ALN Principles for Blended Environments

Combining computer-based and face to face learning provides opportunities to improve learning.

Potential benefits include:

- Greater access to a range of appropriate, personalized and individualized learning, teaching, and resources
- Greater accommodation for learners and teachers of diverse ages, styles, expertise, nationalities and cultures, who can connect from multiple settings such as homes, workplaces, libraries, countries and more
- Greater flexibility and cost effectiveness in terms of mission, scalability, breadth, time, value and infrastructure, and
- Greater student and faculty satisfaction.

Research Finding	**Implications for Practice**
Blending: From institutional and administrative perspectives	
The impact of any particular technology depends on how it is used, the learning goals, knowledge about assessments to evaluate improvements in student achievement, and an awareness of the complex nature of change in the school environment [1]. Technology is one interdependent, changing variable among others—course, setting, individual teachers, students, learning and teaching styles [2]. To counteract internal and external barriers [3, 4] and build consensus, begin by identifying benefits [5].	**Principle 1: Begin with a shared vision of how technology can improve teaching and learning.** ▪ Encourage enterprise-wide collaboration to focus on benefits for teachers and learners. ▪ Engage collaborators from various departments and disciplines, including learners, to articulate common and specialized learning goals, methods, and assessments. ▪ Aim to create a common language among constituents.
Like ALN, blending offers institutions options for efficiencies in cost and scalability: ▪ Consortia and partnerships ▪ Evaluation of re/design, relating costs and outcomes ▪ System-wide implementations based on evaluation results ▪ Strategic planning and accounting to enhance quality and reduce institutional and student costs [6]. However, the learning curve for new technologies (for programmers, designers, students and faculty) can be unexpectedly high.	**Principle 2: Develop efficiencies in cost and scalability.** ▪ Schedule for capacity enrollment (prime time classes can meet less often, so there can be more of them). ▪ Build learning object libraries to enable learners to review on demand and to reduce duplicative e workload of individual instructors/staff. ▪ Create institutional teaching-learning portfolios (program, department, degree and so on) for visibility to constituents and to the public, employers, potential partners, and accreditation and funding agencies. ▪ Engage in partnerships with other institutions by sharing curricula and other resources, e.g. online components can be shared among institutions anywhere, with f2f meetings for collocated groups. ▪ Enable guest access to curricula for the general public, parents, significant others, potential employers, alumni, and more as part of the "branding," marketing, fundraising and recruitment efforts of the institution. ▪ Develop economies of scale (such as system-wide site licenses, help-desks, reusable learning repositories, and multi-institutional partnerships).
Blending: From the perspective of learners	
Learners want convenience, flexibility, affordability, relevance (immediate applicability, and usefulness for employability), competence, reliability, choice, personalization, and rapid feedback [7]. To design courses to accommodate various learning and	**Principle 3: Identify ways to meet the needs of individual learners.** [8]: ▪ Initially assess each student's knowledge/skill level and preferred learning style. ▪ Provide an array of high-quality, interactive learning materials and activities.

