

Serendipity in Northern Zambia: Developing Online Learning and Sustainable Energy Programs at the Zambia College of Open Learning

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Abstract

During a tea break at the 2016, PCF8 conference in Malaysia, the authors had the fortune and pleasure of meeting. One author, the founder and president of the Zambia College for Open Learning which is based in Solwezi, Zambia. The other author, an educational consultant and university lecturer based in Canada. This serendipitous meeting led to a fruitful and long-term working and personal relationship that has resulted in the development of an online learning system aimed at pre-service and in-service teachers, the development of a series of professional development workshops aimed at upgrading the skills of ZAMCOL faculty and staff and partnerships with like-minded organisations including the Open University of Tanzania. Over the last two years we have launched over 100 online courses across six program areas including Business Studies, Technology Studies, Education, Science, Mathematics, Languages and Social Sciences. This paper takes the form of a case study to explore the challenges we have encountered along the way and the ways in which we have solved them. The emphasis isn't simply on problem solving but on being open to embracing unusual challenges and the serendipitous solutions that often result. As an example, a major challenge for our more rural students is poor access to electricity. Indeed, electrical shortages even at the main campus are common. Our solution was to work with a solar engineering company with offices in Zimbabwe and Canada to develop a small solar field that would produce enough power for the college and a surplus that the Zambian Electricity Supply Authority would purchase at market rates. The remainder of the case study provides recommendations for embracing ambiguity and serendipity in education and also discusses future challenges including transforming the college into a university and building research and teaching capacity among the ZAMCOL faculty members. Readers of the article and participants in the presentation are encouraged to consider what opportunities are available to them right now as well as which opportunities they may have missed either personally or professionally.

Introduction

ser-en-dip-i-ty /,serən'dipədē/ Noun – the occurrence and development of events by chance in a happy or beneficial way as in "a fortunate stroke of serendipity". (dictionary.com)

Much has been written in popular and academic literature about planning, goal setting, the development of learning outcomes, design etc... While anecdotal stories about serendipity in scientific discovery are well known (the discovery of penicillin, lasers, X-rays, etc..) (Roberts, 1989), the academic literature on recognising opportunities and serendipity in education is thin on the ground. And yet experienced educators know that unplanned opportunities in learning are often the most fruitful and enjoyable for both the teacher and the student (King et al, 2001). Trained as teachers, educational administrators and instructional designers the authors of this article have spent much of their careers ignoring (or even actively avoiding) serendipitous opportunities. Recognising fortuitous opportunities simply has not been in our background or training. Now, in the last half of our educational careers we are both in a position to take stock of opportunities missed and look around us at current serendipitous opportunities. This article describes a series of serendipitous events that began with a chance meeting at the 8th Pan Commonwealth Forum in Kuala Lumpur, Malaysia resulting in a fruitful personal and professional relationship that has lasted three years and promises to continue. The lesson, of course, is that educational professionals must be open to unexpected opportunities and challenges in their personal and professional lives because we simply cannot know what will come of these events.

Serendipity Part I

At the PCF8 Conference held in Kuala Lumpur, Malaysia the authors of this paper had the fortune to meet over a tea break. One author, Aucoin, an educational consultant based in Canada with twenty years experience in online learning was attending the conference mostly to explore new opportunities in online learning outside Canada. The other author, Mututa, the owner and president of the Zambia College of Open Learning (ZAMCOL), a small distance learning teacher's college located in Solwezi, Zambia was also exploring new opportunities as well as assessing the feasibility of converting his college to a wholly online learning institution. At the time, Mututa was convinced that converting to online learning was the strategically wise and prudent thing to do. What he was unsure about was the best way to achieve this goal nor the best timeline for achieving it. This was the first example of serendipity in the authors' working relationship and, as is so often the case, one that was nearly missed.

