



SPACE STRATEGIES for the New Learning Landscape

By Shirley Dugdale

This is an interesting and challenging time for planners of physical spaces in education. In the past decade, learning has become richer and more complex: technology is generating myriad new ways of learning and the tools to support them; students are seeking more collaborative and immersive experiences; the demands of interdisciplinary research are stimulating new academic relationships and interactions; and learning is just as likely to happen in virtual space as in physical space. With the support of distributed access to digital resources and mobile devices, learning and discovery can happen anywhere.

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This global information environment in which learners are immersed requires new perspectives and fresh approaches for campus planning. At DEGW (<http://www.degw.com/>), we have been responding to this challenge by developing a “Learning Landscape” approach.¹ The Learning Landscape is the total context for students’ learning experiences and the diverse landscape of learning settings available today—from specialized to multipurpose, from formal to informal, and from physical to virtual. The goal of the Learning Landscape approach is to acknowledge this richness and maximize encounters among people, places, and ideas, just as a vibrant urban environment does. Applying a learner-centered approach, campuses need to be conceived as “networks” of places for learning, discovery, and discourse between students, faculty, staff, and the wider community. And especially in today’s tough economic climate, campuses need to use academic space more effectively as well as efficiently.

The most effective planning strategies lead to new insights about how to manage future demands, generate new opportunities, and offer the promise of

sustainable innovation in learning. More specifically, the following ten strategies are key to improving learning space and stimulating campus transformation:

1. Analyze the whole campus as learning space.
2. Develop insights from user engagement.
3. Plan to support multiple types of learning.
4. Leverage space strategies to enable experimentation.
5. Leverage growth in hybrid courses to gain improved space utilization.
6. Seek strategic partnerships to develop informal learning space.
7. Consider diffuse vs. centralized distribution of functions.
8. Link space performance to learning assessment.
9. Develop workplace settings that foster learning organizations.
10. Recognize learning space beyond the campus.

1. Analyze the Whole Campus as Learning Space.

The Learning Landscape approach is about leveraging the power of planning for interaction at the campus level. Rather than developing a master plan from the traditional perspective of siting future building blocks that are often identified as generic space types (such as “classroom,” “departmental,” or “administrative” buildings), the Learning Landscape approach defines a future campus by envisioning overlapping networks of compelling places and hubs, which can offer choices to users and generate synergies through adjacencies and the clustering of facilities.

The nature of generic space types is changing too. Technol-

ogy trends are influencing space in several important ways:

- Traditional categories of space are becoming less meaningful as activities blend, space becomes less specialized, boundaries between disciplines blur, and operating hours extend toward 24/7 access.
- In the future, space types are more likely to be designed around patterns of human interaction than around the specific needs of particular departments, disciplines, or technologies.
- With greater mobility, students have a choice in where they can work and tend to gravitate to spaces they enjoy—so quality of design matters more. New space models for educational institutions therefore need to focus on enhancing quality of life as well as supporting the learning experience.

A key challenge is to find the right balance of formal and informal study space. Formal learning spaces are where instruction is scheduled, whereas informal learning spaces are the spectrum of out-of-classroom places where knowledge sharing and study occur—for example, from libraries and computer centers to cafes, lounges, or residences. As pedagogy changes and teamwork is encouraged by the curriculum, more collaborative group work takes place outside of the classroom. This trend, combined with students’ desire to study in groups, is driving more demand for informal study spaces, not only in libraries but in many other places on campuses, including food facilities reconceived as social learning spaces.

2. Develop Insights from User Engagement.

In a period of such rapid change, it is more important than ever to understand users’ needs through a planning process that engages constituent groups from the beginning. Although surveys provide useful campus-wide data, facilitated interactive workshops can become energizing and creative with activities that draw out information about student culture and perceptions and that engage students in co-creating their vision for the future of the campus. The

Figure 1. Analyzing the Learning Landscape



Formal and informal learning spaces are analyzed in relation to their levels of Formality and Specificity and how those might change campus-wide with implementation of a new vision.

various tools and methods that can be used in these workshops run the gamut from “Day-in-your-life” calendars that identify typical daily activity patterns, to activities that probe how students would prioritize functions at the heart of their ideal campus, to mapping of movement and usage over twenty-four hours. By compiling data from various sources and findings from observational studies, planners can develop typical student study profiles, providing insights on the nuances of campus culture.² Individual students may exhibit behavior aligned with several of the profiles, depending on the time during the semester (e.g., at the start vs. during exam periods) or other variables.