teaching styles, Twigg lists five key features for improving access and quality of learning, from the Pew Learning and Technology Program monograph "Innovations in Online Learning" [8].	▪ Individualize study plans. ▪ Use built-in, continuous assessment to provide instantaneous feedback Offer appropriate, varied kinds of human interaction when needed.
Blended learning can help allay feelings of isolation, anxiety and frustration. Garrison and Cleveland-Innes demonstrate the stages of role adjustment, and "a fundamental change in the control of time and the nature of the multi-dimensional (voice, word, image) interaction" [9].	**Principle 4: Provide continuous support for role adjustment.** To help learners succeed with the magnitude of role adjustment for cognitive, social and teaching presence: ▪ Require orientation (induction) courses that prepare students for the rigor of online learning. ▪ Use peer-to-peer interaction to support novice and expert online learning. ▪ Emphasize community-of-inquiry connectivity via synchronous and asynchronous interaction.
Blending: From the perspective of teachers	
Research Finding	**Implications for Practice**
Faculty satisfaction in the online teaching and learning environment depends on: ▪ Institutional Support ▪ Professional Recognition ▪ Personal Rewards ▪ Effective Institutional Management of Change [10].	**Principle 5: Provide active institutional support and recognition for faculty.** To actively support faculty who have competing priorities institutions should provide commensurate funding, training in pedagogy and technology, and support for disciplinary research and publication related to online and blended environments: ▪ Recognize, publish, and reward best practices in blended teaching. ▪ Engage faculty in peer review to build community and to promote continuous improvement in blended practices.
While it may be that blended courses have the potential to exploit the best of face to face and online courses, some learning activities may be more easily and effectively done face to face, such as proctored testing, and clinical practice, teaching and internships [See 11, 12].	**Principle 6: Ensure learning design appropriately integrates face to face and online components.** Consider which components can be learned as well or better online, and what technology would best support these components. Design components specifically for skill-, attitude-, or competency-learning.
Students engage more in online components when expectations and purpose are clear [13, 14]. Learning effectiveness involves interactions with peers, teachers, interfaces, content and observation [15]. Because all students have an opportunity to contribute to ALN discussion, which can be difficult in face-to-face settings, they are more likely to prepare to participate in "making meaning" [16, 17].	**Principle 7: Promote metacognitive reflection on the process of learning.** ▪ Use well-defined E-activities to clarify goals for activities, to enable group cohesion, and to create legacy and reusable learning Spend time with learners early in the course to clarify purposes and expectations for online activities. ▪ Specify expectations clearly in syllabus, including time on task; clarify and negotiate as needed. ▪ Create small interdependent groups that require participation from all group members to achieve the group goal. ▪ Define "meaningful" discussion participation clearly using rubrics and examples.
Clear, quick, timely feedback is critical to learning and to keeping students on track [18]. ALN students usually have quicker access to instructors, but faculty need to manage student expectations so that students don't expect immediate responses 24/7 [19].	**Principle 8: Provide timely feedback and clear expectations for response time.** ▪ Use multiple ways of providing quick feedback (FAQs, automated quizzes, self-assessments, peer review of work, instructor feedback on discussion and on assigned activities). ▪ Manage students' expectations for faculty response time to individual or group questions.
Blending: From the perspective of student services	
Adjusting to online learning that requires active participation [20, 21] calls for initial and ongoing support for multiple skills and competencies for learning	**Principle 9: Integrate student services.** ▪ Integrate student services system-wide for on-campus and online students to create efficiencies and

throughout courses and programs [22]. See examples below of integrated support services [23].	consistencies for providers and users. ▪ Combine student services with a variety of web-based self service and personal contact (phone, email, in person).
Blending: From the perspective of information technology	
Four major functions of technology support learning: as tutor; as a means to explore; as a tool to create, compose, store, and analyze; and as a means to communicate [1, 24]. Technologies are media with four different focuses: *media for inquiry* (such as data modeling, spreadsheets, access to online databases, access to online observatories and microscopes, and hypertext), *media for communication* (such as word processing, e-mail, synchronous conferencing, graphics software, simulations, and tutorials), *media for construction* (such as robotics, computer-aided design, and control systems), and *media for expression* (such as interactive video) [25]. Technology choices require input and assessment measures from multiple perspectives [26].	**Principle 10: Plan early for course development.** ▪ Start with desired learning outcomes to create a course development model that includes careful analysis of students, cohorts, course objectives and content, *before* selecting appropriate delivery technologies (face-to-face, online, self-paced, cohort, and so on). ▪ Determine the stability and urgency of blended designs; determine development time and costs; guidance and cross functionality; plan for redundancy and reuse; provide flexibility of access; and measure results. ▪ Use instructional design and development professionals to work closely with faculty members well in advance of semester start up to maximize the learning experience for students.
"Code, control, cost, community, confidence are indicators for the usefulness of technology. It takes time to develop these indicators. Patience, feedback, and user support are key factors for successful innovation" [27].	**Principle 11: Provide continuous training and support.** Introduce new technologies at a pace that allows continuous training, feedback, collaboration and sharing of effective practices.
The most important consideration for using technology is that it should provide added value. However, technology can also be a barrier, and the rush to update can be a pitfall [1]. When students are required to participate online they need access to computers and networks either on campus or in other locations such as at home, in the library or through access centers [28]. Technology can encourage collaborative and self-directed learning, development of critical thinking skills, and problem solving [29]. 'Progressive' and technology-based education provides better opportunities for self-direction [30].	**Principle 12: Choose appropriate technology.** ▪ Use technologies for which most users have access, gradually introducing options for more advanced technologies as user access increases. ▪ Meet accessibility standards for disabilities ▪ Exploit the advantages of technology for action research, and for self-motivated and collaborative learning across space, time, disciplines, expertise and cultures.