Over the course of the conference Aucoin identified many contacts with persons interested in online learning and intercultural competence, Aucoin's two main specialties. Many conference delegates expressed interest in attending Aucoin's sessions and having further discussions after the conference. By the end of the conference, Aucoin had amassed many business cards from delegates interested in his services and had even organised the business cards from people he thought most likely to generate projects to those least likely. At the top of the list were persons who expressed enthusiasm about having Aucoin run workshops for them and who indicated that financing was not an issue. Mutata's card was at the bottom of the list. Clearly there was a lot of synergy between Mututa and Aucoin but how could such a project be funded? By Christmas, Aucoin had contacted nearly everyone on his list only to find people's enthusiasm had waned significantly upon returning to their home institutions. This was demoralising and Aucoin considered not even contacting Mututa as he thought it would be a waste of time. However, it was Christmas and Aucoin sent Mututa an email simply to wish him a Merry Christmas and all the best for the new year.

This was serendipity nearly lost because this simple email began a conversation which resulted in a partnership to develop an online learning project aimed at pre-service and in-service teachers, the development of professional development workshops aimed at upgrading the skills of ZAMCOL faculty and staff and partnerships with like-minded organisations including the Open University of Tanzania and the Open University of Zimbabwe. Over the last two years ZAMCOL has prepared over 100 online courses across six program areas including Business Studies, Technology Studies, Education, Science, Mathematics, Languages and Social Sciences. The partnership has also resulted in the development of projects tangentially related to education including partnerships with Zambian cell phone companies to defray costs for ZAMCOL students as well as the development of a solar field to reduce the effects of "load shedding" by the Zambian Electricity Supply Authority.

Zambia College of Open Learning (ZAMCOL)

Philip Mututa is the founder, owner and president of The Zambia College of Open Learning (ZAMCOL) which began as the Teachers of Primary and Secondary Schools Upgrading Program (TOPSSUP) in 1998 in the north-western province of Zambia. It was formed as a response to the acute shortage of qualified teachers to teach grades 8 and 9, and the use of untrained teachers to replace those seconded to teach in Secondary Schools and the Upper Basic Classes.

To staff Primary Schools, Untrained Teachers (UTs) were employed to teach grades 1 to 7. In 1996, for example, 33.4% of the secondary school teachers were seconded primary trained teachers which was not a sustainable arrangement. This situation was further aggravated when the Ministry of Education further reduced the use of un-trained teachers in primary schools which left most of schools in the province with no teachers.

To redress the situation, distance learning was adopted as the mode of training to allow the students continue teaching whilst obtaining their qualifications at the same time. Initially only teachers within the North Western province were enrolled with the hope that such graduates would remain within the province and their schools.

During the second intake, students from other provinces enrolled. This meant that this was no longer a program for North-Western province alone but would benefit many more teachers all over Zambia. By 2003, the Zambian Ministry of Education requested that the program become independent and this became the Zambia College of Open Learning (ZAMCOL). ZAMCOL now operates from Solwezi, located in northern Zambia and has study centres in Mongu, Chipata, Chinsali, Kasama and Mansa.

AvantLearning

Dr. Robert Aucoin is the founder and president of Avant Learning is a small educational consultancy based in Canada that focusses on developing solutions to unique educational challenges. These solutions invariably use technology and online learning with an eye towards inter-cultural competence. What all AvantLearning's projects have in common is that they are evidence based relying on traditional educational tools like needs assessment, instructional design and monitoring and evaluation. Approximately 50% of AvantLearning's clients are in Africa and Latin America.

Project Phases

Aucoin and Mututa agreed early in the project that converting a traditional distance education college to a wholly online learning institution would require a systems approach using instructional design and needs assessment strategies and that the development needed to be evidence-based. Moreover, ZAMCOL needed to move forward cautiously by including all stakeholders. To that end the development of online learning at ZAMCOL has been divided into several overlapping phases. Initially, these phases were: Needs Assessment and Data Collection, Information Technology infrastructure and planning, Administration and Financial Needs, capacity development for faculty and media production. The results of the needs assessment as well as visits to ZAMCOL have refined this list.

Needs Assessment

The authors agreed that a site visit to ZAMCOL was needed to launch the online learning project, however, it was also agreed that a needs assessment would be prudent to investigate what the priorities would be for ZAMCOL lecturers and staff. The needs assessment consisted of two stages which were repeated after 18 months. The first stage was an online survey completed by ZAMCOL staff and faculty. The survey explored participants' experience and openness to technology and online learning as well any concerns they had about moving forward with an entirely online college. The second stage consisted of a series of face to face focus groups conducted by Aucoin with ZAMCOL staff and faculty. These focus groups delved deeper into the questions raised in the survey from stage one and also explored how participants were adapting to the new directions of the college. Both stages one and two were conducted in 2017 and repeated in 2019 with 75 participants.