Understanding how well existing campus spaces are performing should be a fundamental step in the planning process. Space performance surveys can reach wide audiences to capture a broad range of faculty, student, and staff perspectives. Workshop participants can give input on why they like or dislike certain places on campus, and the results can be compared between constituent groups. Such aspects of campus culture and community are rich areas for investigation and insight. However, it is the interpretation of the findings from user research and the synthesis

of that interpretation into meaningful planning principles and concepts that form the core of the Learning Landscape approach, addressing complex planning challenges with a comprehensive perspective.³

3. Plan to Support Multiple Types of Learning.

Learner-centered planning recognizes the importance of supporting multiple ways of learning, including social learning and virtual discourse. Campus planners need to anticipate demand for learning that is more

- *collaborative*, with active learning and group work,
- *blended*, with learning and other activities happening anywhere/anytime, enabled with mobile technology,
- *integrated* and multidisciplinary,
- *immersive*, with simulated or real-world experiences, and
- *hybrid*, combining online with face-to-face learning activities, augmented with mixed-reality experiences.

One implication of these trends is that campuses will need to develop a masterplan for the informal learning spaces as well as the formal teaching spaces. Both types of spaces need to support more

kinds of learning activities. Another implication is that because new types of active learning spaces require more area per student than do traditional classrooms, assumptions about space allocation need to be revisited. Hands-on and experiential activities tend to benefit from longer class periods, perhaps suggesting the need for a more systemic rethinking of space scheduling and use over time in the future. As learners gravitate to blended spaces that support blended activities—where they can work, eat, converse, and relax comfortably—campuses need to plan for diverse settings that are flexible, that allow for user control and manipulation, and that can adapt to different populations, activities, and times of day. As students (and faculty) do more work with advanced media in their classes and projects, campus planning needs to distribute places to enable media work with expert assistance nearby.

Food can be a powerful attractor for social learning, providing destinations for diverse campus groups to cross paths and connect. If these destinations are designed as compelling places, they can support learning discourse and the sharing of experiences, as well as strengthen community bonds.⁴ The quality of both menu and design is becoming more important to attract campus communities as they become increasingly mobile and more committed to healthy lifestyles and sustainable practices.

Campus planners will have to consider new space types generated by more immersive learning. Over the last decade, health sciences education has introduced simulation in multiple forms, all of which have different space needs: simulated team experiences with full-body simulators in flexible rooms like stage sets; mock examinations with standardized patient-actors in suites that resemble clinical spaces; and computer-generated simulations in rooms designed for visualization. Simulation techniques, serious gaming, and authentic learning settings will likely become more widespread in many disciplines, with the full implications for space planning yet to be understood.

But we must not forget the importance of sanctuaries on campuses, especially in this age when the threat

Figure 2. The Space Between



The “space between”—the spectrum of informal learning places—is as important as the traditional formal learning spaces.

of “continuous partial attention” easily distracts. Libraries have traditionally been the places that provide quiet retreats for reflective thought, and this aspect is still highly valued by all campus constituents. As more library space gets devoted to collaborative functions, we need to continue to meet this need campus-wide.

4. Leverage Space Strategies to Enable Experimentation.

Pilot projects for experimenting with different types of flexible learning spaces are important to give faculty the opportunity to test out new settings and teaching modalities—whether team-based learning, teaching-in-the-round, or some other method. However, learning space strategy is more likely to stimulate institutional change if it can make a variety of teaching settings available to a greater number of faculty. One challenge is that most teaching spaces are generally assigned by the semester, whereas faculty may want to teach in different settings over the course of a semester, depending on the material and their teaching objectives. The planning of new or renovated teaching space is an opportunity to create more centrally managed but bookable spaces that can give faculty the opportunity to reserve a space on demand for short periods, either for experimentation or for tailoring the teaching space more effectively to the intended learning activities. These spaces are likely to be more effective if they are clustered into hubs that are supported by staff who are trained to manage the use of the experimental spaces, to support academic technology applications, and to gather data on how effectively the space is being used.

