

Virtual Platforms at Athabasca University

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Abstract

Athabasca University is pioneering new approaches to online teaching and learning through a suite of virtual platforms that connect academics, researchers and students around the world. Using a wide array of customized and publicly-available social networking tools, AU has developed a 5-part VP that supports distance instruction and peer knowledge-sharing and a dynamic online community of learning. Its experience demonstrates the importance of encouraging “innovators and enthusiasts” without excluding others, and how the flat space of a network can be difficult in a more hierarchical, academic environment. It also illustrates the need for agile, organic software development that is responsive to the needs of the users. The paper concludes with some reflections on the pros and cons of open vs. closed networks, and a case study of how Athabasca is working with partners in Papua New Guinea to maximize the potential of Open Education Resources (OER).

A) Introduction

Athabasca University (AU) is an Alberta-based university that is pioneering virtual approaches to teaching and learning in an open, distance education context; our work illustrates the potential for virtual platforms (VP) to support online education with geographically-dispersed learners around the world.

The heart of Athabasca University’s online environment is a virtual media lab (the E-Lab), an integrated website platform for curriculum enhancement and development, social networking, and pedagogical and disciplinary research.

Open online courses give participants from developing regions an opportunity to engage with others from around the world. Students in more than 20 countries -- including India, China, Malaysia, Mauritius, Qatar and Taiwan -- access AU’s courses and educational services online.

This online approach has proven particularly useful for educators in developing regions. They often do not have access to professional development opportunities due to limited funds. Their teacher training sometimes does not include instruction in Information and Communication Technologies (ICTs).

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Athabasca University is also collaborating with United Nations Education and Social Committee (UNESCO) / Commonwealth of Learning (COL) and the Open Educational Resources (OER) Foundation on virtual platforms that are deliberately kept simple to include the maximum number of users, particularly those in underdeveloped regions without technical capacity. As the UNESCO/COL Chair in OER, we have collaborated on delivering several online workshops to hundreds of developing-world participants, to explain OER and train them on how to use and integrate it into curricula. In addition, we are now working with institutions to establish similar UNESCO Chairs in OER in Brazil, Kenya, South Africa, and India.

B) Objectives of the E-Lab

The objectives of the E-Lab are:

- To provide accessible workspaces where users can find open-access tools and resources to improve teaching, learning, and research, as well as view demonstrations of how these tools can be incorporated into an educational context;
- To increase the ease and effectiveness with which people at AU can create, sustain and discover relationships and work collaboratively, both professionally and personally;
- To increase the ease with which information and knowledge can be shared outside formal channels;
- To create services that enable rich online social communities at AU which encompass anyone with an AU affiliation;
- To integrate such services with existing provisions (a “social Velcro” that can bind other content and communication together);
- To enable the use of such services in formal as well as informal education and research; and,
- To experiment with emerging learning models by using social-network learning principles and ubiquitous mobile technology.

C) Role of the VP in Knowledge Management (KM)

Traditional universities have campuses that enable a rich diversity of formal, non-formal and informal interactions in a variety of spaces from cafes to lecture theatres, to offices, to smokers’ areas and park benches. These supply many opportunities for learning and research, including the discovery of new opportunities, new ideas and people with relevant interests, as well as simplifying the process of sustaining interaction.

Such physical “connecting” spaces are almost non-existent at AU; at best they are sparse and unevenly distributed because AU’s learning community is primarily virtual (e.g. via computer, telephone and paper), and thus is more fragmented.

The primary benefit of the *e-Lab* to the university community is in supporting experimental initiatives for online learning, networking, creativity, and communications. These can be tied directly to courses and applied coherently across entire programs in an online learning community.

The use of new platforms such as the e-Lab's [Landing](#) enables new and innovative approaches for teaching and learning in networks, while providing sufficient structure to better orient new learners in countries that lack robust infrastructures.

The various *e-Lab* initiatives are assisting the University to transition from traditional distance-education pedagogies (e.g. correspondence learning using print media) to creatively and collaboratively adopting online technologies. Faculty and staff are also finding that the e-Lab increases the University's capacity to work with different researchers inside and outside the University.

