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NAIT eLearning Initiative: Building an Enabling Environment- Five Years Later: Lessons Learned

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Abstract

Five years later, how did the Northern Alberta Institute of Technology (NAIT) manage a large-scale integration and adoption of a fully online and blended learning model of instructional delivery? The organization began with a pilot project in 2006 to gather experience and knowledge that would ensure our institute-wide NAIT e Learning Initiative was successful. The journey took our organization forward to full development of online degrees in less than one year. What NAIT experienced, the cost, what worked and what didn't work, the unprecedented growth in online learning and other lessons learned over the past five years will be discussed. Key strategies used throughout the process such as relying closely on NAIT faculty support, training and involvement; paralleling Alberta's other post-secondary organizations goals, NAIT moved to a more 'organized' and institution-wide approach to the development, delivery, and support of online learning. Articulating NAIT's learning philosophy, created a unique e learning instructional design matrix (and course development template) that; defined and refined our learning management systems policies and practices for course delivery and student feedback and support were used to realize a positive outcome of our strategy. Continually increasing the skill sets of NAIT faculty in using the technology students have come to expect became imperative and also contributed to our success. Finally, incorporating best practice, being flexible and providing online training and support to faculty who have come to understand how teaching online is different from face-to-face classroom instruction

Keywords

Compelling reasons; Cost; Fully online learning; Blended learning; Best practices; Faculty competencies; Learning management systems; Course development template

1. Introduction

The Northern Alberta Institute of Technology (NAIT) is one of two polytechnic institutes within province of Alberta, Canada. Focusing on business, health, technical and trades training since 1963 NAIT has a proud past with over 164,000 graduates in 85 countries world-wide. The Campus in Edmonton, Alberta currently provides more than 200 credit programs leading to degrees, applied degrees, diplomas and certificates. The organization

employs approximately 1,200 academic staff, and 1,500 non-academic staff that serve 8,400 full-time students, 20,500 students in continuing education and 12,500 apprenticeship students – graduating close to 8,000 Students per year.

In 2005, the academic management team and executive committee approved an eLearning initiative to create flexible opportunities that would allow students to take courses and entire programs online. The strategy contained a staff training component, a plan for systematic growth of technical infrastructure; a flexible instructional design approach which allows for new ways to deliver curriculum and integrate applied research; and a plan to establish NAIT online courses as the best in the marketplace. Today, the institution has seen remarkable growth in students selecting online courses that have been developed specifically for our baccalaureate degree programs. Incorporating NAITs unique teaching and learning philosophy (small class size, hands on experience activity-based curriculum), a unique e learning instructional design matrix was defined and refined; our learning management systems, policies and processes for course delivery has taken the organization forward to realize our goal to create outstanding online learning and blended learning experiences for our students. In addition, the eLearning strategy continues to provide NAIT faculty with a working knowledge and comfort level in the use of technology including online learning design and delivery that encompasses best practices in web-based learning.

This paper will present an overview of our journey as an organization as we grappled with the transformation from primarily a face-2-face learning institution to one that embraced and continues to embrace flexible learning pathways for our students. We will describe our challenges and successes and articulate our lessons learned. Lastly, we will describe what still needs to be done to truly become bimodal in our capacity to serve students into the future.

2. Growth in online learning at NAIT

In 2005, NAIT had approximately 1% of the market share of online learning courses within the province of Alberta. As the eLearning Strategy unfolded, the organization received the mandate to offer Baccalaureate degrees. Two degrees were developed for face-to-face (full-time) during the day, evening (part-time) and online. Within a three year period between 2007 and 2011, a total of 181 online courses were developed for both the Bachelor of Business Administration degree (131 courses in five separate streams of study) and the Bachelor of Technology in Technology Management degree (50 courses including several clusters of specialization).

The growth in online registrations has increased almost 500% over the past three years. This current academic year (2011/2012) sees the highest number of registrations in just two terms thus far. The growth is illustrated in the Table.

