to many of the resources recommended by the chapter authors.

Information technology has great potential, of course, but it has also complicated the publishing process. Some of the projects described in this book used the Web as a delivery method or as a class publication. As this book was being prepared for publication, postings on the electronic discussion list WEBRIGHTS-L dealt with issues of the relationship between traditional book publishers and their cyberwriters and included Michael Greer, our editor at NCTE, an advocate for Web publication as a companion to print publication. One of the contributors to this collection, Gail Hawisher, received permission from NCTE to publish her chapter as part of an online journal before the print book went to press. These variations on the boundaries of form and genre are characteristic of much of the writing and learning in computer-supported communication just as they have been in communication-across-the-curriculum pedagogies.

Reading ECAC

Because our readers are likely to be varied, we have developed a number of strategies for approaching ECAC. We have anticipated some of your interests by clustering chapters into three sections. In the initial section, "Programs: From Writing Across the Curriculum to Electronic Communication Across the Curriculum," we illustrate how ECAC can influence entire programs and how ECAC principles might be applied across institutions. We follow this section with "Partnerships: Creating Interdisciplinary Communities," a series of ECAC projects that reach across borders of various types: classrooms, disciplines, regions, and even countries. Part Three, "Classrooms: Electronic Communication Within the Disciplines," focuses on individual and team-taught disciplinary projects. And the Foreword by Cynthia L. Selfe, well-known theorist and practitioner of both C&C and CAC, places this volume in perspective, anchoring the book with important insights and historical background that will help both educators who have substantial ECAC experiences and those novice swimmers in this educational ocean of potential and peril.

Part One—Programs: From Writing Across the Curriculum to Electronic Communication Across the Curriculum

The interdisciplinary programs featured in this initial section promote effective uses of interactive pedagogies that envision students as developing language users and active inquirers. Such programs are often, but not always, housed in

writing centers, WAC programs, technology-rich facilities, or campuswide teaching/learning centers. They seek to build bridges across disciplines and have discovered that electronic technology may enable them to build virtual bridges that will convey more commerce and communication between and among disciplines than ever before. These programs have discovered also that the technology may be not just the means for travel and exploration, but also a motivating presence in itself, creating attractive opportunities for adventuresome students and faculty alike to innovate, collaborate, and improve education. Readers involved with established programs will find in Part One a variety of ways to integrate ECAC into—and thereby strengthen—their programs; and readers developing such a program for the first time will find here a variety of models they can adapt or combine to fit their particular contexts.

Of course, designing and implementing an effective ECAC project such as an e-mail exchange with another class does not require a campuswide program. Many of the chapters in Parts Two and Three demonstrate this quite clearly. However, when we consider the broader institutional issues involved in our teaching, often it is advantageous for either an informal or a formally recognized group of colleagues to join together to define issues and to promote changes across disciplinary boundaries and thus affect the entire campus culture. This has been the role for many WAC programs—to support curricular changes such as writing-intensive courses and to support faculty development projects such as WAC workshops or summer grants to encourage innovation in teaching. The emergence of ECAC has created new challenges: providing access to technology, defining the educational purposes of technology, developing budget alternatives, and evaluating faculty performance, among other institutional matters. Therefore, ECAC programs, which we define loosely because they take vastly different forms as they emerge on college campuses, perform the familiar WAC programmatic goal of spreading the word across disciplines about new and useful pedagogies, even as their responsibilities grow with the addition of important technology issues. Part One introduces readers to a variety of models for such programs.

We begin this section with Muriel Harris, a pioneer in the development of university-wide writing centers, describing the multifunctional OWL (online writing lab) at Purdue University. She argues convincingly that the use of electronic tools creates new and important dimensions of learning not possible within traditional tutorial-based writing centers. Electronic tools such as the World Wide Web, e-mail, and synchronous conferencing are integrated into the writing center's particular mission to benefit students, tutors, and teachers. Harris concludes with a frank discussion of the obstacles as well as the possibilities for building an OWL.

The next chapter describes innovative ways that ECAC has influenced the WAC program and its writing-intensive courses at the University of Illinois at

Urbana-Champaign. Gail E. Hawisher and Michael A. Pemberton, faculty members in the Center for Writing Studies, analyze the potential and the problems of introducing asynchronous learning networks into courses in English and electrical engineering. They present teacher expectations and then quote from students' electronic texts in order to inquire about what makes electronic conferences meaningful and educationally useful. From their classroom-based research, Hawisher and Pemberton are able to provide some broad-based suggestions for integrating electronic networks into courses across the curriculum.