D) Structure and Functions of the VP

[The e-Lab](#) consists of five main areas that provide multiple functions:

1) The Exhibition Hall is a demonstration space for students and faculty to display course projects and research. Its first and current phase of development includes an open source e-Portfolio tool called *Mahara* that students use to reflect upon and demonstrate competency in their courses and programs, share their individual e-portfolios with fellow students and/or contribute to group portfolios.

E-portfolios represent a technological breakthrough in the individual's ability to create, manipulate and manage knowledge about themselves. They allow them to control representations of what they have learned and created, both in school and at work. As owners of e-Portfolios, they can easily create and re-create views of their knowledge and experience, share with others, or co-create with others.

Our own use of e-Portfolio is designed to integrate its use for the potential student (through Prior Learning Assessment), current student, graduate, and external partners – in other words, to enable people in the widest of learning contexts to become competent managers of information about themselves.

2) The Workshop functions as a synchronous, participative space for webinars and for online meetings via Adobe Connect. Participants in webinars can contribute to events through text messages, audio and video. Webinars can be archived for later reference and are regularly integrated into other courses.

3) The Landing supports asynchronous, formal and informal social networking. It has been built on an *Elgg* framework, an open source social networking engine with plugins that support blogs, wikis, social bookmarks, file sharing, microblogging, groups, and personal profiles/social networking, and much more.

In addition, AU web developers have added more than 70 customized plugins to meet the needs of the institution, including support for scheduling, group profile creation and design, personal learning environments and integration with other systems, both internal and external. It also has many softer tools like a user-generated-and-maintained help system, and an integrated participatory development process based around the use of *Elgg* groups.

The Landing is deliberately a very soft and pliable space that provides many tools and little structure: it is a social construction kit that is and can be used for many purposes, from assessments, through formal course support, to the study of zombies; from committees and working groups, to individuals' public blogs. For example, there are active conversations on [development issues in India](#) and ad hoc informal discussions on topics relevant to [the African context](#).

Unlike other social spaces at AU, *the Landing* is entirely owned and controlled by all the people who use it, without hierarchies or any rigid organisational structure. Anyone with access to any AU system can log into *the Landing* as an equal to everyone else -- from the President down to transient students taking a single course.

4) The Research Area is organized to allow staff and faculty to demonstrate their on-going research in certain themed areas. For the initial phase of the *e-Lab*, the theme is "Mobile Learning." We feature grants, plans, and results of individual and group research projects, as well as profiles of the researchers. The Research Area is already generating cross-fertilization of ideas, as people from disparate areas in the University discover one another's work.

5) The Virtual Tool Cupboard performs an aggregating function – collecting all those open access online resources that are currently used across the University into one virtual space, along with tutorials, sample uses in research as well as in course assignments, along with suggested marking rubrics.

These tools include resources developed at the University derived from both teaching and research, such as timelines and digital collections. Some of these resources are dynamic and will be open to on-going development through user-generated data; other resources are archival. Individual instructors and students working on projects may contribute to existing resources or use tools housed in the VTC to create their own learning resources.

Example: MOOCs

Hundreds of students from around the world have participated in [Massive Open Online Courses](#) (MOOCs) that are now being integrated into the AU virtual learning environment. MOOCs typically rely heavily on open source software (such as Moodle, blogs, and wikis). With the growth of social networks, recent MOOCs have been offered in more distributed, networked models.

For example, the [Change MOOC](#) is offered without the use of a learning management system like Moodle to allow for wider participation. Instead the course content and conversations are distributed across blogs, Twitter, customized software (such as [gRSShopper](#)), *the Landing* and other social media. This distributed technical infrastructure has produced a greater equity of participation than traditional discussion forums. Unfortunately, distributed courses can be challenging for new learners as the fragmented structure can make the course difficult to follow.

Taken together, the five areas afford users a wide range of opportunities to create and manage knowledge across the university and with the wider community. Although complementary, these five areas are relatively autonomous.

These five areas are supported by a variety of online web platforms and software systems, including:

- *Moodle* as a learning management system that supports formal course-level communities through emails, discussion boards, and blogging;
- *Email*, including mailing lists to support different teams, committees and projects, as well as providing a means to address all staff;
- smaller servers, typically running [Drupal](#), provide specialized spaces for a few projects, especially to present a dynamic face to the world for research projects; and
- developers are also working on a new virtual learning environment using the 3D virtual world [Second Life](#).