3. More on our teaching philosophy

NAIT's mission is "*Educated, skilled and successful learners*". Exemplifying NAITs teaching and learning philosophy (small class size, hands on experience activity-based curriculum), a unique e learning instructional design matrix was created for NAIT degree programs (first in the Learning Management System (LMS) WebCT, then later modified in the open source LMS Moodle environment. The templates that resulted were built first for the Business Administration Diploma courses then expanded to include the Baccalaureate degrees two years later encompassing our philosophy and therefore differentiating our online courses from other institutions. These templates were used to align learning outcomes and objectives to 'online class' activity (describing the activity intent); assessment; and resources required in a spreadsheet format.

Academic Year	Total Registrations
2008/2009	1,103
2009/2010	2,369
2010/2011	5,322

Table 1: Growth in Online Registration at NAIT

Included in the design of our courses is an Essential Quality Standard Checklist (see Appendix A) for NAIT online learning development that has been adapted from the Campus Alberta Quality Council (September 21, 2006) document entitled “*Additional Quality Assessment Standards for Programs Delivered at a Distance*” and the eCampus Alberta Quality Standard Guidelines for online courses. This checklist is provided to subject matter experts (or content experts) that are developing courses for our degree programs at NAIT. It is also a standard component of each online course nested under ‘instructor resources’ on the course site.

Within the design aspects of our online courses - as best practice describes the interaction students have with their fellow students and instructors as pivotal to success in online learning - the organization (more specifically) NAITs’ academic leadership also recognizes characteristics of effective distance learning as an egalitarian relationship (Lobel, Neubauer, and Swedburg 2005) or better described as “[...]the institutional community supporting the virtual community needs to model the behaviors of collaboration necessary to build the online community. (Hunter 2004) NAIT is committed to collaboration as one of the 4C’s of Leaderful Practice - collaborative, concurrent, and collective and compassionate (Raelin 2003) as the organization is currently embracing by establishing an emergent and planned change management process to take us into the future that provides flexible pathways for students.

3.1 Best Practices in Online Learning Facilitation

In addition to this over-arching organizational philosophy, goals and change process, the eLearning strategy identified competencies and skills faculty required to be successful online facilitators. NAIT provided and continues to provide faculty with a working knowledge and comfort level in the use of technology including online learning design and delivery. The “*Best Practices Course in Online Learning Facilitation*” was developed in 2007 and has been delivered to NAIT faculty and others faculty within the province of Alberta several times a year. This course is a 4 week courses that exposes faculty to a Learning Management System, web conferencing software and best practice protocols for online learning from a ‘student perspective’. Faculty members learn by being a student in an online course, and by practice teaching to each other in this environment.

The ‘*Best Practices*’ course has had over 150 participants from 2007 – 2009 with an additional 250 participants in 2010-2011. Overall approximately 400 faculty members have learned to create, manage and actively participate in asynchronous forums and discussions, synchronous virtual classroom presentations as well as to use the various tools and options within the LMS application to support students.

3.1.1 Lesson Learned

- NAIT has learned the ‘*Best Practices*’ course is an effective way to introduce faculty to online learning (especially if they have not experienced taking an online course, or facilitated one prior to accepting a contract to teach online);
- Faculty appreciate the opportunity to learn in a safe environment before going live into an online course with students;
- Transformation learning on the part of the faculty member takes place regarding how to create pedagogically sound online courses;
- Faculty members were surprised how much work is involved in keep students engaged in an online course and soon learn techniques to build effective communities of learners.

3.1.2 Future

NAIT needs to continue to support faculty to take the Best Practices in Online Learning Facilitation.

4. Technology

In 2005 NAIT’s Director of Information Services Division (ISD), pointed out just how big the infrastructure and infrastructure support was at NAIT. He noted that the “*IT infrastructure at NAIT supports 5500 desktops, laptops and servers over 10 campuses with gigabit connections to all wiring closes and with 100baseT connections to the desktop.*” NAIT has campuses outside of the main Metro Edmonton and all of these campuses were connected via a 20 Megabit link to the high speed internet with large band width. In 2005, access to the Internet was via a 15 megabit per second connection with the capability of bursting to 30 megabits per second. Functionality, such as video conferencing and streaming video, was controlled and monitored using NAIT’s packet shaper, which allowed a guaranteed quality of service for designated types of Internet traffic.