5. Leverage Growth in Hybrid Courses to Gain Improved Space Utilization.

A great challenge for colleges and universities is how to introduce more active learning modalities into the curriculum when the need to teach large numbers of students with limited faculty often generates dependency on large-lecture class sizes, especially for introductory courses. Active learning spaces require more area per seat in order to provide

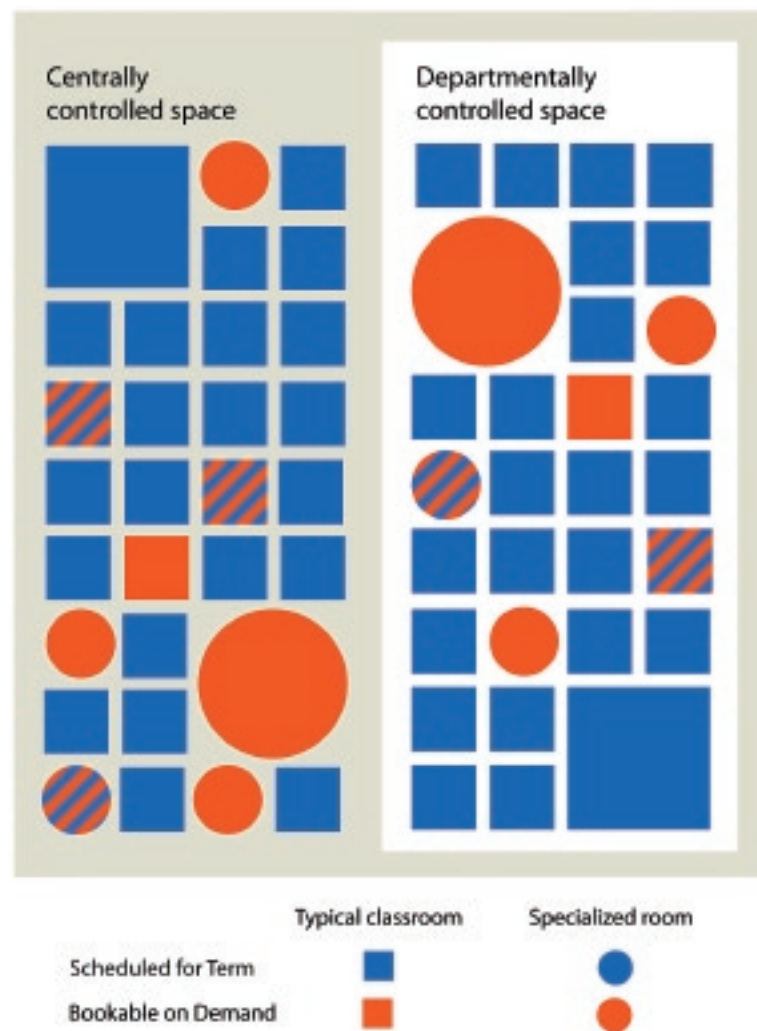
rooms that can accommodate multiple layouts with flexible seating and tables large enough for students to spread out with different types of materials and equipment.

Even with the growing recognition that spaces supporting active learning can provide a more effective learning experience, some institutional and state space planning standards, developed before recent technological changes, still mandate that space be budgeted based on old models. This affects space budgeting at the campus level, as well as the programming and design of individual buildings. Many campuses have a legacy of existing classrooms with tablet-arm chairs. The conversion of these

classrooms into more effective learning spaces with flexible tables either reduces room capacity or requires additional space for the same class size—and hence an adjustment to the distribution of classroom sizes. In addition, institutional restrictions on net-to-gross ratios often limit corridor spaces and public lobbies, where serendipitous encounters and lingering after classes can enrich informal learning. Planning these informal spaces as net area can help to offset this, but strategies are needed to rethink the process for budgeting learning space and to mitigate the increased space demand of these transitions.

One such strategy is to lobby for the review of existing institutional and state

Figure 3. Mixed Model for Formal Learning Spaces



Introducing hubs of special or experimental teaching spaces that are available to be booked on demand can encourage faculty to experiment.

space standards and for the development of more enlightened standards that take into account changing patterns of usage. Another is to leverage the potential of the growth in hybrid courses, which offer a combination of face-to-face and online class activities. If a hybrid course meets only two times a week instead of three, the classroom becomes available for assignment to another activity or course during that third period. The more efficient use of space with hybrid courses has the potential to offset the conversion of existing space to a higher square footage per student, enabling the creation of more active learning settings across a campus—and the allocation of more of it to informal learning space. The reduced classroom “seat” time can provide an opportunity for growth in programs without requiring new construction, and when classes do meet, they can be in settings that can support more interactive work. Leveraging this potential, though, will require coordinated leadership and vision, both at individual campuses and nationally—the kind that EDUCAUSE can promote.