However, with the possible exception of email, these areas and platforms tend to remain as disconnected islands. It can be complex to establish ad hoc teams, tutorial groups, inter-course sharing clusters, or to form networks of interest.

Additional integration of *the E-Lab* is required, therefore, to better take advantage afforded by different applications. In particular, a system for content interoperability, better content-management and delivery, mobile applications, and increased analytics of learner activity are needed. Building on the backbone of the existing applications, these additional developments offer an opportunity to expand learning opportunities of open courses to a greater number of participants in developing countries.

E) Canadian Partnership Grants and the VP

To date, AU has not received funding from IDRC's Canadian Programs. But it has accessed a number of grants to develop the initial phases of the e-Lab, providing individuals and groups the opportunity to create, share, and manage knowledge in an integrated virtual environment. This includes grants from the following partners:

- federal [Knowledge Infrastructure Program](#) (KIP),
- internal research grants,
- the Social Sciences and Humanities Research Council,
- the Canadian Foundation for Innovation (CFI),
- the Government of Alberta's Department of Advanced Education and Technology,
- the Canadian Radio and Television Commission (CRTC),
- the Heritage Canada Community Infrastructure Fund,
- the Community Access Fund of Western Economic Development, and
- the Access to the Future Fund of the Government of Alberta

F) Evolution of the VP Environment

The e-lab has evolved “organically” in response to emerging user needs and via customized technical solutions.

Until 2001, the University operated using older, analog technologies – paper-based course materials; assignments that were word-processed and then mailed in; in situ final examinations, or telephone quizzes, etc.

Over the last decade some areas of the University were able to digitize, but many were not. It has only been in the last two years that we have been adequately resourced to convert the whole institution to online technologies, which will now enable us to use the most current pedagogies.

Overall, the evolution of the e-Lab has been fairly seamless, with component teams and advisory groups taking responsibility for each area and using a Charter and Scope process that grounds the e-Lab in first principles and clear objectives.

As with any virtual environment organized to serve a variety of purposes, we occasionally discover gaps and overlaps, but our flat structure allows us to respond quickly. However, the e-Lab is large enough to be effective and small enough to be nimble and responsive to user needs.

The e-Lab is very new; but the uptake on the current components is encouraging: there are over 300 users of e-Portfolio and approximately 3,000 users of *the Landing*. This is especially impressive as enrolment is voluntary, or optional for most users.

The e-Portfolio has been adopted in professional, undergraduate and Masters programs as a tool for students to manage and demonstrate their learning. In addition, the Centre for The Learning Accreditation Centre at AU has worked with the e-Lab to develop an e-Portfolio template for its Prior Learning Assessment and Recognition program (PLAR).

G) Outcomes of the E-Lab VP

The specific outcomes to date include:

1) Developing new contacts, readers, collaborators, partners and networks or coalitions:

Internally, the *e-Lab* concept has proven to be a magnet for those faculty and students who want to move forward in a virtual, collaborative environment. We have formed working groups from across academic, administrative, and service units. This has resulted in cross-departmental groups interested in developing special programs and in offers to amalgamate and share resources. For example, the *e-Lab* has been instrumental in early discussions on the formation of a Writing and New Media program at the University.

A small number of invited guests use the virtual environment of the *e-Lab* as part of their research projects to reinforce and consolidate existing ties; *its* main purpose is to enable internal knowledge dissemination and creation. To support this, we have recently enabled publically-moderated comments in *the Landing*, which allows anyone on the internet to participate in conversations and dialogues with users of the social environment. This has led to an increase in use of *the Landing* to share and construct knowledge with the world at large.

AU has also formed External Partnerships and alliances with industry (e.g. especially the Canadian media industry) and professional groups (e.g. in healthcare and human services). These groups have been attracted in particular to the e-Portfolio component and the possibility of dedicated virtual learning spaces for their members.

2) Information and knowledge shared and developed;

Part of the ethos of the *e-Lab* is that it be open, flexible and collaborative. We have informal external alliances with several Canadian universities, including Acadia University, and the University of Alberta.

Internally, knowledge sharing has been very diverse, from courses to committees to formal and informal research groups and rich networks, including informational magazines (such as the internal AU publication, *Insider*).