In 2005, the ‘academic computing systems’ that included WebCT and eventually Moodle existed outside enterprise computing; that is outside the Information Services Division (ISD) whose mandate at that time was to provide administrative computing support for the organization. Online learning and the connected infrastructure was considered ‘innovation’ and was not fully supported until 2010, when it moved to ISD and became part of the enterprise system framework for NAIT.

Currently the core design and functionality of our multi-user computing systems integrates academic requirements within the enterprise framework and aligns these applications and support within the organizations Information Technology strategy. Security controls, standards and governance is now an integrated approach for all academic systems and the requirement for access by both staff and students is centralized making our business continuity and IT risk management more stable, therefore creating scalability for our online course offerings.

4.1 Technical and Functional Support

In addition to the infrastructure support NAIT provides to academic computing now through ISD (specialists in computing architectural design, network engineering, scripting and server deployment), the organization recognized a need for Local Area Experts (LAEs) and system administrators for the LMS and related applications (web and video conferencing). Currently instructors are provided training and support through Best Practices in Online Learning Facilitation, along with additional workshops and one-on-one (just-in-time) training in using specific tools in Moodle. A seasoned online instructor would be classified as a ‘Power User’

and be able to actively edit, add content (text and images) and manage course materials, student evaluation and reporting within the LMS system. The LAE would provide support to faculty using their specialized knowledge of the software application and its integration into NAIT's connected business processes and practices such as the connection to our PeopleSoft registration system, student portal and Registrar's Office. The System Administrators is the conduit between the Power User, LAE and the system specialists in ISD with their in-depth understanding of the work unit operations and configuration between the hardware and software requirements. At NAIT these individuals maintain the framework for nesting and managing numerous courses on the server efficiently, test new versions of software applications, document changes and updates as they occur.

Tier 1 technical support for students is provided NAIT's Student Success Call Centre and more complex Tier 2 support is provided 7/16 hours though the Academic Help desk in ISD through email and phone contact.

4.1.1 Lesson Learned

- NAIT required the move from innovation to enterprise computing to support the tremendous growth of online courses and numbers of student registering over the recent three year period;
- NAIT recognized it required technical and functional application support at various levels to ensure faculty and student success;
- Student support is required to be in place sixteen hours per day seven days per week throughout the academic year to ensure student success;
- Risk management and organizational support for academic enterprise computing is more demanding than administrative computing.

4.1.2 Future

NAIT is exploring a consortia approach to hosting online learning applications off campus. There is new need to expand student support beyond 7/16 for help during the summer months.

5. Who are our online students?

In 2005 the eLearning strategy speculated we would have a different type of learner engaged in online learning courses at NAIT. We described them as millennial learners that would expect to learn anytime anywhere and would want to use the latest technology. We predicted that we would see a number of our students from outside our province and outside our country working toward a diploma or degree online. In reality, we realize these are not our student attributes ... yet.

By February 2010 anecdotal information compiled from surveys sent to students participating in online courses over two years has painted the following picture:

The students participating in NAIT online learning courses are working adults taking one or two courses at a time that are technically savvy and can navigate and learn using the Learning Management System and applications provided.

The overall response rate for online student surveys within this timeframe was 18%

- 97% of students were currently employed while taking their online course

- 75% of students worked 40-49 hours per week (not including the time spent on their course or studying)
- 54% of students were taking only one course
- 15% were taking three or more courses
- 73% of the students indicated they were able to access all components of the course and
- 73% of students felt they were a part of a community of learners

6. Costs

Estimates for the cost of developing online learning courses and specifically converting two programs fully online were established in 2005/2006 based on instructor (content expert) compensation; instructional designer (ID) support; library and instructional resources required; multimedia development; infrastructure support; and overall project management. The document indicated an institutional investment of \$3,601,406 over three years would be required.

Although the timeline extended to five years, the actual cost of developing 181 online courses representing four years of 'new' degree programming plus 'converting' two years of existing courses from face-to-face to online learning was \$3,506,096.