On the surface, Mary E. Hocks and Daniele Bascelli of Spelman College have taken the most technical approach to ECAC: establishing a multimedia teaching facility and an impressive ECAC program. Their emphasis, however, is sound, innovative student-centered CAC pedagogy made possible and supplemented by sophisticated technologies. As a result, they have been able to encourage faculty from a wide array of communication-intensive liberal arts courses to incorporate multimedia and World Wide Web development for themselves and for their students.

Mike Palmquist, Kate Kiefer, and Donald E. Zimmerman of Colorado State University reflect on their efforts to expand ECAC by appealing to both students and faculty, by locating the program in the campus Writing Center, and by developing computer-supported communication, hypermedia, and World Wide Web-based instructional software. In particular, they view networked communication as one method of tackling the difficult problem of attracting faculty who are less than enthusiastic about assigning writing, as a traditional WAC program would recommend. Thus, they have developed an Online Writing Center that directly supports student writers and generates faculty support because of the enthusiasm the students share with their teachers.

Joe Essid and Dona J. Hickey of the University of Richmond demonstrate how ECAC has become an integral part of their training of Writing Fellows, who in turn provide support for their university's writing-intensive core courses as well as courses in the major. Writing Fellows are undergraduate students from all majors who learn theories and practices of composition and the uses of electronic tools and then assist faculty in the disciplines with assignment design and the writing process.

Peter M. Saunders proposes a distinctly different approach to ECAC. He describes the development of a "learning platform" that provides business students with virtual case studies that are information-rich and use several media. The Professional Writing Center at Lehigh University, which Saunders directs, is a component of their writing-across-the-business-disciplines program. The center seeks to initiate change by helping learners experience communication "as fundamental to all social interaction within a real or simulated business context outside the classroom." ECAC has provided this WAC program with another option: rather than attempting to initiate pedagogical changes within

the fifty-minute class period, they promote similar changes through virtual cases.

The next chapter illustrates how technical communication and engineering departments can collaborate effectively on interface design issues. At the same time such collaborations help the university accomplish its goals and objectives concerning undergraduate education and technological expertise. Stuart A. Selber of Texas Tech University and Bill Karis of Clarkson University demonstrate how the technical knowledge of an increasing number of English faculty in designing World Wide Web pages and hypertext projects can promote interdisciplinary collaborations that benefit all students.

Scott A. Chadwick of Iowa State University and Jon Dorbolo of Oregon State University describe how theoretically sound, student-centered, writing-intensive, World Wide Web-based courses can change the nature of typical distance learning programs. They developed an introductory philosophy course, InterQuest, that became the programmatic model for other courses with similar principles, including CalcQuest.

Part One concludes with a speculative piece by Todd Taylor of the University of North Carolina–Chapel Hill. Taylor calls for changes in CAC based on a grass-roots approach in developing Web sites. For Taylor, the power of the Web works in ways that should not be overlooked simply because they seem obvious. While the Web connects local interests to national and international ones, it also is an ideal architecture for connecting local interests to one another, thereby creating on every campus the "community of scholars" that has been a central goal of WAC programs from the very beginning.

Part Two—Partnerships: Creating Interdisciplinary Communities

The chapters in the second section of this volume highlight two of the most attractive features of electronic communication: its support for collaboration and for integration of text with other media, particularly with graphics and sound. We emphasize electronic collaborative learning both because it has been one of the theoretical and practical bases for WAC and CAC since their inceptions and also because it has become more dynamic and multifaceted through well-designed virtual learning communities like those described here. Writing to and with their partners, online students actively discover and construct meaning, negotiate conflict, and produce both informal and formal publications for authentic audiences, even when they never meet physically. In this section, students in a variety of disciplines and at different locations collaborate on projects using e-mail, conferencing software, MOOs, and the World Wide Web.

The section starts with Teresa M. Redd's fascinating collaboration between an all-black composition class at Howard University and a predominantly white class of graphic artists at Montana State University. Students who never met were able to confront racism in their personal lives and in their communities and to use the tensions of that examination to produce a print publication in

which the art students illustrated the texts of their composition partners and created their own texts as well.