About the Collaborators

Contributors to these recommendations participated in the Sloan-C Online Research Workshop in the spring of 2004.

Nan Chico is the Director of Online Programs for Continuing and International Education at California State University, Hayward; she has been the graduate coordinator for the MS in Education, Option in Online Teaching & Learning (MS-OTL) interdisciplinary program since its inception in early 1999. Nan has designed or re-designed 14 courses (and taught 4) in this program and has chaired 120+ capstone Projects or Theses for our students, who are from very diverse areas (K–12, college and university, corporate and non-profit, military, and support staff from each). Nan started out as a sociologist, with a Ph.D. from the University of California at San Francisco, and taught onground for many years in the Sociology department at Cal State Hayward at both the undergraduate and graduate levels—mostly upper division General Education courses, and upper division and graduate courses in research methods.

Lisa S. Babinec is an Associate Faculty member at Cascadia Community College in Bothell, WA. Dr. Babinec has taught Literature, Literature and Cinema, Composition and Rhetoric, and Creative Writing Courses for the past 12 years at the undergraduate level in the United States and the United Kingdom.

For the past two years, she has taught online World Literature and Composition and Rhetoric courses, and has a particular interest in designing online World Literature and World Literature and Cinema classes. Presently, she lives in Oxford, England, while teaching online for Cascadia Community College and the Washington Online Community College network. Dr. Babinec has a Ph.D. in Scottish Literature from the University of Glasgow, Scotland, and an MA in Creative Writing from Miami University, OH. Contact: lbabinec@cascadia.ctc.edu.

Craig S. Clawar is the Assistant Director for Distributed Technology Operations within the Education for Working Professionals Office at Rensselaer Polytechnic Institute. He has over 15 years of experience in systems design and analysis as well as in the deployment of technology in the support of learning objectives. At Rensselaer, Craig is responsible for all technical aspects of strategic research, deployment and administration of Rensselaer's Distributed Learning programs. As head of Distributed Technology Operations, he is responsible for the support for internal computing resources, distance student connectivity, classroom facilities' operations, and the stability of all synchronous and asynchronous distributed delivery modes including: Elluminate, WebCT, Satellite, Videotape, Video Stream Live, Video Stream Delayed and Video Conferencing.

Craig has an MS in Computer Science and is a member of the steering committee directing the activities of the Elluminate users' community. He has been involved in all aspects of technology including application design and development, networking infrastructure, telecommunications and audio and video applications. Contact: The office of Education for Working Professionals, Rensselaer Polytechnic Institute, DCC 133, 110 8th Street, Troy, NY 12180. Phone: 518-276-4386; Email: clawarc@rpi.edu.

Dr. Judith Effken is Associate Professor and Director of the Online PhD Program at the University of Arizona College of Nursing. Dr. Effken has conducted research on visualization of data and using simulations for instructional purposes. Dr. Effken teaches healthcare informatics in the graduate programs at the College of Nursing.

Nancy Fire has taught for the last 30 years teaching in both higher education and continuing education efforts for teachers, health personnel, and state government. Now, she is a doctoral student (ABD) in Adult and Community College Education at North Carolina State University. Her focus is online learning. Her dissertation will include both mental mapping and self efficacy as possible predictors of performance following sequences of online learning. She has spent the last 7 years reading, designing, and evaluating online learning.

Roxie Hoffman is a specialist with the Teaching, Learning, and Technology Center (TLTC) at Northcentral Technical College (NTC) in Wausau, Wisconsin. She trains faculty in the use of their online course management tool (currently Blackboard) and an additional online testing tool (Perception) and provides administration and support for both tools. Ms. Hoffman is an NTC adjunct faculty member and has facilitated an online business proofreading and editing course for four years. Ms. Hoffman has a B.S. in Business Education and an Information Processing Specialist technical diploma. Contact: Northcentral Technical College, 1000 W. Campus Drive, Wausau, WI 54401. Phone: 714-675-3331, Ext. 4153. Email: hoffman@ntc.edu.