There have been around 3,500 blog posts, 2,000 microblog posts, 1,000 wiki pages, 1,600 shared bookmarks and 800 photos shared on the social media component alone. A fairly large number of personal blogs (around 36%) are shared with the public and mostly cover reflections on research.

3) Influence exerted on practices or policies of particular organizations;

The increasing use of *e-Lab applications* in teaching has also helped to fill the gaps not met by existing course delivery mechanisms and has encouraged the growth of new pedagogies.

For example, AU staffer George Siemens is an originator and leading champion of "[connectivism](#)", a new pedagogy for the digital age that focuses on knowledge as existing within systems and networks and is accessed through active participation.

The Landing, with its support for university committees, has played a role in policy development across the university *The Landing* is still new and so has not reached a critical mass of users yet. However, a significant influence on the academy is anticipated. Leaders are carefully promoting policies and practices at this stage so that the influence of the *e-Lab* can be extended both internally and externally.

4) Enhanced capacity to learn more from experience and from others

Our university is currently restructuring its academic departments, and at the time of writing, is just completing a complete overhaul and upgrade of its virtual infrastructure. This re-structuring means that the university seems more open than usual to the kind of changes represented by the *e-Lab*. Indeed, the *e-Lab* is seen as the direction in which the University must go; therefore, its progress is being closely observed.

We seem to have had the greatest impact internally with programs beginning to alter curriculum in order to include the concepts of personal reflection, social networking, and individual management of knowledge. For participants, awareness of what others are doing and saying is very valuable both for knowledge diffusion and for social cohesion. Staff and students have described *the Landing* as a great space to reduce the sense of isolation that often characterizes distance learning and claim a greater awareness of connections. However, both staff and students have observed issues with the burden of adding the virtual environment onto existing multiple channels, a problem that we are still struggling to resolve.

H) Effectiveness and Efficiency

In terms of assessing the effectiveness of the e-lab, we have found that it has proven integral to the work of Athabasca University. As an open, distance-education institution, our students and staff live across Canada and around the world; face-to-face meetings are not feasible. The *e-Lab* is complementary to other existing learning systems, so its value is in augmenting far more than in replacing them.

Efficiency-wise, the E-lab has proven cost-effective and reliable. But as any alternatives to using the *e-Lab* are largely analog, they are increasingly irrelevant. It is not only a question of efficiency, but also about filling in the gaps. Groups that cut across programs, disciplines and organizational boundaries existed only in sporadic pockets before, but are now commonplace.

This is particularly true in the case of the social media component, *the Landing*, which allows for greater exchanges of knowledge beyond course, program and organizational boundaries. Students and staff who felt isolated now feel more connected. Individuals who wished to set up ad hoc spaces or to experiment with new methods of sharing and communication, but were hampered by the difficulties, technical and organizational, now do so on a regular basis.

I) Future Changes

Unfortunately, the implementation of the *e-Lab* coincides with a historically-low-point in public funding for education, and this has been instrumental in slowing its development.

Otherwise, the current design, use, roles and functions have been thoroughly debated and considered, and evaluation and assessment are ongoing.

Its role within the organization, however, is still emerging. Some functions will be augmented. Which include:

- introducing virtual environments for meetings and group projects;
- integrating an increasingly sophisticated exhibition space with the University's existing digital collections;
- developing mobile field trips for a variety of teaching areas;
- facilitating workshops for skills development that address the needs of undergraduate and graduate students; and
- providing a full set of synchronous tools for communication and sharing.

It is also important to continue integrating with other university systems, especially the learning management system (Moodle), *the Landing* and *Mahara*. The biggest problems relate not to functions but design. We need to maintain a reliable balance between providing a wide array of content and services, and creating an inviting and easily navigable virtual space.

J) Other Lessons Learned

The Role of Innovators

Universities are typically federations of distinctive academic entities that guard their turf jealously and are only too eager to dispute any changes or perceived threat to their territory. As such, suggestions for rapid change from "Innovators" -- key faculty, staff or students who have suggested numerous changes to the e-Lab structure and format -- are met with suspicion.

Leading a project designed to encourage people to cooperate across traditional lines has revealed the best and the worst of the academy. The innovators have thus had to learn how to be inclusive, because being welcoming and creative is not enough. We must also demonstrate to individuals as well as groups how they will gain. And, since universities are competitive places, we must also suggest to colleagues how not to fall behind "the others." We must also make sure that opinion leaders and decision-makers are on side. Consistent, on-going communication of progress and results is crucial, especially in a dispersed workplace.