The resulting data revealed both challenges and opportunities for ZAMCOL. Demographically, most respondents were male (67%) and over the age of 46 (57%). While the literature shows there is no correlation between age, gender and online learning or technology capability this was a concern for us given the relative lack of diversity in the group we would be working with. The data further showed that participants had relatively high levels of educational achievement (45% had achieved bachelor's level or higher) and their comfort and skill level with information technology (60% described themselves as comfortable, very comfortable or expert level with technology) and are generally enthusiastic about new technologies and new uses for technology (48% of respondents reported that they usually use new technologies ahead of or at about the same time as their friends and colleagues do). For us it was more important that participants were eager to use new technologies and explore new ideas than they be experts so this was a key finding for us.

However, when questions of comfort level with technology were applied to online learning the data revealed uncertainty among participants. While 45% of participants rated themselves as equal to or better than their colleagues with respect to their online teaching and learning skills, fully 56% of respondents did not answer this question which implies great uncertainty about the question itself. Follow up focus groups supported this conclusion as they revealed that most participants were unsure of what online learning meant. Some participants had vague notions of providing live lectures via the Internet, but the majority only understood that online learning would involve technology and access to the Internet. In spite of this result participants remained open to the idea of online learning in whatever form it would take with only 5% of respondents reporting they prefer teaching and learning to be exclusively face to face. Similarly, only 5% of respondents reported a preference for teaching and learning exclusively online with 60% reporting they prefer a mix of face to face and online learning. Follow up focus groups revealed that participants were generally more comfortable with face to face learning because that is how they learned as students. Curiously they didn't see a difference between conference calls and/or online lectures. To them this all counted as online education and only differed by the communications media. This was a critical point for participants with most participants citing (53%) the ability to communicate with students fundamental to good

teaching and learning experiences. These findings were key to the online learning team since it provided a natural beginning point to begin the conversations.

The remainder of the needs assessment focussed on participants' perceived teaching ability and their views on what would be needed to successfully convert ZAMCOL to online learning. Participants offered key insights into what was needed to make ZAMCOL successful at online learning. Many of these insights focussed around traditional barriers to online learning like reliable access to the internet and access to and training on a robust learning management system. But other respondents were more concerned about online teaching pedagogy. In other words, there was a recognition that lecturers and administration would have to fundamentally change the way they work online. In the case of lecturers there were concerns about how they would "deliver lectures online", how they would build and maintain communities online and how they would deliver and grade assessments online. Some of these ideas were even more nuanced calling not just for lecturers to be trained but for ZAMCOL to put in place trainers as well as a train the trainer program for new and continuing lecturers. It was also suggested that these training programs proffer certification for the participants. Other participants were interested in working with trained instructional designers and media designers to enhance their courses to make them online-ready. Further training suggestions included how to design online materials and curriculum, how to teach online, how to assess online and how to build and maintain communities online. The assumption at this early stage of development was that the students would have access to the internet and relevant tools as well as be well-versed in how to learn online. It has recently emerged that this might not be the case. Curiously the issue of financing this endeavour was only raised by one participant, however, in later focus groups this was raised frequently although it was not entirely clear what financing was needed for.

Visit One and Pilot Project – October 2017

Based on the information collected in the needs assessment, Aucoin designed a two-week consultation and curriculum for ZAMCOL and this was delivered at ZAMCOL in October of 2017. The program was as follows:

