

Using Open and Educational Resources (OERs) and Wiki's to Support Entrepreneurship Training in Technical and Vocational Education and Training (TVET) Institutions in Zambia

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Abstract

Though entrepreneurship training has been offered in Technical and Vocational Education and Training (TVET) institutions in Zambia since 2000, there have been challenges of inadequate and inappropriate teaching resources that may have affected the quality of entrepreneurship training. The purpose of this study is to explore the possibilities of using Open Education Resources (OER's) and wiki's to support Entrepreneurship Training in Technical and Vocational Education and Training. This is done by making an analysis of entrepreneurship training materials available online and exploring how these could be adapted for use in TVET institutions in Zambia. The study explores how OERs have been used to address similar challenges before by other institutions. OERs can be used as an innovative means of improving teaching and learning in TVET institutions in Zambia by promoting a more learner-centred approach to teaching and learning and more quality contact between teachers and learners. The study ends with key recommendations that can assist policy makers and training providers on what are the most suitable ways of integrating ICT's in education, and ICT tools such as OERs and wiki's in a socio-economic environment like Zambia, where textbooks cannot be easily afforded by most students and lecturers.

Keywords

open educational resources, wiki; collaboration; entrepreneurship; entrepreneurship training,

Introduction

Though entrepreneurship training has been offered in Technical and Vocational Education and Training (TVET) institutions in Zambia since 2000, there have been challenges of inadequate and inappropriate teaching resources that may have affected the quality of entrepreneurship teaching and learning. This issue has been raised at various meetings and visits made to training institutions. In terms of inadequate teaching resources, Technical Education and Vocational Education and Entrepreneurship Training Authority (TEVETA) has made efforts to procure some textbooks to be sold to teachers and trainers. These books are inadequate to cater for the 3000 plus lecturers in TVET institutions and also 30,000 students.

As for the resources being inappropriate, some lecturers that teach trade test level have indicated that the text books are too advanced for the students. Some creative lecturers have improvised by using entrepreneurship training resources from the International Labour Organisation (ILO) such Know About Business (KAB) and Start and Improve Your Business (SIYB). The purpose of this study is to explore the possibilities of using Open Education Resources (OER's) and wiki's to support Entrepreneurship Training in Technical and Vocational Education and Training. This is done by making an analysis of entrepreneurship training materials available online and exploring how these could be adapted for use in TVET institutions in Zambia.

Further a review of how OERs and Wikis have been used to address the challenge of inadequate teaching materials elsewhere is made. Having appropriate teaching and learning materials that suits the needs of learners in Entrepreneurship has been a challenge in TVET in Zambia. The availability of OERs and affordances of wiki's offer an opportunity to address this challenge. OERs and wiki's have a greater social presence than text books. OERs and wikibooks can easily be distributed from place to place so long as the sender and recipient have Internet access. Even in areas with no Internet access but with computers or mobile phones teachers and learners can access some OERs and wikis offline. The Internet provides much greater quality and quantity of access to nearly all citizens (Anderson, 2004:41).

A wiki is a simple web page that anyone can edit (Siemins, 2009). A similar definition is given by Augar, Raitman & Zhou (2004:95) who state that “wikis are fully editable websites. Users can visit, read, reorganise and update the structure and content (text and pictures) of a wiki as they see fit”. Some of the advantages of Wiki’s are that it is easy to learn and anyone can edit. Wikis are also instantaneous so there is no need to wait for a publisher to create a new edition or update information. Wiki’s allow for collaboration as teachers and students located in different parts of the world can work on the same document. Lastly, there are a wide range of open source software wiki's to choose from so licensing costs shouldn't be a barrier to installing an institutional wiki (Wikieducator, 2011). Therefore as a subsidiary goal, the study will explore how the use of wikis can be used to create OERs.

Most of the TVET institutions in Zambia have access to computers and the Internet. In addition a greater number of lecturers and students have mobile phones with an increasing number having those that have internet access and other advanced features. OERs and wikis have some affordances that managers and lecturers in TVET institutions can take advantage of to support entrepreneurship training. Most lecturers that have undergone training in technical colleges and universities have some basic working knowledge of using ICTs.