An e-mail debate that fosters global awareness and critical thinking is the focus of Linda K. Shamoon's chapter. Students at the University of Rhode Island corresponded with students at the University of Bilkent, Turkey, and at Technical University, Braunschweig, Germany, as part of their coursework in management information systems and business management using a model that can be applied in any discipline.

In a collaboration between biology students and humanities-oriented first-year composition classes at Michigan Technological University, Dennis A. Lynch reports on what he considers a "failed" use of e-mail discussion lists to integrate "two worlds of activity: two ways of teaching and learning." Students themselves were involved in assessment of the list discussions, and that process of reflectiveness and student control led Lynch to understand his misconceptions about the media and instructors' roles in such discussions.

Margaret Portillo and Gail Summerskill Cummins from the University of Kentucky use the straightforward and powerful heuristics of e-mail discussions between students in interior design and composition to explore creativity, a concept that could be emulated by any number of disciplines: "music, kinesiology, architecture, or communications." Students developed their own texts in order to examine visual and verbal communication as well as aesthetics.

COllaboratory is an online learning community supporting a series of courses in the Rainbow Advantage Program at the University of Hawaii. Program director Margit Misangyi Watts and Michael Bertsch describe the various ways their students serve their own local community by using MOOs and e-mail to make connections with writers a continent away.

Michael B. Strickland and Robert M. Whitnell use the tradition of student empowerment at their small, liberal arts institution to involve students in the development of an interdisciplinary World Wide Web presence for Guilford College. They explore the potential for sustained student involvement in the educational and administrative dynamics of postsecondary institutions.

Part Three—Classrooms: Electronic Communication Within the Disciplines

The third section gives insight into the potential and challenges of using ECAC within disciplinary contexts. Readers will find a wide range of projects designed and carried out by individuals or small teams of teachers who use an array of technologies to encourage written and visual communication experiences valuable in many disciplines. They offer models general and practical enough to use as we continue exploring applications of networked communication systems in all areas of education, and they do this by attending, as do all good teachers, first to the intellectual, emotional, and curricular needs of students. Here, perhaps more than anywhere else in this volume, the reader will

become aware of disciplinary concerns as authors examine the essence of their individual approaches. Although these chapters describe courses in particular disciplines, we are confident that the techniques, theory, and practices from every chapter in this final section can be an inspiration to any dedicated teacher who would like to take advantage of ECAC pedagogies.

Shifting from traditional journal writing notebooks to electronic journal groups gave the students in Katherine M. Fischer's honors section of a class in approaches to literature at Clarke College a new understanding of and excitement about their readings. Writing to each other instead of to the teacher fostered an awareness of language and audience that helped them understand and appreciate the literary process.

Electronic approaches to writing for learning transformed the engineering students in Paula Gillespie's literature classes at Marquette University, enhancing their awareness of alternative readings of a literary text and stimulating the use of supporting explanations and citations in their messages to classmates. The idea for class e-mail came to Gillespie from a math colleague; the result was a collaborative presentation that encouraged teachers in other disciplines to try electronic journals.

Deborah M. Langsam and Kathleen Blake Yancey wanted to encourage students to think and talk about the role of science in their own lives in a biology class with two hundred non-major students. Using a model developed with Yancey, her colleague at the University of North Carolina-Charlotte, Langsam gave students a forum for asking questions and receiving direct assistance, and her "biochallenges" provided students with issues that allowed them to make the connections between scientific processes and their own experiences.

Recognizing the importance of communication skills and teamwork for the accounting profession, Carol Venable and Gretchen Vik of San Diego State University developed an interactive team-taught model of instruction to inculcate both interpersonal and workplace skills. Collaborative conferencing and Internet research are central components of their class on reporting for accountants.

Randall Hansen of Stetson University, hearing the call from industry for highly communicative graduates who synthesize information readily, redesigned an introductory, writing-intensive marketing course. In that design he included Internet listservs, electronic journal writing, online class materials, WWW research strategies, and electronic publishing.

Maryanne Felter and Daniel F. Schultz designed a challenging "Western Civ" course for community college students based on the concepts of collaborative learning and writing-to-learn and using several technologies: local, on-site network discussion sessions; e-mail; and Internet access. They discuss the problems of their first effort and make suggestions for the future.