6. Seek Strategic Partnerships to Develop Informal Learning Space.

There are great opportunities today for partnerships among libraries, academic computing groups, and student centers to develop spaces into new kinds of informal learning environments. The reassessment of print collections, the increase in off-site storage options, and the student demand for more collaborative settings are leading libraries to convert former stack zones into more space for users, especially where valuable first-floor space is being freed up as reference resources become increasingly digital.⁵ Aging, crowded computer labs, designed for elbow-to-elbow individual use, are being updated and converted into more interactive workspaces, whether located within libraries or distributed in other buildings. These changes in usage offer not only spatial opportunities for converting areas into more effective learning activities—and for achieving a better integration of formal with informal learning spaces—but also operational opportunities, with the potential for more integrated staffing models to provide

better services to learners at their point of need⁶ and to collocate staff groups for greater collaboration. As library space is shared with a variety of partners, the traditional distinctions between the library and other informal learning spaces are blurring.

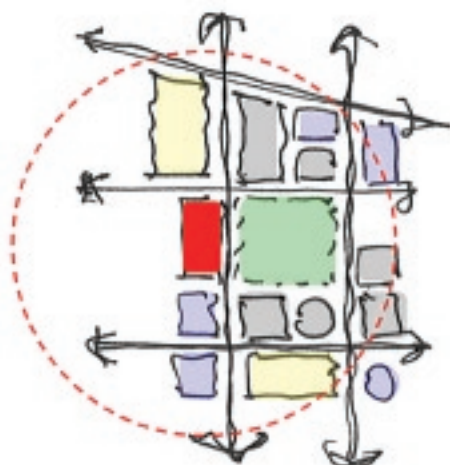
7. Consider Diffuse vs. Centralized Distribution of Functions.

Providing service to learners at point of need is becoming more complex with increasingly mobile on-campus populations. One strategy is to incorporate collaborative and study spaces into centralized shared facilities, in order to support and stimulate interdisciplinary work more effectively and serve different groups’ needs with economies of staffing. (Libraries, for example, have consolidated branches and collections and have added teaching space and other complementary functions.) At the other end of the spectrum is a diffuse approach, which distributes smaller informal learning zones that can be locally specific and responsive with specialized software and expert assistance related to

Figure 4. Distribution Strategies

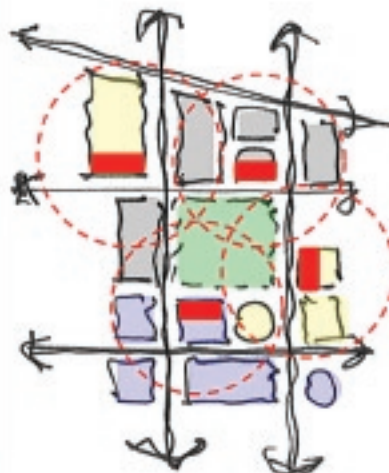
CENTRALIZED

Concentrations of new and innovative learning spaces into Learning Centers



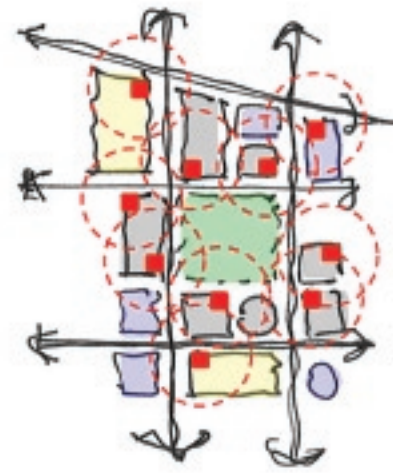
FOCUSED

Learning clusters as groupings of new and innovative learning spaces allocated to campus zones by sectors



DISTRIBUTED

Distribution of new and innovative learning spaces across and between campus sectors on as-needed basis



Exploring alternative options for learning space distribution helps to define different approaches to support learning communities.

disciplines in that sector. This approach places service points in more convenient locations and may offer better opportunities to provide face-to-face services to learners who otherwise might not travel across campus to seek out assistance from reference or other learning support services. The easier the transitions from one activity to another—“continuing the dialogue” as students spill out of classrooms and move into informal learning activities—the more effectively will the blending of activities that students seek be accommodated. As we move into the next decade, the challenge of this duality will become an issue as campus planners determine how networks of service points are integrated with teaching spaces. We need to understand the best ways to exploit the power of place in this new century.

