GAME CHANGERS

EDUCATION and INFORMATION TECHNOLOGIES

Edited by **DIANA G. OBLINGER**

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FROM THE EDITOR

I would like to thank the many people who made this book possible, particularly Gregory Dobbin for managing the project and Karen Mateer for her research.

—Diana G. Oblinger

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Athabasca University: Canada's Open University

Dietmar Kennepohl, Cindy Ives, and Brian Stewart

THE PRIMARY DRIVING FORCES moving Athabasca University forward are its motto Learning for Life and its mandate to remove barriers to university-level education. By seeking to provide flexible education and serve nontraditional learner groups and needs, the university is very different from traditional campus-based institutions. Athabasca University (AU) is re-creating itself into a twenty-first-century university through its adoption and use of technology to expand the opportunities for its stakeholders. The growing needs of students, academics, and staff to learn and work in an integrated online environment is reflected in the institution's movement to a virtual campus with easy access to learning assets. Students are allowed to learn on their time at their pace in their place. For many, this is their only opportunity to access tertiary-level education.

The model that AU is inventing is responsive to the developing crisis in postsecondary education. New approaches and sector reinvention are necessary for creating knowledge-driven societies to meet the growing requirement for education to develop the citizenry and to be economically sustainable. The current higher education model, where operational costs rise at the real rate of inflation above all other sectors,[1] and where expectations of stakeholders for improved outcomes have increased—all occurring in a milieu of traditionally slow organizational change—cannot continue as is. AU has developed an approach that is cost effective,[2] pedagogically sound, responsive to student needs, and above all, adaptable to changing circumstances. In a world of uncertainties, change is probably the only certainty.

The Future Is Not What It Used to Be

AU has been one of the few universities worldwide already bridging the new educational future with its open- and distance-learning approach since its inception. This meant, in the 1970s and '80s, that it delivered print-based, independent study courses with telephone-tutor support.[3] Still, as newer technologies became available, they were experimented with and, if found useful, adopted. Assignments could be submitted electronically rather than through the postal system with the advent of e-mail, for example. However, adoption of new technologies usually varied across the university, with the technology essentially considered an add-on or modification to the basic working model. While appropriate and effective for its time period, this traditional approach to designing and delivering courses became entrenched and reinforced by years of policy, practice, and collective agreements. Wholesale system-wide changes were slow in coming, although individual examples of innovations could be found. Choosing one learning management system (LMS) for the entire university, for example, became a lengthy and complex debate, reflecting not only the politicized nature of course development and delivery, but also the widely divergent opinions across the academy itself.[4]

The incorporation of appropriate technology, as well as actual approaches to learning design, delivery, and support, has been the subject of continuing discussions. We have recently observed a substantial increase in willingness and momentum for change, with the focus having moved from accepting the necessity for change to reinventing the AU model. Two recent externally funded university projects ($14.5 million total) have catalyzed this acceleration: one for the digitization of all AU course content, and the other for increasing systems capacity and currency for research, collaboration, learning, content management, and student support.

A broad analysis of the literature indicates that critical success factors for integrating technology into teaching and learning are "organization-dependent, related to variables such as organizational mission, goals, culture and practices, as well as faculty and student perspectives."[5] AU's stated approach to institutional transformation is collaborative, informed by multiple perspectives, and focused on learning as the core business of the university. Effective integration of information and communication technologies (ICTs) depends on the successful coordination and implementation of a number of interdependent subsystems within the organization. This chapter describes AU's journey, which is ultimately a story of great change and reinvention, but also one of discovery. We share our approach to and perspectives of some of the serious difficulties we have found along the way, recognizing that these once-unique

challenges, through their universalities, can offer lessons for many postsecondary institutions.

Our Infrastructure Really Is ICT

In 2009, AU was awarded a Knowledge Infrastructure Program (KIP) grant after years of lobbying both provincial and federal governments to consider ICT funding as capital rather than purely operational funding. While many other institutions applied KIP funding to physical buildings, AU's bricks and mortar is mainly its technology. This recognition from the government of ICT as capital infrastructure was a fundamental paradigm shift—it was not only essential to AU's model, but it served as an important next step for higher education as a whole.