In 2010, lecturers and training managers from twenty-four training institutions, policy makers and staff from TEVETA underwent a one week residential workshop and six weeks online workshop in Flexible Skills Development Initiative organised by the Commonwealth of Learning. The workshop was held in the context of the memorandum of understanding between MSTVT and Commonwealth of Learning for the latter to assist MSTVT in developing an Open and Distance Learning (ODL) Policy Guideline to guide the provision of ODL in TVET institutions. This workshop covered aspects of the use of ICTs in education and included a UNESCO mini-course in ICTs in education. Such exposure by lecturers gives them some useful background to use learning management systems that use wiki’s.

Status of Information and Communication Technologies (ICTs) in TEVET

The status of ICTs in TEVET has been well documented in a report that was recently done by a consultant for the Commonwealth of Learning. In his report Herd (2010:19) states that: “Zambia is making good progress in terms of laying the physical optical fibre backbone of its infrastructure. Connection to the major international marine cables should bring cheaper

high speed bandwidth to Southern Africa connecting it to Europe, Asia and America, and is nearing completion. There is of course, much work to do in country, with very low rates of computer ownership and even lower rates of subscription to the internet. The ratios of learners and teachers to PCs is high in most TEVET institutions and is currently not sufficient to meet good standards of online learner support or access. Computers are generally not of high specification and technical support is often not readily available or undertaken by the teachers themselves. But, the outlook over the next 3-5 years is encouraging. A number of initiatives are improving the installed base of centres with good hardware specifications. Progress will be incremental and it is encouraging that recent government announcements indicate a growing political will to fund ICT use in education. International donors and other partnerships are further contributing to the installed base of computers in TEVET institutions”.

It can be thus noted that though the overall picture in terms of ICT infrastructure in TEVET institutions is not very encouraging at present, the future outlook in the next 3 to 5 years i.e. 2011-2014 gives a more positive outlook. This is due to a number of positive developments in the nation. Some of these are:

- The Zambian Information and Communications Technology Authority (ZICTA), the regulatory authority responsible to the Ministry of Communication and Transport, as part of a desire to reduce the ‘digital divide’ between urban and rural areas ZICTA are opening a series of multi-purpose IT centres and through its Universal Access Fund.
- Another notable initiative by a TEVET institution in Choma, is a partnership with a development partner in Dortmund, Germany. The project, called CHODORT, has ambitious plans to roll out 150 shipping containers converted to act as small ICT centres to be placed across the country.
- Community-based tele-centres, multi-purpose post offices and the projects such as CHODORT do provide access to computers and the Internet. Operationally, they might usually be expected to provide public access alongside an economic development agenda e.g. entrepreneurship development, business support etc, and gives a broader purpose to the centre other than simply being another internet café.

There is potential for TEVET institutions located close to the tele-centres to provide outreach services to provide training and information need analysis to foster the development activities and to create or develop further the social dimension to their existing role in the community and act as intermediaries between the community who may not be familiar with ICTs and the information services that would be of local benefit. Collaborate with partners to consider placing tele-centres in or near TEVET institutions” (Herd, 2010).

Other developments in the nation that provide a suitable environment for the development of the use of ICTs in TVET are: the development of a national ICT Policy by the Ministry of Communications and Transport and a draft national eLearning strategy by the Ministry of Education.

In other developments, Herd (2010) also reports on the “increasing use of the mobile phone network. Mobile device technology is growing rapidly with a myriad of new applications and services being developed globally. Social networking, podcasting, blogging and subscription services are now common, almost routine in the lives of many people *especially youths*”.

A number of students especially those along the line of rail i.e. Lusaka, Copperbelt, Central and Southern provinces (which make up more than 70% of the total enrolment of students in TEVET) are “digital natives” and have had some exposure to ICTs either at home, their communities or schools. In addition the number of internet café’s in Zambia has increased in the past few years (especially along the line of rail). This offers an opportunity to both learners and lecturers to access ICTs for educational purposes.