8. Link Space Performance to Learning Assessment.

Some institutions that have committed themselves to a learner-centered mission have developed strategic plans that outline elaborate procedures to assess their annual plans against measurable outcomes, framed in terms of improved learning or learner support. However, these documents do not address issues of space in support of learning—much less outline a method to assess how well teaching space itself contributes to or hinders the effectiveness of the learning process. Even harder yet is how to assess whether informal learning spaces are adequately living up to their potentially rich contributions to the learning experience on a campus. Key questions include the following:

- How well do campus spaces support learners?
- What is the established process for evaluating all learning spaces?
- Are the learning spaces viewed as a continuum from classroom to public spaces?
- Do the informal spaces function effectively to support learning?
- Do work settings support learning for all participants in campus life—for faculty and staff as well as students?

Institutions need to develop an ongoing process for researching students’ and faculty members’ experiences with learning spaces and need to get feedback on a regular basis about the performance of both centrally scheduled and departmentally controlled space. Ideally, this would be part of an annual assessment process that links space performance to the assessment of learning outcomes and provides insights for the next round of campus-wide planning improvements.

9. Develop Workplace Settings That Foster Learning Organizations.

The typologies of office spaces on campuses have not changed in many years, yet technology is driving many changes in academic work. Faculty have more mobile work styles and connect with learners

in a wide range of settings. The increasingly complex nature of research leads academic researchers to collaborate with colleagues in interdisciplinary teams, whether the colleagues are on the same campus or in other institutions around the globe. The increasing amounts of research data being generated will require displays of complex information to aide group deliberations, ideally in facilities designed to enable the visualization and manipulation of that data. Although well-funded research areas and departments may have acquired the facilities to do this kind of collaboration, generally across campuses there is a middle ground of under-served researchers in many disciplines. Campuses need to plan networks of places for interdisciplinary teams to collaborate—places that are not controlled within any

Conventional Campus Planning	Learning Landscape Planning
Campus-focused	Learning Landscape context-aware
Looks backward, relying on planning standards and benchmarks	Forecasts changing needs of users, based on research and engagement with special tools and methods to envision future models
Linear process, from analysis to conception to implementation	Nonlinear process, emphasizing co-creation of concepts with users, pilot projects, ongoing refinements, and incremental implementation
Produces a “plan” to be implemented	Produces a set of strategies and concepts, to be applied, tested, refined, refreshed, and reapplied
Based on needs assessment by school and department	Engages hybrid groups to complement needs assessment process and build consensus around solutions
Conceived spaces are more important than the activities within them	Activities drive the planning process: space is conceived to support them
Prioritizes formal instructional space	Focuses on planning informal as well as formal learning environments
Focuses on classroom experience	Plans networks of physical and virtual learning spaces for distributed, hybrid, and social learning experiences
Single-use space types	Mix of specialized and flexible, multipurpose spaces supporting blended activities
Specialized spaces assigned by semester	Specialized spaces booked on demand
Single-owner model	Layered ownership model, from public to invited to private space

particular departmental turf but are developed on neutral ground, such as libraries, which can provide shared equipment and expert assistance in mediating the use of information and potentially in archiving the shared and co-constructed knowledge. The growth of digital scholarship in the humanities and social sciences⁷ is also starting to generate demand for visualization capabilities, just as the sciences and engineering do today.

Advances made in the design of the corporate workplace in response to new ways of working can provide insights for improving administrative and faculty office spaces on campus. Providing more collaborative work settings and better shared spaces will enable colleges and universities to be more agile in response to change.

10. Recognize Learning Space beyond the Campus.

Tomorrow's campus planning process needs to acknowledge that learning activity extends well beyond the edges

of the campus, both physically and virtually. Now that students are enabled with mobile devices, they seek out those community places offering the late hours and blended settings that may not be available on campus. GPS-enabled portable devices and tools enable groups to coordinate and converge anywhere. More outreach programs providing work experiences in authentic settings will blur the distinction between academic and real-world learning experiences and will likely offer opportunities to gain efficiencies in the use of campus space.

Not only is the city becoming the campus, but the world has become the classroom. The Web 2.0 environment provides lots of opportunities to enable virtual discourse, and blogging and podcasting offer learners opportunities to express themselves and share their knowledge with peers (or experts) far away. Students can now access virtual scientific instruments, such as through MIT's iLabs program initiatives (<http://icampus.mit.edu/ilabs/>), as well as certain research



databases to investigate their own hypotheses. Bringing remote experts into the classroom to converse via video projection will become increasingly important in this global context—with implications for learning space design to enable multi-screen projection capability, layouts with decent sightlines for all seats, and other basic but often ignored criteria.

Virtual worlds like Second Life promise to offer a complementary place for learners to gather. This activity may be either independent of physical campus activity or blended with it, as learners in a real space interact with participants in the virtual world.