As for external partners, our experience suggests that innovators need to be more patient and take more time up front in coming to agreements; each organization has its own culture, its own needs and neuroses. It is important to focus on the right questions to ask and what issues to probe before bringing in other university departments to any discussion.

The Importance of Ownership and the Role of Enthusiasts

AU has a large and supportive group of enthusiasts who feel that ownership of the

system is crucial. We have deliberately cultivated enthusiasts rather than aiming for maximum penetration because of our earlier experiences at another institution, where around 30,000 people arrived at a similar site and found nothing there to keep them.

However, ownership is vital not just for the enthusiasts, but for everyone. Sometimes the enthusiasts will suggest things that would help them but take away power from others. For example, a very popular kind of suggestion involves setting up tiers of membership that give some people more power than others in the system. However, we have strongly resisted this because, though it would have value for some, it would take away control from others.

Hierarchy vs. Flat Social Space

We have discovered that there can be clashes between the various social forms (group network and set) that make it hard to identify the context within a flat social space that supports them all without prejudice. This is especially problematic in a formal educational environment, where context shifts discontinuously and regularly several times a day, with different courses, committees, research groups, social groups, social networks and interests shifting all the time. Traditionally, closed social knowledge spaces deal with this through their innate hierarchical structures, without such predetermined structures in a flat social space, it can be hard for users to identify and control where they are.

Technical Considerations

On the technical side, because of the evolutionary approach taken to the development of the system, the innovators have tried to adopt a far more *agile approach to software development* than is common within the University. This has resulted in some tension between our bottom-up, experimental ethos and the institution's traditional top-down ethos that values reliability and stability. We have therefore learned that, for such an initiative to succeed, we need to find some common ground that will enable soft and flexible development.

Plug-ins: Flexibility but a Burden

A second concern about the development of *the Landing* is that, while its component-based approach (e.g., the Landing has 105 Elgg plug-ins and rising) has strengths in enabling flexibility, it does eventually become a serious support burden.

On the other hand, developing a strong policy of code review, as well as careful practices relating to how plug-ins and the like are chosen in the first place can save a lot of woes. Plug-ins provide a means for us to meet the needs of the diverse users, but they also present technical difficulties in ensuring that they all work together. Nevertheless, a more top-down approach would not provide us with the flexibility that our users are demanding.

Potential for Developing Countries, Including Mobile Technology

As we build and extend the e-Lab, we have become convinced that such virtual media labs could provide valuable services in developing countries. A good example is UNISA - a large open university in South Africa that has over 375, 000 students. If universities in developing regions begin to offer open online courses through open source applications like *the e-Lab* using mobile phones, tablets and other devices, the potential learner population is significantly increased.

Many regions of Africa have limited internet penetration, but mobile penetration can exceed 90% in many regions. The integration of open online courses, mobile learning, and virtual environments offer a dramatic development opportunity for new and existing educators.

In order to ensure that the AU virtual platforms and all AU websites are usable by a wide variety of mobile devices, even those with limited screen space, AU has implemented a Content Management System (AlFresco) to store all content as XML so that it can be easily downloaded to any application or device. At present the AU website and the virtual platforms are all usable on 3G mobile phones.

J) Post Workshop Reflections

Open vs. Closed Networks:

A major dichotomy that I observed at the IDRC Learning Forum was that between Open and Closed Networks (See Table 1):

Table 1	Open Networks	vs. Closed Networks
Membership	Anyone is free to join from anywhere with the proviso that they will participate and have an active interest in the goals of the network.	Membership is usually limited to a select group of invited participants sharing common goals or interests.
Diversity	Members exposed to a wider and more diverse community.	Deliberately keep the participants numbers lower, which helps in the formation of a community of users who really know each other.
Security	More security problems.	More secure.
Focus	Harder to keep larger groups on topic or focused on specific tasks or discussion points.	Easier to keep on topic and tasks since more homogeneous.
Nature of community	More anonymous, which can encourage people to speak out and be bold in their opinions, and not concern themselves with minor grammatical errors.	Can in their own way engender good discussions because of the feelings of the members as part of a community which is more forgiving.