Gaye Kelly is a Business and Computer Applications training instructor with the Irish State Training Agency, FAS. She has more than 20 year's experience as a trainer, initially with Digital Equipment, later Irish Times and currently FAS. Gaye is currently preparing a feasibility study on Blended Learning for her training centre. She holds a B.A. degree from Trinity College, Dublin and recently obtained an MSc in I.T. in Education from the same University. Research for her Masters focused on the usefulness of ICTs in developing meta-cognitive skills in adults learning. Her main area of interest is lifelong learning.

Geraldine Lefoe is an educational developer in the Centre for Educational Development and Interactive Resources at the University of Wollongong, Australia (http://cedir.uow.edu.au). Dr. Lefoe facilitates and supports the continuous development of effective teaching practices and policies. She has been involved in aspects of online teaching and learning for 13 years. She is a member of the Research Centre for Interactive Learning Environments (http://rile.uow.edu.au) and executive member of the Australasian Society for Computers in Learning in Tertiary Education (ascilite) (http://www.ascilite.org.au).

Alice L. Loddigs is the Coordinator of Faculty Support in Learning Systems and Technology at the Luther Seminary in St. Paul, MN. She came to Luther Seminary in 1997 to provide support to 35+ faculty. As technology has become an ever increasing influence on pedagogy, faculty support has also taken on new meaning. In 2002, she formally took on new responsibilities for instructional design with a focus on technology in the classroom and online education. Collaborating with faculty and assisting them in learning how to use new tools to enhance their teaching has been a rewarding part of her work. She has also provided computer workshops to Luther Seminary staff as well as serving an integral role in an annual Faculty Computer Camp for the Minnesota Consortium of Theological Schools. Alice received her B.A. degree from Augsburg College, Minneapolis, in 1989. She worked for 15 years in the division for higher education of The American Lutheran Church.

Anthony LoSecco has an extensive background in consulting and auditing and has also worked as a university instructor. His IT credentials include Microsoft, Cisco, Novell, and Comptia certifications. He is also a CPA and has several Accounting credentials; MBA Iona College, MS Rutgers University, MS New York University, and BA Queens College.

Richard Kennedy is Director of Administration-Psychiatry at San Francisco General Hospital which is contracted to the University of California. As part of the Medial School, besides its clinical work, the department has a vigorous education program for its staff of 800, including multiple Grand Rounds for faculty each week and the teaching of residents and medical students. The department is exploring ways to use the Internet to share its expertise in care for the indigent and its experience in meeting the needs of an ethnically diverse population. Rick has taught on the secondary level and on line has taught MBA skills to doctors and the continuing quality improvement process to a diverse group of master's students. He is a re-enactor with several groups as an 18th century barber-surgeon.

Dr. Jayne Lytle is associate faculty and e-learning consultant in the Center for Learning and Technology at Marylhurst University. In this position, she assists with training and mentoring faculty in online pedagogy and instructional design. She is also responsible for the instructional design for an innovative online program in business and organizational leadership. Previously, she was senior course developer of online MBA programs at Cenquest, a Portland-based e-learning company. Before moving to Portland in 1999, Jayne worked at The Vanguard Group, a mutual-fund company, located in Valley Forge, PA, as the corporate newsletter editor and executive speechwriter and later as a member of the training department.

Dr. Lytle has taught graduate and undergraduate courses, and professional seminars in speech communication courses for Portland State University, Oregon Graduate Institute, Pennsylvania State University, Drexel University, Cabrini College, and Gallaudet University.

She has a Ph.D. in Education from George Mason University, Fairfax, VA; a M.A. in Speech Communication from San Jose University, San Jose, CA; and B.A. in Speech and Drama from the University of Washington, Seattle, WA. Email: jlytle@marylhurst.edu.