6.1 Funding Model for Development

An extraordinary agreement to engage faculty in developing courses for online delivery was developed. The funding model paid (content expert) faculty 'outside their regular work hours, outside their regular work day' to develop online courses through a specialized Memorandum of Agreement where payment hinged on the ability to provide specific deliverables by an agreed upon date. Funds were not transferred to schools to download staff.

6.1.1 Lesson Learned

- The hiring and provision of specialized Instructional Design (ID) staff was not required to the extent first thought;
- NAIT faculty were able to take on the development of the content and the creation of the online course site as part of their agreement;
- An additional copyright and moral rights waiver was required to ensure faculty understand the content of the online course is owned by the institution;
- Faculty take pride in the final product and are enthusiastic to teach the course once it is developed.

6.1.2 Future

NAIT will like to continue the practice of recognizing the expertise of the staff and providing compensation rather than time to faculty to develop future online courses. NAIT will need to ensure there is adequate academic development funding in place for continued and ongoing development of online learning courses.

7. Conclusions

Given the success of the online degree programs and student uptake with regard to the flexibility, there is more to do. Guidelines and procedures that will help the organization support learners that are at a distance and allow programs to fully support their faculty and students in an online environment are in the developmental stage. These guidelines and

procedures will provide the steps and commitments required to nurture the student that is not on campus and provide the opportunity for a rich learning experience outside the Moodle environment.

Exam invigilation for students that are not on campus or for those with exam conflicts is becoming more and more prevalent and requires additional resources to manage the sheer volume of requests. A centralized exam center that would allow for synergies and economies of scale is in the proposal stage.

Equitable instructor (facilitator) compensation that provides the opportunity to acquire qualified staff yet permit the organization to grow in capacity and flexible offerings of online learning is important.

Finally, NAIT is now in the business of online learning. Our students are successful and our faculty has grown in their skills a competencies. The future plan is to allow more and more programs to provide the flexibility to students to meet their life-long learning goals and objectives.

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Appendix A

Essential Quality Standards (EQS) for a Moodle Master

WRITING

Course Coordinator and the delivering instructor are responsible for:

- The tone of the writing is supportive and encouraging.
- The level of language used is appropriate for the intended audience.
- The writing is free of bias relative to age, culture and ethnicity, gender, and sexual preference.
- The content is reviewed for correctness, unity, and cohesiveness, and is free of grammar and spelling, punctuation, and formatting errors.
- The citations reflect [APA formatting](#).

DEVELOPMENT

Course Coordinator and delivering instructor are responsible for:

- All links work and permissions checked.
- There is a high contrast between the text and the background.
- The course outline is present in the Moodle Master and is the **approved** outline for the current academic year in pdf format.
- The course content is approved by the Program Chair.
- The course outline is approved by the respective Program Chair and the Curriculum Committee.
- [Active Learning Strategies](#) are regularly incorporated in course content.
- Instructions for activities and assessments are detailed and explicit.
- Any PowerPoint slides are used as a resource only to support subject matter, and are not utilized in isolation as sole source of subject matter.
- The following components are included in the Moodle online course Master site:
 - A current, approved Course Outline.

- Course start and end date.
- Textbook and resource identification and purchase information.
- Course delivery schedule.
- Assignment and assessment due dates.
- Netiquette rules.
- Facilitator autobiography.
- Module titles and scheduled dates.
- Student feedback questionnaire(s).
- Examination invigilation requirements and procedures.
- The course site is designed based on a consistent format.
- Content, activities, and assessments accurately reflect the course outcomes.
- Authentic assessments are utilized.

FUS eLearning Coordinator responsible for:

- Tools for collaboration are provided (such as forums, webinars, email, Elluminate and telephone).
- The course has been piloted and/or beta tested with colleagues and learners.
- Multimedia elements do not exceed minimum technology requirements.
- The course design and delivery is supported by [Undergraduate Studies](#).

TECHNICAL SUPPORT

FUS eLearning Coordinator responsible for:

- Multimedia elements do not exceed minimum technology requirements.
- Pertinent contact information for technical support is provided.