Robert Wolffe uses e-mail journals to mediate the math anxiety and uncertainty of elementary and early childhood teachers. Discussions included con-

tent summaries, learning processes, frustrations, and successes, and encouraged specific cognitive and affective growth in students while providing a great deal of in-process feedback to the teacher.

Because large lecture classes seemed counter to the intellectual and dialectical nature of philosophy classes, Valerie Hardcastle and Gary Hardcastle incorporated electronic communication into their teaching at Virginia Tech. An informal discussion area personalized the class and fostered active participation from students who might never have spoken in class.

MaryAnn Krajnik Crawford, Kathleen Geissler, M. Rini Hughes, and Jeffrey Miller present a four-way conversation about their experience with students at Michigan State University in a team-taught, writing intensive, interdisciplinary humanities course entitled "The U.S. and the World," where they require writing-to-learn activities through e-mail list discussions. Their conversation is an informal and collaborative analysis of the students' e-mail discourse. The e-mail transcripts enabled these teachers to reflect critically on their pedagogical theories and practices and to gain a better understanding of how students use the conversational language of e-mail to serve both personal and academic purposes.

As you peruse these chapter summaries and our table of contents, we encourage you to explore the models from other disciplines as well as your own, for neither the technological platforms nor the pedagogies are discipline-specific—and the potential for variation is everywhere. Although individual chapters highlight uses of communications technology in specific fields or as collaborations among disciplines, each one is adaptable to a wide range of other learning environments. The biology students using e-mail in Deborah Langsam's class, for example, could have responded to biochallenges with the running commentary that is central to Valerie Hardcastle's and Gary Hardcastle's philosophy classes. Paula Gillespie's electronic journals for literature would work for Randall Hansen's marketing students, and his business models of online research and interaction could be adapted for engineering courses or technical writing classes. The World Wide Web development project at Guilford College could be adapted at the class or department level by any college interested in involving students in campus life while they learn about the Internet. The MOO at the University of Hawaii and the international e-mail debate at the University of Rhode Island offer replicable models that cross oceans.

Electronic Communication Across the Curriculum provides postsecondary teachers and program administrators with contextualized maps of exciting, challenging professional terrain. Teachers new to ECAC activities will find models to emulate. For more experienced teachers, these chapters will inspire new project ideas, variants they can use for their own classes.

Although this book offers opportunities for sampling activities in a range of disciplines, we realize that many academics will come to this reading task with specific objectives in mind and a number of intellectual and institutional forces

compelling them to investigate ECAC. For that reason we present here some suggestions for selective reading.

Technology Focus

Distance Learning: Although most communication technologies can and probably should be considered as media in which distance learning programs can be conducted or enriched, these authors specifically mention distance learning programs: 4/Palmquist-Kiefer-Zimmerman, 8/Chadwick-Dorbolo, 11/Shamoon, 14/Watts-Bertsch

Electronic Mail and Other Text-Based Communication Platforms: 1/Harris, 3/Hocks-Bascelli, 4/Palmquist-Kiefer-Zimmerman, 5/Essid-Hickey, 8/Chadwick-Dorbolo, 10/Redd, 12/Lynch, 13/Portillo-Cummins, 14/Watts-Bertsch, 16/Fischer, 17/Gillespie, 19/Venable-Vik, 21/Felter-Schultz, 22/Wolffe, 23/Hardcastle-Hardcastle, 24/Crawford-Geissler-Hughes-Miller

Multimedia: 3/Hocks-Bascelli, 4/Palmquist-Kiefer-Zimmerman, 7/Selber-Karis, 20/Hansen, 21/Felter-Schultz

World Wide Web: 1/Harris, 3/Hocks-Bascelli, 4/Palmquist-Kiefer-Zimmerman, 7/Selber-Karis, 8/Chadwick-Dorbolo, 9/Taylor, 15/Strickland/Whitnell, 19/Venable-Vik, 20/Hansen, 23/Hardcastle-Hardcastle

Disciplinary Focus

Cross-Disciplinary Programs and Partnerships: 1/Harris, 3/Hocks-Bascelli, 4/Palmquist-Kiefer-Zimmerman, 5/Essid-Hickey, 9/Taylor, 10/Redd, 11/Shamoon, 12/Lynch, 13/Portillo-Cummins, 14/Watts-Bertsch, 15/Strickland-Whitnell