AU's ICT Capital Plan is a ten-year development program inspired by the vision of an Online Knowledge Environment (OKE). The creation of a unique and compelling experience driven by world-class pedagogical research and practice, available through individualized access, with course delivery tailored to students' learning preferences to enable greater success, were some of the main tenets of the OKE vision. In order to improve services and supports throughout the organization, the capital plan essentially seeks to establish the OKE through the use of ICTs across learning, research, and administrative activities. Superficially, most innovations and projects that flow from this plan manifest themselves through changes in technology. However, they are often process or practice changes that also incorporate an ICT systems component at their foundation. Thus, ICT has come to play an increasingly important role throughout the operations of the institution and is creating a culture of innovation and a desire for change. ICT represents the overwhelming capital base of the institution. AU is seen as a virtual institution both internally and externally, one in which the traditional view of capital infrastructure, buildings, and land does not apply.

Course Delivery and Learning Support

It is crucial to have the appropriate supports in place for success, given that most AU courses are offered as *individualized study* courses (mainly undergraduate level) with year-round enrollment and that some students may only have minimal formal prerequisites or may have been away from their studies for many years. A long-standing strategic objective of the university has been to provide high-quality support in a flexible learning environment. The learning experience is greatly influenced by academic support, in addition

to the full suite of administrative and student support services available online and by telephone (detailed later in this chapter). Still, some fundamental issues have had to be dealt with.

Learner preparedness: Academic supports are available in some cases before one even formally becomes a student.

- Degree Audit and Program Planning (a web-based advising/degree audit tool) enables students to perform "what if" scenarios based on their coursework to evaluate how transfer credits would apply to their program.
- Several self-diagnostic tests ("Am I Ready for . . . ?" series) are available to potential students to help determine if they are ready for a specific course or, more generally, for university-level study itself.

At an open university, students are not required to have formal prerequisites to register in entry-level courses, but they are still expected to perform satisfactorily once they enter. Because AU faculty and staff wish to reduce failure rates, this creates challenges. Furthermore, to ensure that students have a reasonable chance to obtain the education they seek and deserve, the teaching staff feel morally obligated to adequately advise and inform students attempting a course.

AU has also developed academic supports that are open to all students in the area of general education. This includes the Write Site, the Math Site, and Information Literacy, which all provide a wide variety of online resources (and in one case, personal coaching). However, at the heart of the AU model is the fact that (1) courses and programs are developed and overseen by research-active professors in those fields and (2) students have access to a tutor.[6] Enhancing student success is the aim in all cases.

Student engagement: Again, as with learner preparedness, the need to enhance student success and increase the traditionally low pass rates for students studying alone and online drives much of the discussion and debate at AU. Research links proactive student contact with persistence and student success.[7] In order to establish a relationship and encourage course completion, this used to mean telephoning or e-mailing a student. A critical factor in student success is student engagement, as has been repeatedly pointed to in wide-scale studies; as a result, benchmarking tools such as the National Survey of Student Engagement have become common. AU provides student engagement opportunities via well-designed interactive courses (discussed later in this chapter) and through individual communications with course tutors and online discussion forums with course colleagues as a result of the possibilities afforded by

new technologies. The creation of an interface for the teaching staff portal and community (myAU Learning Management [Tutor] Tab) that highlights recent student activities (submission of assignments, forum postings, internal mail postings) and disseminates tutor-related information in an effort to increase tutor engagement with students is the outcome of one recent initiative.