Janet C. Moore is the Chief Learning Officer for Sloan-C. She is co-editor of the *Sloan-C View*, associate editor of the *Journal of Asynchronous Learning Networks* (JALN), and managing editor of annual volumes in the Sloan-C quality series. She is project manager for the eArmyU Council of Academic Management; she reviews and approves academic memberships and programs for the Sloan-C Catalog. Dr. Moore has experience at all levels of education beginning with pre-school Montessori, and including 20 years as director of undergraduate and graduate programs. She has designed and taught more than 70 sections of 7 online courses and seminars. She wrote *Elements of Quality: The Sloan-C Quality Framework* (2002), and the synthesis of the 2002 Online Quality Seminar. Dr. Moore has a Ph.D. in Literature and was a U.S. delegate to the Inter-America Conference on Hemingway in Havana, Cuba in 1995. Contact: The Sloan Center for OnLine Education, Olin and Babson Colleges, Olin Way, Needham, MA 02492-1245 Phone: 401-632-0707; Email: janet.c.moore@sloan-c.org.

Frank Signorile is a Counselor, Instructor and Program Coordinator for Campbell University. A member of the Campbell family since 1993, he has served an Coordinator, Extended Campus Education for Marine

Corps Air Station, New River, part of the Camp Lejeune, North Carolina Extended Campus, as an Adjunct Instructor for Campbell University and other local institutions of higher learning, and as Program Coordinator for the University's Pilot Distance Education program. He holds Masters Degrees in Public Administration, Computer Information Systems, and Education. He is married and the father of three children.

Gerald (Jerry) Stapleton is the Associate Director for Distance Education and Coordinator for Online Courses for the University of Illinois Chicago College of Medicine Department of Medical Education. Mr. Stapleton has responsibility for the operations of the Online Development and Support Center, which supports faculty in the development and implementation of web-based courses and programs and supports the medical professionals who participate in those programs. These programs include courses of study such as the Master of Health Professions Education degree program, the GME Core Curriculum for residents and fellows, and the Specialty Needs for Primary Care Physicians CME program as well as programs in Sleep Education, Orthopedics, and the Illinois Rural Health Network, an online initiative targeting rural health professionals.

Prior to joining the Department of Medical Education, Mr. Stapleton was Midwest Regional Manager for Computer Training with Best Buy Company, Inc. of Eden Prairie, Minnesota where he was responsible for the management of eight professional training centers in Illinois and Michigan. Previously he held a similar position with CompUSA of Dallas, Texas. Mr. Stapleton has experience as a public school principal and teacher as well as business management experience in the private sector. Mr. Stapleton's research interests include curriculum development and assessment in the online environment.

Iris M. Striedieck is an assistant professor at Penn State University. A member of the Educational Leadership Program, she is lead faculty with the World Campus in creating and offering an online Curriculum & Instruction masters program. Prior to this, Iris was Assistant Coordinator for the Office of Preservice Teaching Experiences at Penn State University where she worked closely with school districts and prospective teachers in securing and supporting field placements. Each of these positions is rooted in her previous teaching experience as a high school mathematics instructor. Her research interests include online pedagogy, instructional supervision and leadership, and integrated curriculum, with a focus on the arts.

Stephanie Witwer is the Director of Outreach at Minot State University. In that position she is involved in the development, administration and marketing of MSU Online. Until recently she was the Principal Investigator for the Title III Grant that facilitated the development of the Online Program. Ms. Witwer is also involved in a variety of other business initiatives for Minot State, including distance delivery programs in several locations in North Dakota and planned international locations. Ms. Witwer has been in her position for two years. Prior to her work at Minot State University, Ms. Witwer was Vice President of UniMed Medical Center in Minot, and a former nursing faculty member at Minot State. Ms. Witwer is an affiliate faculty member for the Regis University e-MBA Program in Healthcare Administration in Denver, CO. She holds Bachelor's Degrees from the University of North Dakota and North Dakota State University and a Master's Degree from UND.

Francine Van Meter is the Director of the Teaching and Learning Center at Cabrillo College in Aptos, California. She is program coordinator for distance education and manages a center that provides technology training and support to faculty developing web media. She is a member of the California Virtual Campus Bay Area Steering Committee and has designed and taught online courses since 1997. She also teaches in the digital media department. Francine has an M.A. in Instructional Technology from San Jose State University and B.A in biology from the University of California, Santa Cruz.