A Diversity of Approaches Needed

It was very helpful to learn about how the different networks profiled at the Learning Forum operated and the issues that were raised. It seems that every culture and/or region has a different approach and has adapted to the Internet and to Virtual Platform creation in its own way. Diversity has won out! Going forward, we need to remain open to diverse approaches and to see beyond our biases to permit experimentation and learning.

A Case Study: Papua-New Guinea

Higher education in many developing countries can assist students in moving to digital technologies, often by leaping over the historical technological path followed by countries in the northern hemisphere.

As an example, in Papua New Guinea, textbooks costs are often as expensive as in Canada if not more so, in a country where university professors earn less than \$10,000 per year. Students cannot afford and therefore do not buy their textbooks; instead they try to share the one or two physical copies that might be in the Library. But, the University Library does not have the money to replace any materials that are stolen, lost, or become unusable due to local conditions. To make matters worse, internet access at the national university is often slow and unreliable.

On the other hand, most students have cell phones through which they can access the internet. The problem is to find ways to make modern technologies work for the educational system and for the development of national identities in PNG and many other countries in the developing world.

We have been working with two universities in PNG, the University of Papua New Guinea (UNPG) and Divine Word University (DWU) to see whether the technologies of distance education might help them to educate their students. For instance, we have been told that, on the days when the internet works, staff and students could download or read, or work with, materials that have been packaged for use in individual courses via mobile devices or via DVDs burned by the universities from the online resources. In their view, production and storage of course materials, research results, and student work, on the internet, or via DVD, is far superior to physical storage, which cannot be properly maintained or afforded locally.

This work could result in the development of targeted Open Educational Resources (OER), or in the development of more general OER templates, for the problems of PNG are replicated across the Pacific Island nations and in many other countries in the southern hemisphere. The UPNG is struggling to establish a distance education arm to reach people who live on many of the country's 600 islands and in remote mountain valleys. They feel that a combination of internet, mobile devices, and DVDs can assist distance education centres in such far-flung communities. Access to a social networking space such as the Landing could further assist in bringing staff and students together in a virtual community.

Academic publishing and distribution is often extremely difficult to afford in the developing world. Even if resources can be garnered to publish, distribution tends to be extremely limited. This inability to manage knowledge created in the developing world serves to sustain historical imbalances of power between the northern and southern hemispheres.

The same constraints apply to creative writing, with obvious effects on the establishment of national literatures. For example, there is one literary journal in all of PNG; the University does not have the money to actually publish the journal, although they have all the expertise they need to write the content and edit it. AU Press, which has extensive experience in online publishing has agreed that, if UPNG has edited the journal, AU could use an existing website established by a

member of academic staff to publish it. That way, students of South Pacific literatures in general, and PNG literature in particular, around the world but more importantly in PNG itself, will actually have access to new literature.

The use of a virtual media lab such as the e-Lab at AU can also be helpful in assisting universities and related cultural organizations to exhibit and archive cultural artifacts and collections in many ways. Online exhibitions and demonstrations are easier to assemble and gain a much broader audience than do their physical counterparts. For example, in Port Moresby, PNG, the national museum can only be experienced by appointment, because of endemic problems with law and order. The caretaker of the museum must literally unlock and lock the doors of the building for any visitors in order to secure their safety. An extraordinary ethnographic collection is therefore available to only a few privileged people and not to the wider citizenry of the country.

One way to address these problems would be to take images and commentaries of the artifacts in this institution, digitize, and incorporate them as an educational resource for students at PNG's universities. The e-Lab could assist in mounting such exhibitions and incorporating the images into course materials as required by PNG's educators.

The aim of any partnership between the e-Lab at AU and universities in the developing world must be to build capacity and develop collegial networks. The general benefit to the academic world and its supporting communities would be substantial. In our discussions with faculty in PNG and other nations of the South Pacific, we have concluded that the websites, virtual tools, digital collections and interactive elements developed with a primary partner (in this case, the UPNG and DWU) could produce templates for use by others.

Our focus to date has been on the Pacific Islands region. One of our goals has been to establish a loose collaborative network contributing eventually to a regional literary history. What the e-Lab and related departments at AU provide is expertise in open and distance education, expertise in partnering with external organizations, leadership in research on the use of mobile devices in education, substantial experience in solving problems in learning design for distance delivery, and stability on the technical side.

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