Social networking: Studying alone and online is not a typical environment for many students. Traditional residential universities have spaces that enable a rich diversity of informal, nonformal, and formal interactions in a variety of places, such as cafes, lecture theatres, libraries, common areas—Oldenburg's "third places."[8] These physical social spaces provide many opportunities for learning and research, including the discovery of new ideas and people with relevant interests. Such spaces are unavailable or unevenly distributed in online institutions. The growth of social networks in society (e.g., Facebook, LinkedIn, Twitter) and in academic settings (e.g., University of Brighton's community@brighton and University of Manitoba's Virtual Learning Commons) has inspired AU to offer a secure social network for learners, alumni, staff, and faculty. The site (The Landing) increases social interactions among members of the AU community, offering more opportunities for collaboration, cooperation, and sharing through the use of an extendable online social software system. Pilot projects currently underway are leading to successful practices for incorporating The Landing into self-paced individualized study courses. These experiences are informing course design more broadly across the academy.

Student Support Services

The nature of services students are demanding has been impacted by the proliferation of postsecondary learning options.

- Students' perceptions of university education are moving toward a business orientation whereby they see themselves primarily as clients purchasing services rather than as students learning with faculty.
- Technology has increased access and 24/7 service is now expected.
- The nature and level of services can differ greatly for undergraduate and graduate students.

The AU model is characterized by openness, flexibility, breadth, and quality of programs in a distance and online learning framework, accessed through continuous enrollment at the undergraduate level. Taken together, these features demand an array of student services that not only meet changing expectations, but that also offer more immediate, effective, and customized services

in the unique AU learning environment. This has prompted efforts in several vital areas.

Credit transfer, evaluation, and coordination: Because students have become more mobile, they are increasingly seeking credit for a combination of courses from a variety of institutions and a range of other learning experiences, so that advising, program planning, transcript evaluation, and prior learning assessment have become progressively more complex. In addition, maximum recognition of previous learning for students that can be applied to their program is allowed by the open nature of the university. Until recently, this had been done manually and was very time consuming. AU introduced a document workflow related to transfer credit evaluations, articulation agreements, and examination requests (Transfer Credit Administration System), which also provides automated and seamless updating of student records and allows students to preview transcript evaluation. Future integration with the provincial postsecondary application system (ApplyAlberta) will further expedite transcript receipt.

Pan-university collaborations: Student support areas at AU include registry, course materials, access for students with disabilities, prior learning assessment and recognition (PLAR), challenge for credit, financial aid, information center, technical support (Help Desk), examination services, transcript requests, transfer-credit evaluations, advising, program planning, counseling, library services, ombuds office, and student awards. Also, AU has offices at major collaborating residential institutions. These student support areas are distributed across the university in several units and together offer a wide variety of services. Unit heads from student services and learning support consult regularly in different pan-university collaborative working groups—which include the Contact Centre Group, AU Web Advisory Committee, and the Student Success Group—in an effort to pull everything together and offset any "silo effect." Coordinating efforts across the university and maintaining consistency in all student-facing operations is crucial. Four overarching principles articulated in the Student Success Group vision guide the initiatives: (1) enhance student experience and success, (2) cultivate a service culture, (3) integrate appropriate technology, and (4) maintain continuous evaluation and improvement.

Student relationship building: AU is introducing an ICT system (Student Lifecycle and Relationship Management Support Services) that tracks student contact information related to various constituents (prospective students, current students, alumni) with the goal of enhancing student engagement outside the classroom, improving service relationships, and informing strategic communication and business planning. This is being used in combination with other initiatives, including a call management system (Virtual Call Centre) to

facilitate improved frontline service and provide information on patterns to stimulate further development. The relationship management system will provide insights into student behaviors, allowing future developments to better meet emergent demands and respond to student needs.

Paving the way: Many of the ICT innovations adopted by student services and learning support are not necessarily direct supports. They are instead meant to make various practical functions easier for the student and less of a distraction to learning. For example, students can arrange for invigilated examinations literally at any time anywhere in the world. Systems under the Exam Harmonization project will not only define and streamline the exam life cycle; they will provide efficient exam management. The Gradebook system integrates and enhances student grading functions in the learning management system (Moodle) with the student information system (Banner), allowing students to more easily submit assignments and eliminating duplicate grade entry by tutors. The Federated Search system enables students and researchers to browse and find information in multiple databases and resources during a single library search. Some innovations, while still essential to supporting students, are more administrative and thus unseen. Examples of this include AU's move to a single content management system (Alfresco) and its adoption of Desktop Virtualization, which transitions the desktops of personal computers onto a centralized server and enables staff to securely access their digital assets from any computer with an Internet connection, whether inside the AU workplace, on the road, or at home.