Time frame:	Activity/Topic
Day 1	<ol style="list-style-type: none"> 1. Meet with production staff to discuss current practice and requirements for adapting to online teaching and learning needs 2. Meet with senior staff for introductions and determine vision for the college generally and the project specifically 3. Visit the facilities as well as discuss student and faculty technical capabilities on and off campus
Day 2-4	<p><u>Online facilitation workshop.</u> Workshop will use a mix of short lecture, small and large group discussion and group work. Participants will leave the workshop having created and facilitated a short online learning module and will be provided feedback by the facilitator and their peers.</p> <p>Topics to include but not be limited to:</p> <ul style="list-style-type: none"> • Discussions around the differences between traditional distance learning and online learning • Models in online learning (MOOCs, online correspondence etc..) • Creating interactive online learning activities • Conducting online learning assessments • Team work online • Exploration of available online tools
Day 5	<p>Consultations with senior staff at ZAMCOL regarding the process of teaching and learning in online environments. Potential topics could include:</p> <ul style="list-style-type: none"> • Creation and use of teaching and learning centres • The fine line between technological skills and good teaching • Scholarship of teaching and learning • Administration of online teaching and research • Intercultural communication
Day 6	<p><u>Online facilitation workshop cont.:</u> Participants to present their online learning modules including a philosophy/rationale to explain key decisions they made in</p>

Time frame:	Activity/Topic
	terms of content, activities and assessments. A full learning plan will be expected. Constructive feedback will be provided to the participants by peers and facilitator.
Day 7-8	Instructional Design for Online Learning Workshop

The workshops were generally well attended by lecturers as well as senior academic and administrative staff. Participants came to the Solwezi campus from all the ZAMCOL study centres. The feedback from these workshops was positive as this was the first time lecturers had had the opportunity to explore the pedagogy of online learning.

The workshop evaluations showed that the project has begun strongly in terms of development, but we were just scratching the surface. While all the course materials had been uploaded to the learning management system, no courses had been attempted online. To test some of the learning that took place during the workshops we decided to run a small pilot project with one course lasting six weeks before Christmas, 2017. This course was Advanced MS Office, taught by an experienced lecturer comfortable with online learning tools. This was a good choice for the pilot project since both the learners and the lecturer were already familiar with online learning and information and communication technologies and so any problems could be recorded and resolved quickly without participants panicking and abandoning the entire pilot project.

The pilot project was not evaluated formally, however, informal feedback was good. The major issues (as predicted in the needs assessment) had to do with Internet access and course design. The way in which the course was developed was to simply take the correspondence course version of the course and upload all the materials to the learning management system. In other words, little attention was paid to rethinking the instructional design of the course, nor to assessments nor to communications.

Serendipity Part II

While waiting at the Solwezi airport for Aucoin’s return to Canada, the authors of this paper were discussing current events, family life, the weather...anything except our project because we were both tired after two weeks of 12 hour days and, frankly, Aucoin was anxious to return home after a long time away. Again over tea, Aucoin began to describe an idea a colleague from Zimbabwe had to build solar fields in Zimbabwe. Aucoin and his colleague (Matuvi) had been discussing this idea for 10 years or more and they had been waiting for the right opportunity. Given the unstable political and economic situation in Zimbabwe since 2008 the time never seemed to be right. Mututa asked two simple and surprising questions: “Had we ever considered building solar fields in Zambia?” and “When could Aucoin return to Zambia for more workshops and consulting?” Again, these were serendipitous moments nearly missed but resulted in great opportunities.

Throughout the two weeks Aucoin was at ZAMCOL there were numerous power failures. Fortunately, ZAMCOL has a backup diesel generator (as do most large business and the mining operations that surround Solwezi). So stable power generation is an issue that could be resolved by solar power in a country that sees bright sunshine nearly 70% of the time. Financing, engineering and project management are always challenges and so Aucoin replied that he would discuss this with Matuvi to see if it were possible. After numerous discussions we determined that it was feasible to build a solar field at ZAMCOL given that ZAMCOL already owned much of the electrical infrastructure and there was an electrical sub-station next door to the property. Moreover, a solar field would make financial sense as it would mean ZAMCOL could eliminate the need for a diesel generator and all the diesel fuel required to run it. The planned solar field would produce approximately two times more electricity than ZAMCOL would use. However, this was a good investment in future power needs as ZAMCOL expanded and later upgraded to university status.