INSTRUCTIONAL DESIGN

Program Chair and the Course Coordinator are responsible for:

- Online course is at the appropriate level and is as academically rigorous as its face-to-face equivalent.
- Online activities and assessments reflect the asynchronous and flexible nature of online learning.
- Online and the face to face delivery have the same outcomes and objectives.
- Outcomes are achievable, measurable, relevant, clearly stated, and concise.
- The material is organized in a way that allows learners to understand relationships between course modules.
- The content is directly related to learning outcomes and objectives.
- The content is accurate, relevant, and current.
- Learners can realistically complete the course in the time provided, given practical constraints such as available time and resources.
- Formative and summative course evaluations are made available.

Course coordinator, delivering instructor and FUS eLearning coordinator are responsible for:

- A variety of instructional or learning activities are used to promote interactivity, such as online discussions, web conferencing, and collaborative assignments.
- Assessment due dates, and examination dates, times and format are indicated at the beginning of the course.
- Opportunities for interaction and feedback between instructor and learner, and between learners, are incorporated into the curriculum.
- Online and the face to face delivery employ the same type of assessments.
- Examination regulations (including invigilation requirements and options) are indicated.
- Students with special needs, those living and/or working in remote or international locations, and student diversity are considered and incorporated into the course design.
- A bibliography or reference list includes a variety of material such as web links (URLs), books and journals, CD-ROMs, and videos.

[Information Literacy](#) resources are available to

students.

The delivering instructor, independent of the delivery mode is responsible for:

- Learners are informed about the criteria that will be used for all assessments. i.e. Rubrics.
- A course syllabus is accurate and provided to learners.
- Introductions of instructor and students are incorporated.
- Assignment due dates, and examination dates, times and format are provided to students at the beginning of the course.
- Calendar entries are populated.
- Learners are told whether learning activities are sequential or whether they can be completed in any order.
- Learners are informed of the ways in which they can communicate with the instructor privately and publicly.
- Regular formal and informal learner feedback is incorporated.
- Photographs and multimedia are included in content, combined with text formatting, to produce engaging design.
- There is a high contrast between the text colour and the background.

FUS eLearning coordinator and the delivering instructor are responsible for:

- Access to appropriate information resources is provided.

FUS eLearning coordinator is responsible for:

- Netiquette overview is provided.
- Invigilation options are indicated for eLearning sections.
- Learners with special needs, those in remote communities, and diversity issues are considered.
- Activities and assessment reflect the flexible nature of online learning.
- Learners are provided with the opportunity to evaluate the course anonymously

LEGAL

The delivering instructor, independent of the delivery mode, and with support from the FUS eLearning Coordinator, is

responsible for:

- [Copyright](#) has been obtained for course materials and digital copies of permissions stored in Moodle folder under instructor resources.
- Copyright clearance has been obtained for course materials and digital copies of permissions stored in Moodle folder under instructor resources.
- Photographs/Multimedia
- Publisher and print content
- Online videos
- Web content and images
- Articles and Journals
- [Creative Commons](#) license terms are respected.
- All NAIT policies are respected.

The JR Shaw School of Business and the Faculty of Undergraduate Studies are responsible for:

- Issues relating to [Freedom of Information and Privacy Act \(FOIP Act\)](#) regulations are addressed.
- Student records are maintained past the course end date.
- Respecting Alberta FOIP regulations, student personal information and progress is not shared with other students or the public.

at risk, and works with the Program Chair and Undergraduate Studies to contact and support these students.

- Assessment details, including whether invigilation is required, is communicated to students at the start of the course or prior to course start date.

Adapted from eCampusAlberta Essential Quality Standards

Faculty of Undergraduate Studies and the JR Shaw School of Business

DELIVERY

- The instructor and learners are provided the opportunity to introduce themselves.
- The instructor engages learners and provides constructive feedback regularly.
- The online facilitator makes best effort to respond to student questions within a timely manner (eg. within 24 hours.)
- Exam and assignment due dates are communicated at the beginning of the course and provided in more than one location within the course site.
- The instructor supports an environment that creates a community of learners.
- The instructor solicits learner feedback.
- The facilitator schedules and publicizes regular online office hours using interactive tools.
- The facilitator actively monitors student participation and progress to identify students