Finally, numerous common strategies employed by student services and learning support units are in place across the university. For example, technology is often used to automate routine work to free up more time for personalized high-touch interactions. Students can also directly access needed resources and information, affording them more control over their own learning environment. However, student services and learning support are not a concierge service for fulfilling any and all requests. The collection of services is meant to reduce barriers to university education and to facilitate an environment conducive to learning and personal growth. They provide a balance of what is wanted and what is needed to enable the success of independent self-directed learners.

Course and Curriculum Development

The early AU model used an instructional systems design[9] approach wherein courses were written by subject matter experts (authors) following a template created by instructional designers, edited for quality and consistency

and produced as print-based materials by specialists in visual design and typesetting. Courses typically included study guides that provided commentary about readings from textbooks or collected articles, course manuals that described how students should work through courses, and assignment manuals. These materials were boxed and mailed to students.

A detailed seven-phase process guiding course-development activities included opportunities for curriculum alignment, peer evaluation of content, and regular revision of courses. This process, focused on the publication of content, worked well for many years.[10] As ICTs emerged, instructional designers were hired to help with experimental projects, create learning objects, and advise on the use of multimedia. At the same time, learning theory was evolving from positivist to relativist, and students' preferences were changing from accepting direct instruction to expecting to actively participate in their learning.[11] Greater possibilities for student interaction with content, with instructors, and with other students[12] were afforded by the new online technologies. The world changed, challenging the original course-development model.

Several academic units experimented with online student activities in early course-management systems. By the early 2000s, most graduate programs and programs in two undergraduate disciplines—Business and Nursing—were delivered online (with the exception of textbooks and exams). The pedagogical model of textbook wraparound or information delivery approaches in the self-paced programs saw few changes, however. In 2006, the LMS enterprise was consolidated—Moodle is an open source software, in line with AU's commitment to openness—and course materials were speedily converted to the online environment, at least initially.[13] Conversion did not involve much change, but it was a first step in the long process of influencing the culture and practices of both academic and administrative staff. While some staff resisted the conversion approach and viewed it as too threatening to traditionally successful models, others saw an opportunity to create more engaging courses and enhance the learning experience of students and felt the university was not moving fast enough into the online world.

Recent Course Design Innovations

In the late 2000s, AU began recruiting learning designers[14] to help influence the transition from print to online course development. As their experience with course conversions and the LMS grew, and examples of successful online courses were shared throughout the university community, more and more academics came to appreciate the need to rethink their approach to course design. Student feedback was also beginning to describe changing

expectations. The learning designers focused their efforts on designing learning activities and aligning assessments with learning outcomes. Working with course professors and other subject-matter experts to redesign course materials into engaging and interactive learning environments that are also motivating and challenging, the learning designers identified the need for an educational development program that would share promising practices in online teaching and learning across disciplinary boundaries. Workshops, presentations, and open conversations covered instructional and learning theories, appropriate use of technologies for student success, assignment design, and examples of innovative course design at AU. These efforts supported new relationships with course professors and inspired greater confidence in the potential of online courses to meet the needs of both students and specific disciplines. As a result, new policies and processes for course development are expected soon.

The externally funded ICT infrastructure projects provided additional resources for experimentation in several areas, including learning analytics and open educational resources (OERs). A suite of complex online tools was designed to assist with analyzing student behavior in the LMS and with the development of interactive learning objects at the activity level. One application accesses data for formative evaluation of courses that use learning resources in new ways. Other applications include authoring interfaces that allow nonprogrammers to develop media-supported learning activities such as quizzes, tutorials, decision trees, and m-casts.[15] The digitization project supported the development of twenty-five interactive, multimedia learning objects and activities for seventeen of AU's largest enrollment courses. These "showcase" enhancements were designed to focus students' attention on difficult content or concepts in individual courses in order to increase their engagement and motivation. Formal formative evaluation is under way, but early feedback from tutors and students is promising. Producing reusable resources using core XML coding so that they could be easily adapted for other uses was another goal of the project. Most of the objects and their associated editors are now licensed with Creative Commons and have been released into the OER community. And we are already repurposing the objects in new courses.