It is the potential of augmented reality, though, that will enable the physical landscape to reveal information and itself become a learning field. Thanks to new capabilities for mashing up Google maps with layers of user-developed content, those with mobile devices can move through a campus or urban landscape and access rich virtual information linked to place. Some have already started to turn this into dynamic class experiences, such as MIT's course project to investigate a mock environmental threat for which students had to gather data from across campus with handheld devices.⁸ Campuses need to plan not only with a broader perspective about the environment in which learners will be immersed but also to exploit more effectively the potential connections between physical and virtual spaces.

Summary

To support learning today, colleges and universities must be able to do more with less yet still plan to meet future demands. If learning space designers

can collaborate to develop creative and strategic responses to meet emerging space needs, they will be able to plan academic space that is more effective as well as efficient. As John Seely Brown and Richard P. Adler explained so well, when the focus of attention shifts from the content to the learning activities and human interactions around which that content is situated, social learning and evolving communities of practice will enrich future learning.⁹ Campuses need to create a participatory architecture for supporting these communities of learners, an architecture that can harness the power of both the existing physical place and the emerging virtual space.

Notes

1. Much of this thinking has grown out of our work at DEGW, a strategic design consultancy, over the last decade, particularly in library planning. Led by DEGW and the University of Lincoln, together with other university partners, a major study about the Learning Landscape approach is currently being done in the United Kingdom. It will study the characteristics of the Learning Landscape context for learning and will explore the development of new models for the twenty-first-century campus, with more efficient, effective, and sustainable use of space throughout the higher education sector. For more on this study, see "Learning Landscapes in Higher Education," <<http://learninglandscapes.lincoln.ac.uk/>>. In July 2009, the status of findings will be reviewed in a presentation entitled "Planning for the New Learning Landscape: Findings from Research and Case Studies Here and Abroad," at the conference of the Society for College and University Planning (SCUP): <<http://www.scup.org/annualconf/44/>>.
2. For reflections on differences in cultures, see Richard A. O'Connor and Scott Bennett, "The Power of Place in Learning," <http://www.libraryspaceplanning.com/assets/resource/Power_of_Place.pdf>.
3. The Learning Landscape approach was applied in the master planning process for the University at Buffalo. See "Phase II: Learning Landscape," *UB2020*, <http://www.buffalo.edu/ub2020/plan/phase2_learn_cultivating.html>. I provide further information about the University at Buffalo campus concepts for learning spaces in the 2009, no. 1, issue of *EQ*: <<http://www.educause.edu/eq>>.
4. One example is the Steam Café at MIT. See Scott Francisco, "Steam Café," in Diana G. Oblinger, ed., *Learning Spaces* (Boulder, Colo.: EDUCAUSE, 2006), <<http://www.educause.edu/Chapter27.MIT%3ASteamCaf%E9/11925>>.
5. Chad Kainz, Andrew Harrison, Kelly Miller and Shirley Dugdale, "Digital Scholarship and the Evolving Library," presentation to the Society for College and University Planning (SCUP), July 21, 2008, <http://www1.scup.org/downloads/annualconf/43/SCUP-43_20080721_CC-17.pdf>.
6. As these collaborations develop, new roles are appearing. For example, Steven J. Bell and John Shank have described their concept of the "blended librarian" as one "who combines the traditional skill set of librarianship with the information technologist's hardware/software skills, and the instructional or educational designer's ability to apply technology appropriately in the teaching-learning process. See "FAQ," *The Blended Librarian*, <<http://www.blendedlibrarian.org/FAQ.html>>.
7. Project Bamboo (<http://projectbamboo.org/>) is providing leadership in this area. As a multi-institutional, interdisciplinary, and inter-organizational effort, it is bringing together researchers in arts and humanities, computer scientists, information scientists, librarians, and campus information technologists working on advancing arts and humanities research through the development of *shared technology services*.
8. Phillip Long describes this project in Phillip D. Long and Shirley Dugdale, "Planning the Informal Learning Landscape," *EDUCAUSE Learning Initiative (ELI) web seminar*, March 12, 2007, <<http://connect.educause.edu/Library/Abstract/PlanningtheInformalLearn/39420>>.
9. John Seely Brown and Richard P. Adler, "Minds on Fire: Open Education, the Long Tail, and Learning 2.0," *EDUCAUSE Review*, vol. 43, no. 1 (January/February 2008), pp. 16–32, <<http://connect.educause.edu/Library/EDUCAUSE+Review/MindsonFireOpenEducation/45823>>.