Finally, the authors were beginning to recognise serendipitous opportunities and it occurred to the (now) three partners that there might be a way to have the solar field project more financially viable and that would be to involve the Zambian Electricity Supply Corporation (ZESCO). Given that Aucoin was due to make another visit to ZAMCOL a meeting was set for Mututa and Aucoin to meet with the ZESCO authorities to present their plan. Much to our pleasure ZESCO was very interested in solar power and agreed to purchase any surplus electricity. Based on these financial projections we estimate that the solar field will have paid for itself within two years and will begin making money for the college thereafter. These financial calculations do not include the cost of diesel fuel and so

the break-even point is likely far less than two years. This solar field is scheduled for completion in August of 2019 and there are plans underway to construct other solar fields throughout Zambia. For these authors this is the most extreme example of serendipity given that neither of us are trained in solar power nor were we looking for opportunities in these areas. But experience and other opportunities had opened our minds and hearts to opportunities wherever they presented themselves.

Remaining Site Visits – July 2018, May 2019 and October 2019

Since 2017, Aucoin has visited ZAMCOL twice more in 2018 and 2019 to conduct workshops, continue the needs assessment and conduct focus groups. Workshops have included a range of topics designed to build capacity in instructional design, teaching and learning online, online assessments including assessment *for* learning (as opposed to assessment *of* learning), the scholarship of teaching and learning, research methods and information literacy. Because of the continuous needs assessment and initial results from our monitoring and evaluation it was determined that the following needed to be implemented as soon as possible:

1. More workshops and consultations are needed at ZAMCOL's study centres since there remains confusion about what form online learning will take at ZAMCOL as well as the needs of the lecturers and staff at the study centres.
2. Another pilot course needs to be launched in August of 2019 with Aucoin acting as a shadow teacher. A lecturer and course (social studies) have been identified and some instructional design changes will take place under Aucoin's supervision.
3. ZAMCOL needs to hire one or more instructional designers to work with lecturers on redesigning their materials and rethinking their teaching to work in an online learning environment. Currently we plan to hire someone by August of 2019. Approximately 60 courses will need to either be adapted for online learning or developed from scratch. This does not include planned new academic programs in information communications technology and human performance technology nor does it include the planned upgrade to university status.
4. A fourth visit is planned for October 2019 to follow up on the solar field project as well as follow up on the shadowing that will begin in August of 2019. Likely more workshops will be conducted at the main ZAMCOL campus, however, the topics have yet to be determined as the authors are still examining the data from the last needs assessment iteration and focus groups.

Advice and Conclusions

As we mention above the AvantLearning/ZAMCOL project and relationship continues to bear fruit and there are many other examples of serendipitous opportunities that we could describe here if there were space. But the authors believe that the examples provided here are enough to encourage the reader to consider opportunities in their own personal and professional lives that may have been missed because they didn't conform to expectations around design, planning or other personal and professional models we have all worked with our entire careers. What the authors are now wondering is whether serendipity can be paradoxically "engineered" or planned. Certainly, this seems possible in online learning environments through activities like games, simulations, web quests etc... (Afridi, 2019). However, in future research we would like to explore how we can make better use of serendipitous opportunities in our personal and professional lives. To that end, we would like to end this paper with the story that we ended our first series of ZAMCOL workshops with called "The Taoist Farmer".

There is a Taoist story of an old farmer who had worked his crops for many years. One day his horse ran away. Upon hearing the news, his neighbors came to visit. "Such bad luck," they said sympathetically.

"Maybe," the farmer replied.

The next morning the horse returned, bringing with it three other wild horses. "How wonderful," the neighbors exclaimed.

"Maybe," replied the old man.

The following day, his son tried to ride one of the untamed horses, was thrown, and broke his leg. The neighbors again came to offer their sympathy for what they called his "misfortune."

"Maybe," answered the farmer.

The day after, military officials came to the village to draft young men into the army. Seeing that the son's leg was broken, they passed him by. The neighbors congratulated the farmer on

how well things had turned out.

"Maybe," said the farmer.

The point of this story is quite simply that no event can be judged as good or bad or lucky or unlucky and this has been a philosophy that we have begun to adopt in our personal and professional lives much to our pleasure. The idea of staying open to new ideas and opportunities has arguably been the wisest approach in our combined 75 years in education and we encourage others to consider it.

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