These special projects also offered opportunities for faculty to get more involved in conversations about moving AU programs and services online, which has resulted in a greater understanding of and commitment to innovation in course design for online delivery. A higher level of engagement in and support for initiatives that are renewing the culture of teaching and learning services at AU and accelerating the adoption of change is one outcome. A heightened sense of collaboration among the various stakeholders in the teaching and learning enterprise is another.

The Future Is Here

Research programs are focused on the application of emerging technologies to improve student access to and success in AU courses in support of future developments in course design and learning support. Researchers at AU's Technology Enhanced Knowledge Research Institute are actively engaged in exploring advances in mobile learning, adaptivity and personalization, social networking, learning analytics, and open education. The design-based nature[16] of these research initiatives connects researchers directly with practitioners—both learning designers and professors—and helps builds community, further supporting an understanding of the need for change. New pedagogical approaches are already emerging. One is focusing on the use of OERs in course design, which is expected to reduce course development time and cost (AU is a founding member of the OER university[17]). Reusable learning designs will have a similar impact on production processes.

The results of learning analytics studies in particular will likely guide the design of course models in years to come. Analytics broadly promises that new insights can be gained from in-depth analysis of the data trails left by individuals in their interactions with others, with information, with technology, and with organizations. Learning analytics focus on course- and class-level activities, letting students access data about their learning progress and offering design teams ideas for iterative improvements of courses.[18] Our goal—to provide personalized learning environments—is achievable if combined with the data from administrative systems, especially grades and student demographic information from the student information system.

Student Perspective and Performance

Approximately one-third of AU students register for one or two courses in order to complete degrees at their home university or college. The demographics of these visiting students are analogous to those at traditional institutions. The rest of the students are nontraditional learners who tend to study part time, are often more mature, and already have job obligations and family commitments. AU regularly surveys its students to obtain feedback on course, tutor, and learning support, as well as on nonacademic services,[19] using the detailed information to improve services.

Overall satisfaction scores tend to be quite high, with 95.3 percent of students rating services as excellent or good and 97.7 percent who would recommend AU to friends.[20] The provincial government also conducts an

Table 1. **Athabasca University Graduate Student Satisfaction Compared with Mean Alberta Universities, 2010**[22]

	Quality of Teaching (%)	Quality of Program (%)	Overall Experience (%)
Athabasca University	94	97	97
Mean Alberta Universities	88	87	90

independent satisfaction and outcomes research survey (approximately two years after graduation) of all provincial postsecondary education institutions. In almost two decades of these surveys, AU graduates have consistently expressed high levels of satisfaction with the quality of the teaching, programs, and overall educational experience. The 2010 report is no exception,[21] as seen in Table 1.

In its last undergraduate student survey in 2008,[23] the Canadian Universities Survey Consortium rated Athabasca University as being as good or better compared with the national average in several areas, including satisfaction with teaching quality (88 percent vs. 88 percent) and overall educational experience—92 percent vs. 85 percent. (Since most of the thirty-one universities in the consortium are primarily classroom-based with online supports, the questions related to the in-classroom environment, social activities, and in-person perceptions of the professor generally scored lower than average.) Athabasca students reported higher levels of satisfaction with online instruction (95 percent) compared with students having taken online courses at other institutions (73 percent).