References

[1] C. Clawar. Posting to the Sloan-C Online Research Workshop March 2004. Synthesis of research in progress at Rensselaer Polytechnic Institute and the North Central Regional Laboratory's report on the *Critical Issue: Using Technology to Improve Student Achievement* (unpublished). Available: http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/goals.

[2] S.R. Hiltz, J.B. Arbaugh, R. Benbunan-Fich and P. Shea. ALN Research: What We Know and What We Need to Know About Contextual Influences. In *Elements of Quality Online Education: Into the Mainstream*. Volume 5 in the Sloan-C series, eds. J. Bourne and J. Moore. Needham, MA: Sloan-C, (in press) 2004.
[3] A. Levine and J. Sun. Barriers to Distance Education. Chapter 6 in *Distributed Education: Summary*. ACE/Educause series, 2003. Available: http://www.acenet.edu/bookstore/pdf/distributed-learning/summary/dist-ed-ex-summ-06.pdf.
[4] *Preparing for the Revolution: Information Technology and the Future of the Research Universities*. Panel on the Impact of Information Technology on the Future of the Research University, Policy and Global Affairs. National Research Council, 2002. Available: http://www.nap.edu/catalog/10545.html.
[5] S. Laster. Model-driven Design. In *Elements of Quality Online Education: Into the Mainstream*. Volume 5 in the Sloan-C series, eds. J. Bourne and J. Moore. Needham, MA: Sloan-C, (in press) 2004.
[6]T. Bishop. Presentation for various national conferences, including the Sloan-C Cracker Barrel Workshop at the 9th Sloan-C International Conference, November 2003. See examples of efficiencies in the Sloan-C Cost Effectiveness practices at http://www.sloan-c.org/effective.
[7] A. DiPaolo. Invited keynote presentation: The Rise of a New Educational Industry: Lessons Learned in the Evolution of Online Education for the Annual Conference of Directors of Educational Technology/California Higher Education (DET/CHE), December 3, 2002. Available: http://scpd.stanford.edu/scpd/about/educa.htm.
[8] C. Twigg. *Innovations in Online Learning: Moving Beyond No Significant Difference.* ©The Pew Learning and Technology Program, 2001. Sponsored by a grant from the Pew Charitable Trusts. Available: http://www.center.rpi.edu/PewSym/Mono4.html#Anchor-Preface-49575_END.
[9] D.R. Garrison and M. Cleveland-Innes. Student role adjustment in online communities of inquiry: model and instrument validation. *Journal of Asynchronous Learning Networks* (JALN) 8(2): April 2004.
[10] M. Thompson. Presentation for various national conferences, including the Sloan-C Cracker Barrel Workshop at the 9th Sloan-C International Conference, November 2003. See examples of faculty support and policies in the Sloan-C Faculty Satisfaction practices at http://www.sloan-c.org/effective.
[11]J. Hofmann. *Motivating Online Learners,* 2003. Available: http://www.learningcircuits.org/2003/aug2003/hofmann.htm.
[12] P. Valiathan. Blended Learning Models. *Learning Circuits,* 2002. Available: http://www.learningcircuits.org/2002/aug2002/valiathan.html.
[13] G. Salmon. *E-tivities: The key to online learning*. London: Kogan Page, 2002.
[14] P. G. Taylor. Changing expectations: Preparing students for flexible learning. *The International Journal for Academic Development* 5(2): 107–115, 2002.
[15] K. Swan. Learning Effectiveness: What the Research Tells Us. In *Elements of Quality Online Education: Practice and Direction*, Volume 4 in the Sloan-C series. Eds. J. Bourne and J. Moore. Needham, MA: Sloan-C, 2002. And various national conferences including the Sloan-C Cracker Barrel Workshop at the 9th Sloan-C International Conference, November 2003. See examples of strategies in the Sloan-C Learning Effectiveness practices at http://www.sloan-c.org/effective.
[16] M. Kassop. Ten ways online education matches of surpasses face to face learning. *The Technology Source*: May/June, 2003. Available: http://ts.mivu.org/default.asp?show=article&id-1059.
[17] Sloan-C Effective Practices. Mercy College Defining Effective Participation; Herkimer County Community College Student-Led Discussion.
[18] A. Chickering and S. Ehrmann. Implementing the Seven Principles: Technology as Lever. Updated October, 2003. Available: http://www.tltgroup.org/programs/seven.html.
[19] L. Ragan and S. Terheggen. *Effective Workload Management Strategies for the Online Environment*. April 15, 2003. Available: http://www.worldcampus.psu.edu/pub/home/fac/workload_strat.pdf.
[20] D.R. Garrison and M. Cleveland-Innes. Critical factors in student satisfaction and success: Facilitating student role adjustment in online communities of inquiry. In *Elements of Quality Online Education: Into the Mainstream*. Volume 5 in the Sloan-C series. Eds. J. Bourne and J. Moore. Needham, MA: Sloan-C, (in press) 2004.
[21] R. Pargetter, C. McInnis, R. James, M. Evans and I. Dobson. *Transition from secondary to tertiary: A performance study*. Canberra: AGPS, 2002.
[22] *Beyond the Administrative Core: Creating Web-based Student Services for Online Learners.* WCET, 2002. Available: http://www.wcet.info/projects/laap/index.asp.
[23] S. Witwer. Posting to the Sloan-C Online Research Workshop March 2004 (unpublished).