However, the effective use of OERs and Wiki’s could be negatively impacted by educators with technophobia i.e. a fear of technology or inappropriate use of technology e.g. using OERs and Wiki’s without adapting them to suit the needs of learners in a particular place. At the high school that I taught at from 1996 to 2002, a number of teachers that did not teach Mathematics and ICT were not too keen to use computers for educational purposes and would ask teachers of Mathematics and ICT to help them with simple tasks such as typing, word processing and Internet browsing. Issues of copyright may also arise especially by

content writers. Technophobia and inappropriate use of technology can be addressed by sensitisation on the affordances of technology and providing best practices on the use of Wiki's and OERs in Entrepreneurship training. Creation of educational content using wiki's encourages collaboration between lecturers/teachers and also students. The lecturers can then agree to make this content available to these as OERs.

Background

Following the rapid growth of the informal sector after the economic reforms of the early 1990's, a need for entrepreneurship training developed. The shrinking of the formal employment sector implied that many TEVET graduates were unable to find jobs in the formal sector. The 1996 TEVET policy highlighted this issue and provided for interventions to put in place to assist the informal sector which was an alternative to the shrinking formal sector. A national curriculum on Entrepreneurship training was developed and implemented in order to promote the self-employment career option. Entrepreneurship training was introduced in TEVET to ensure that all graduates received training to allow them become self employed at any suitable stage in their careers.

Entrepreneurship training however has been frustrated by inadequate number of trainers and as a result the up-take of entrepreneurship teaching and learning has remained rather low. The absence of business counsellors and mentors has also negatively affected entrepreneurship development. There is also limited availability of instructional materials to cater for the various target groups. There have also been inadequate entrepreneurship training programmes for those already running their own businesses, or indeed those exhibiting high entrepreneurial potential within the labour force population (MSTVT, 2010:17). The focus of this study however, is on the inadequacy and inappropriateness of training materials and how the use of OERs and wiki's can be used to support entrepreneurship training.

Entrepreneurship training in TVET in Zambia was introduced to address a number of challenges. Entrepreneurship training usually has a number of challenges. Ruskovaara and Ikävalko (2004) identify some of the challenges of entrepreneurship education as different

nuances of entrepreneurial aims that secondary and vocational schools have. There is also the *challenge* of the content of entrepreneurship education. The theme is very wide as Hytti (2002) and Gibb (2001, 2005) have stated, so one should take it into account as a method of learning and teaching as well as a substance of learning and teaching. *Another challenge* is the nature of teaching: The freedom is a virtue, but when the actors – here teachers – don't know much enough about the aims, work methods and content of the entrepreneurship education, like stated by Seikkula-Leino (2007), it is pretty pointless to measure its effectiveness and quality.

In the context of this study, some lecturers have challenges in interpreting the entrepreneurship curricula and its' associated aims and objectives. This could be due to lack of training in pedagogical methods or lack of experience as entrepreneurs. This leads to ineffective use of available teaching materials leading to poor learning of entrepreneurship. The use of OERs and wiki's makes it possible for lecturers to tap into the experience and knowledge base of teachers globally and within Zambia. Especially within Zambia, TVET institutions like Teacher Vocational Training Centre, Evelyn Hone College of Applied Arts and Commerce, Northern Technical College, Zambia Insurance Business College, Digitech College and Chawama Youth Resource Centre that have fairly well developed ICT infrastructure and developing learning management systems can be used to provide leadership and mentorship to other training institutions. Some lecturers and training managers from the above mentioned short course training institutions have undergone some training in the use of ICTs

Entrepreneurship training seeks to produce potential entrepreneurs who will run viable and sustainable enterprises. In order for this to be achieved the quality of training is very important. As Akola and Heinonen (2006) argue that regardless of the educational background of the participants and whether they already run a company or not, from the learning point of view it is important that the programme is concrete and practical enough.