Similar to other universities, learners are evaluated by their submitted work, interaction with the teacher/tutor, and invigilated examinations. Although the open nature of the university does not require prerequisites to enter many courses, it does require students to meet rigorous standards to pass the course. Grades obtained in AU courses are comparable in distribution and in absolute terms to those at sister universities in the province,[24] which all use the same grading scale.[25] Other institutions in Canada and abroad commonly recognize bachelor degrees for entry into graduate programs and courses for credit transfer. AU is a formal member of the credit-transfer system in both Alberta[26] and British Columbia[27] and has the authority to be a university and grant degrees through Alberta's Post-Secondary Learning Act. It is also officially recognized by the Government of British Columbia. In 2006, AU became the first Canadian public university to receive accreditation in the United States,

through the Middle States Commission on Higher Education (MSCHE), one of six regional organizations in the U.S. that accredits universities. No other public Canadian university holds this level of foreign accreditation.

The Participation Challenge

The completion and pass rates are the most distinguishing student performance features when compared with traditional residential universities. Students studying online as individuals (as opposed to being in a cohort) have significantly lower pass rates. This is especially true in an open course with minimal prerequisites. The course pass rate for undergraduate students at AU for the period 1996–2003 was 54 percent, comparable to other open distance-learning (ODL) universities.[28] However, AU's nonstart rates[29] are substantial, and when nonstart course registrations are excluded from pass rates, "The pass rates for … students at AU increase from 59% to 84%—a figure that likely approximates pass rates at conventional universities."[30] Though technically the nonstart students are not students who fail the course, AU and other ODL universities expend much effort toward understanding and, more importantly, increasing student retention and persistence in their courses by fostering more student engagement and designing better courses. For example, can ICTs be used to create a cohort "feel" to a course, but still allow the flexibility of individualized study? In the end, it is factors that the university has no control over—family, home, health, work—that are connected with nonstart behavior for many mature students.

In addition to internal and external pressures to increase pass rates, good news can be found on the participation front. AU provides a viable option for those in remote, rural, and northern communities, and reaches many underrepresented groups, especially aboriginal students and students with disabilities. Learners (79 percent) who may be mobile or who have family and job commitments and who wish to study part time from anywhere regularly take advantage of the tremendous flexibility offered. The fact that 74 percent of graduates are the first in their family to earn a university degree, a significantly higher number than at most universities, is the noteworthy result of the combination of open admission and rigorous course standards. This participation—where it is most needed—reflects AU's mandate to remove barriers to university-level education and is of great value.

Becoming a Twenty-First-Century University

Transforming a large academic organization is very much like trying to change the tires on a car while driving down the highway. Even if everyone can agree on what the final outcome might be, its realization is demanding and risky. Many visions of the twenty-first-century university have been proposed—often embracing features AU employs—and include being learner centered and open, having self-paced courses, offering continuous enrollment, incorporating appropriate technology and learning design, focusing on learning outcomes and not inputs, and providing strong student service and learning supports. What could other institutions learn from AU if they were to design themselves as a twenty-first-century university?

- Many of the proposed features that have been successfully implemented by AU do result in high student satisfaction and successful performance. They come with their own challenges, however.
- Preparing for and embracing changing technologies is vital. ICTs have become an integral and critical part of AU. They are no longer "add-ons."
- Effectively adopting ICT requires transparent governance allied with reliable processes and administration. ICTs are disruptive to a university's core business and require broad understanding and acceptance to be successful.
- Providing institutional infrastructure and fostering a culture that can accommodate unforeseen future changes are key to laying the groundwork for building a twenty-first-century university.

Becoming an educated person is what attending the university is still about. Universities prepare people for careers with skills that fuel the economy. However, developments such as the following have inspired us to rethink the concept of the university: the vast amounts of information now available; rapid changes in technology; the creation of new professions; the blurring of formal, informal, and nonformal learning; employers' desire for general education and soft skills; globalization and increased mobility; and changing learner expectations. While these factors will drastically change how, when, and where we learn in the future, they also bring us back to the idea that a particular area of study is essentially just a vehicle to a good university education. Learning to learn, rather than focusing on specific disciplinary content, is the solid emphasis at Athabasca University. It's about learning for life.

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29. A "nonstart" is a student who registers in a course but has not submitted any assignments or done any examinations.
30. Powell, *Openness and Dropout*, Table 7.

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