Services helpful for blended, ALN, and f2f environments:

- Commonly designed templates/course shells that can be easily navigated, ADA accessible—students can comfortably move from course to course with minimal training.
- "Just in time" technology assistance embedded in class pages for particular skills—students can view them when they have the question (self service) but still have tech support real people to call with questions.
- Tutoring and remedial help modules—again this is available "real time" when students are actively engaged in their homework—some helps that are self service but back ups (e.g. Smarthinking, OWL, math helps, etc.) that are with a real person.

- Instructor contact—blended classes can also take advantage of asynchronous communications (both discussion and instructor email) even if related to a concept discussed in a f2f classroom.
- Library access including electronic reserve, to access supplementary course materials from anywhere and to search online reference databases and full-text articles. It is also helpful to be able to contact a reference librarian by phone and email for help with literature searching.
- Online bookstore services—with special attention to special ISBN numbers for electronic course packs, etc.
- Technology support—online service options with personal service backup—WebEx or Linktivity—type support to help students identify settings that interfere with the online course components.
- Admissions applications, registration, financial aid, degree audit, bill payment, transcripts, academic advising, career counseling, placement, resume writing.

[24] B. Means. Introduction: Using technology to advance educational goals. In B. Means (Ed.), *Technology and education reform: The reality behind the promise*, 1–21. San Francisco, CA: Jossey-Bass, 1994.

[25] B.C. Bruce and J.A. Levin. Educational technology: Media for inquiry, communication, construction, and expression. *Journal of Educational Computing Research* 17(1): 79–102, 1997. Available online: http://www.lis.uiuc.edu/~chip/pubs/taxonomy/index.html.

[26] A. Rossett, F. Douglis and R.V. Frazee. Strategies for Building Blended Learning. *Learning Circuits*, ASTD online magazine, June 30, 2003. Available: http://www.learningcircuits.org/2003/jul2003/rossett.htm.

[27] K.C. Greene. Sakai and the Four Cs of Open Source. *Syllabus Magazine*, March 1, 2004. Available: http://www.syllabus.com/article.asp?id=9030.

[28] G. Lefoe, C. Gunn and J. Hedberg. Recommendations for teaching in a distributed learning environment: The students' perspective. *Australian Journal of Educational Technology* 18(1): 40–56, 2002. Available: http://www.ascilite.org.au/ajet/ajet18/lefoe.html.

[29] The North Central Regional Laboratory. *Critical Issue: Using Technology to Improve Student Achievement.* 1999. Available: http://www.ncrel.org/sdrs/areas/issues/methods/technlgy/goals.

[30] R. Phelps. Developing Online From Simplicity toward Complexity: Going with the Flow of Non-Linear Learning. In proceedings of NAWeb, 9t*h Annual Conference on Web-Based Teaching and Learning*, 2003. Available: http://naweb.unb.ca/proceedings/2003/PaperPhelps.html.