Organisations such as the International Labour Organisation (ILO) and UNESCO have developed Entrepreneurship materials for trainers and learners that are available online. One example of an ILO online publication is Self-Employment Skills for Young People

(Corbanese & Rosas, 2006). This publication has a guide for facilitators and learners. In the facilitators guide it is stated: “The Guide can be used as reference material by staff of labour market institutions in charge of employment promotion but also by employment service advisers, trainers, youth leaders and peers. Facilitators are not required to possess prior knowledge on enterprise development, but they need to have good facilitation and training skills and to be creative and imaginative. This is particularly important for the selection and adaptation of learning resources to the needs of the audience and of the national context” (Corbanese & Rosas, 2006:4). The target group for the ILO modules are mostly youths, women and the informal sector.

For the UNESCO modules the target groups are secondary students and non formal learners (UNESCO, 2006). In the preface of the booklet: “Starting My Own Small Business – Facilitators Guide it is stated: “due to little available resource material on entrepreneurship that could augment TVET, UNESCO designed modular training packages in entrepreneurship for higher secondary TVET learners and for non-formal learners. The training packages are elementary and are intended to be an introduction to ethical entrepreneurship. They are core programmes that outline the key topics on entrepreneurship and may be expanded or abbreviated as the teaching situation demands. They also aim at instilling a heightened sense of self-confidence, particularly among non-formal learners, and awakening them to the possibility that self-employment could be a viable career option. Facilitators may adapt and interpret the training material to suit the unique situations in each community. The packages may be translated into local languages and reproduced without restriction, provided UNESCO is acknowledged as their source” (UNESCO, 2006:4-5).

Literature Review

Open Educational Resources

Open Educational Resources (OERs) are materials made freely available online for educators and learners to use, repurpose and extend. OERs have numerous opportunities for and teaching and learning such as: incorporating videos, lectures, and other materials in existing courses, making resources freely available online (e.g. a wiki textbook written by students), design learning activities around improving existing resources in public sites such as Wiki

Educator (Siemens & Tittenberger, 2009:47). This study will focus on how lecturers can use wiki's to develop OERs for entrepreneurship training and also use existing OERs for entrepreneurship programmes in TVET.

The term 'open educational resources' (OER) was first adopted at the UNESCO 2002 Conference on Open Courseware for Higher Education in Developing Countries and is now commonly used to refer to an Internet-driven worldwide community effort through which educational resources can be accessed free of charge across the globe. Generally referred to as 'digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research', OER includes:

- Learning content: syllabi, full courses, modules, learning objects, lecture notes, presentations and data collections.
- Tools: content development tools, online learning communities, and software to support the creation, delivery use and improvement of open learning content.
- Implementation resources: intellectual property licenses to promote open publishing of resources and guidelines for design and best practice (Centre for Educational Technology, 2011:1).

In Zambia an example of how OER's have been developed in a collaborative effort with other Commonwealth nations and are being used is available. "New open educational resources (OER) for 20 secondary courses created through (Commonwealth of Learning) COL's "OER for Open Schools" initiative are now freely available online. The self-instructional learning materials, developed by educators from Lesotho, Namibia, Seychelles, Trinidad & Tobago and Zambia, are appropriate for the existing secondary education curriculum. Educators can download, adapt and re-use the OER at no cost. "OER for Open Schools" was a two-year initiative funded in part by The William and Flora Hewlett Foundation. It involved building capacity in the effective use of technology in classrooms, development of OER and creating learner support materials. The 100 Master Teachers involved in this training are now providing training to colleagues in their countries. The 20 print-based OER are available as PDFs on the COL website, the COL Wiki, WikiEducator and on CD ROM by request. eLearning versions will be available later this year" (Commonwealth of Learning, 2011:7).