Business: 6/Saunders, 11/Shamoon, 19/Venable-Vik, 20/Hansen

Education: 9/Taylor, 22/Wolffe

Engineering: 2/Hawisher-Pemberton, 7/Selber-Karis

Humanities: 2/Hawisher-Pemberton, 3/Hocks-Bascelli, 8/Chadwick-Dorbolo, 10/Redd, 12/Lynch, 13/Portillo-Cummins, 14/Watts-Bertsch, 16/Fischer, 17/Gillespie, 21/Felter-Schultz, 23/Hardcastle-Hardcastle, 24/Crawford-Geissler-Hughes-Miller

Math-Life Sciences: 12/Lynch, 18/Langsam-Yancey, 22/Wolffe

The educational goals and interactivity described in *Electronic Communication Across the Curriculum* inspire creativity in both teachers and students, and the media themselves encourage ongoing collaboration. Increasingly, professional conferences and publications devote space to computer-supported instruction, expanding the forums for educators to discuss theories and technologies and offering hands-on computer workshops to model interactive learning. We invite you to participate in these ECAC conversations: e-mail the authors or editors, join listserv discussions such as WAC-L and CCAC-L, and contribute your own ideas through the ECAC World Wide Web site (http://www.ncte.org/ecac).

Works Cited

Batson, Trent, and Randy Bass. 1996. "Primacy of Process: Teaching and Learning in the Computer Age." *Change* 28.2: 42–47.

Britton, James, Tony Burgess, Nancy Martin, Alex McLeod, and Harold Rosen. 1975. *The Development of Writing Abilities (11–18)*. London: Macmillan Education.

Chavez, Carmen, Ralph Lelli, Donna Reiss, Carol Venable, Gretchen Vik, and Robert Wolffe. 1997. "WAC and the Electronic Classroom: A Multidisciplinary Workshop on Computer-supported Writing to Learn." Workshop at the Writing Across the Curriculum Third National Conference. College of Charleston, South Carolina. February 6–8.

Cooper, Marilyn M., and Cynthia L. Selfe. 1990. "Computer Conferences and Learning: Authority, Resistance, and Internally Persuasive Discourse." *College English* 52.8: 847–69.

Gilbert, Steven W. 1996. "Making the Most of a Slow Revolution." *Change* 28.6: 10–23.

Green, Kenneth C. 1996a. "Campus Computer Use Is Increasing, but Not as Fast as in Previous Year." *The Chronicle of Higher Education* 21(November): A21–22.

Green, Kenneth C. 1996b. "The Coming Ubiquity of Information Technology." *Change* 28.2: 24–28.

Green, Kenneth C., and Steven W. Gilbert. 1995. "Great Expectations: Content, Communications, Productivity, and the Role of Information Technology in Higher Education." *Change* 27.2: 8–18.

Haas, Christina. 1996. *Writing Technology: Studies on the Materiality of Literacy.* Mahwah, NJ: Erlbaum.

Katz, Seth, Janice Walker, and Janet Cross. 1997. "Tenure and Technology: New Values, New Guidelines." *Kairos* 2.1. [http://english.ttu.edu/kairos/2.1/index_f.html]. 7 May 1997.

Reiss, Donna. 1996. "A Comment on 'The Future of WAC.'" *College English* 58.6: 722–23.

Schwartz, Helen, et al., eds. June 1995. "Evaluating Computer-Related Work in the Modern Languages: Draft Guidelines Prepared by the MLA Committee on Computers and Emerging Technologies in Teaching and Research." [http://jefferson.village.virginia.edu/mla.guidelines.html]. 29 November 1996.

Selfe, Cynthia L., and Richard J. Selfe. 1994. "The Politics of the Interface: Power and
    Its Exercise in Electronic Contact Zones." *College Composition and Communication*
    45.4: 480–504.

Selfe, Dickie. 1996. "Our Necessary Ambivalence toward Computers and Composition:
    Support for Technologies, Technology Users, and Innovative Teaching." Paper pre-
    sented at the annual meeting of the Conference on College Composition and Com-
    munication. Milwaukee, Wisconsin. March 28.

Spooner, Michael, and Kathleen Yancey. 1996. "Postings on a Genre of Email." *College
    Composition and Communication* 47.2: 252–78.

Thaiss, Chris. 1996. "When WAC Becomes AWE." *Composition Chronicle* 9.6: 8–9.

Walvoord, Barbara. 1996. "The Future of WAC." *College English* 58.1: 58–79.