In South Africa an example of a good practice of implementation of OERs is at the University of the Western Cape. Open Educational Resources Africa (2010:1) report that “good progress has been made in implementing Health OER activities at University of the Western Cape. There are two separate entities within the institution which are involved in the project: the School of Public Health and Faculty of Dentistry. The following has been achieved in this period. These include: initial policies have been sourced for a policy review, at the request of the representatives from Dentistry and Public Health, contact has been made with key institutional players with an interest in OER or responsibility for institutional matters affecting OER. The Institution is in its’ final stages for completing the following projects: School of Public Health (SOPH), electronic folder of case studies which are of direct relevance to the SOPH; Five written case studies based on past or ongoing SOPH research projects which match specific teaching activities in MPH and PG Diploma modules; Two new case studies for teaching purposes in CORE MPH and PG Diploma modules; Adapted and proofread existing courses (Alcohol Problems: A Health Promotion Approach and Measuring Health & Disease I) as OER resource on UWC Free courseware site; Six academic skills/research skills PowerPoint tutorials to be distributed on CD or internet as PowerPoint presentations separate from audio.

Another example of a good practice of using OERs to support teaching is the Online Teaching and Learning Commons (<http://commons.carnegiefoundation.org/>) by the Carnegie Foundation for the Advancement of Teaching (Carnegie Foundation for the Advancement of Teaching, 2008:1). The Commons is essentially an open version of the Foundation’s Gallery of Teaching and Learning (<http://gallery.carnegiefoundation.org/>), which has been operating from 1999. The Gallery provides an online showcase for case studies of successful teaching and learning projects that have been supported by the Foundation, along with a set of web-based tools (the KEEP Toolkit) for creating these case studies (<http://www.cfkeep.org>). The Commons is an open forum where instructors at all levels (and from around the world) can post their own examples and can participate in an ongoing conversation about effective teaching practices, as a means of supporting a process of “creating/using/re-mixing (or creating/sharing/using) (Brown and Adler, 2008:13).

The University of Cape Town (UCT) has also been using Open Educational Resources. The University has an OER UCT project currently running in the Centre of Educational Technology at UCT with the support of Shuttleworth Foundation. The project aims to showcase the teaching efforts of UCT academics by encouraging publication of resources as OER. There is an Open Content directory where teaching and learning content from UCT can be accessed (University of Cape Town, 2011:1). As a student doing a Postgraduate Diploma in Education in the Centre for Educational Technology, I have been able to access a number OERs from UCT and other higher institutions of learning. This is much easier and convenient than using textbooks and journals which may not be readily available and even when available may be expensive to acquire. One advantage of OERs is that they provide a means of archiving teaching materials. At the CET podcasts of all lectures are saved as audio files that can be listened to at the learner's convenience. A teacher having access to such files can assess their teaching and get useful resources either as print media or electronic media.

Wiki's

A number of definitions are given for wiki's. Siemens & Tittenberger (2009:44) define wiki's as "easy to use web publishing tools that allow a group of users to collaboratively add and edit web content without any programming knowledge. Wiki's can be used for teaching and learning especially in this context for Entrepreneurship training. Common uses include: course notes, course syllabus, FAQ, collaborative writing and group work, brainstorming, inviting experts (whose work may/may not be the focus of the wiki) e.g. an Entrepreneur who knows entrepreneurship practice and content creation with educators from other universities/schools". This definition is similar to the one given by Wikipedia (2011:1) who define a wiki as a website that allows the creation and editing of any number of interlinked web pages via a web browser using a simplified mark-up language or a What You See Is What You Get (WYSIWYG) text editor. Wiki's are typically powered by wiki software and are often used collaboratively by multiple users. Examples include community websites, corporate intranets, knowledge management systems, and note services. The software can also be used for personal note-taking.

It can be noted from the above definitions that wiki's allow for the creation and editing of educational content. This makes it suitable for collaborative use of lecturers in coming up with suitable entrepreneurship training material in TVET. TVET Lecturers in various parts of Zambia can work together on wiki's to develop entrepreneurship materials that can be used in TVET institutions.

Wikis serve different purposes. Some permit control over different functions (levels of access). For example editing rights may permit changing, adding or removing material. Others may permit access without enforcing access control. Other rules can be imposed for organizing content. In the figure 1 below, an example of a wiki is given. In this wiki, one can read the contents of the wiki like one would read any other Internet resource. In this state, the wiki is read-only and cannot be edited. Figure 2 is an example of a wiki in an edit state or mode. In this state, a person that has a Wikipedia account can edit the content of the wiki.

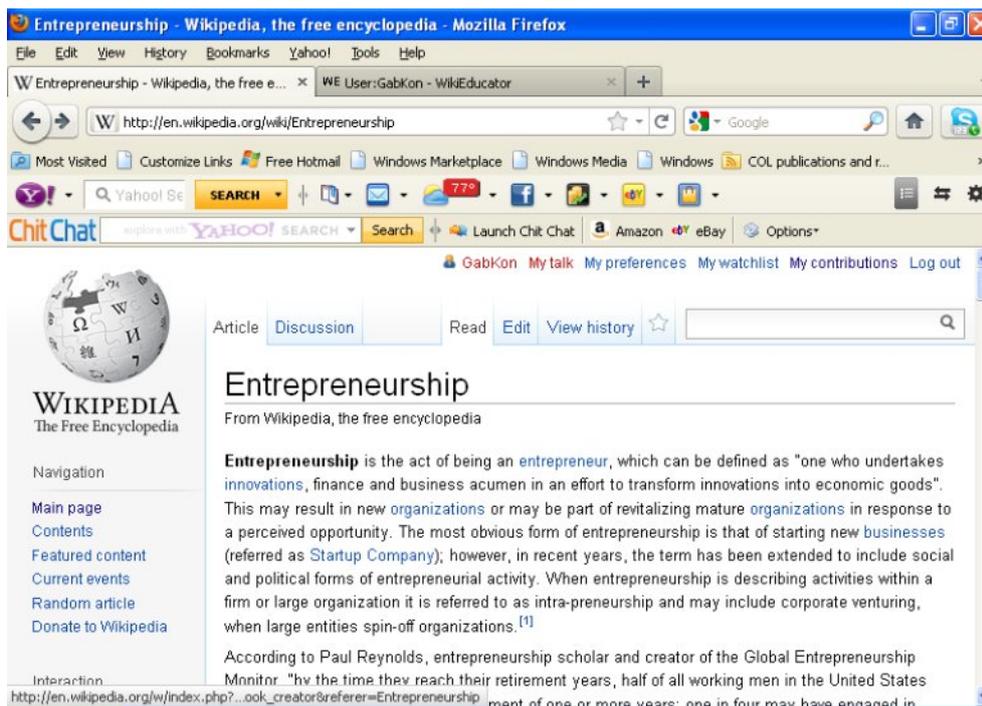


Fig. 1: Example of a Wiki in read state (Wikipedia, 2011)

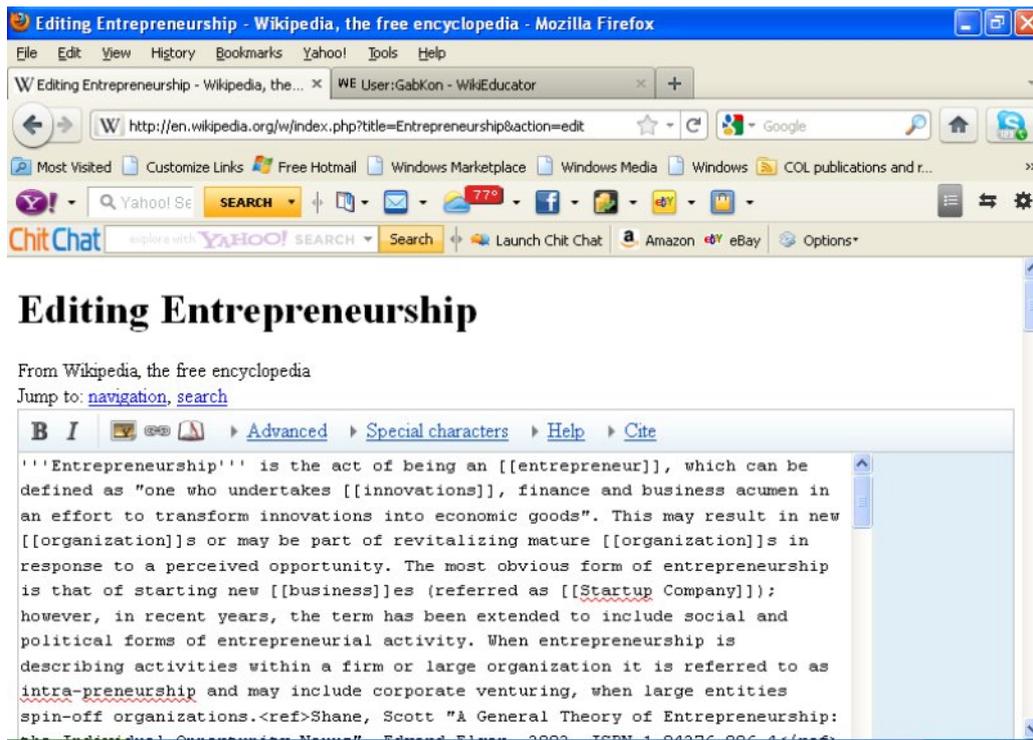


Fig. 2: Example of a wiki in edit state (Wikipedia, 2011)

Theoretical Framework

The study uses Anderson’s model of Online Learning as a theoretical framework. Figure 1 below provides a model that illustrates the two major modes of online learning. The model illustrates the two major human actors, learners and teachers, and their interactions with each other and with content. Learners can interact directly with content that they find in multiple formats, and especially on the Web; however, many choose to have their learning sequenced, directed, and evaluated with the assistance of a teacher. This interaction can take place within a community of inquiry, using a variety of Net-based synchronous and asynchronous activities (video, audio, computer conferencing, chats, or virtual world interaction). These environments are particularly rich, and allow for the learning of social skills, the collaborative learning of content, and the development of personal relationships among participants (Anderson 2008: 49). Since entrepreneurship lecturers in TVET institutions face challenges in acquiring appropriate Entrepreneurship materials the affordances of online learning can give lecturers rich content in various formats which can be used by students in a collaborative manner with the guidance of a lecturer.

It needs to be stressed that in any learning environment there are a number of interactions that take place such as student-student interaction, student-content interaction, student-teacher, teacher-teacher interaction, teacher-content interaction and content-content interaction (Anderson, 2004:48). This study focuses on the student-teacher, teacher-teacher and teacher-content interaction.

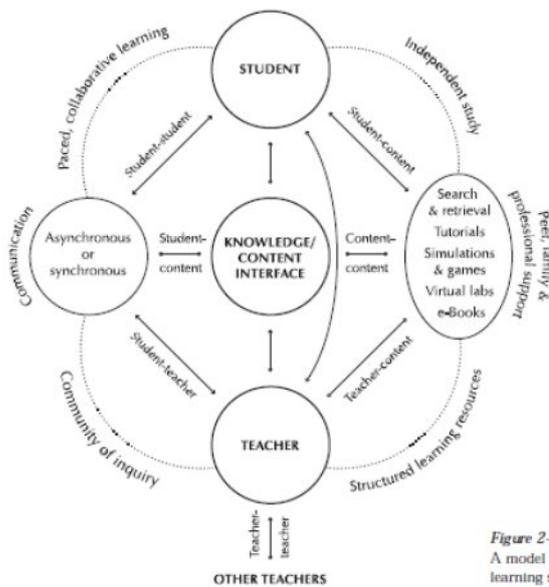


Figure 2-4
A model of online learning showing types of interaction.

Fig. 3: A model of online learning showing types of interaction (Anderson, 2008:49)

Aim

The aim of the study is to explore the possibilities of using OER's and wiki's to support entrepreneurship training in Technical and Vocational Education and Training (TVET) institutions in Zambia

Research Question

The study was guided by the following research question: How can online learning tools such as OER's and wiki's be used to support entrepreneurship training in Technical and Vocational Education and Training (TVET) institutions in Zambia?

Methodology

The study analysed the content of entrepreneurship training materials that are available online and explored how these could be adapted for use in supporting Entrepreneurship training in TVET institutions in Zambia. More specifically, the study explored the possibilities

of using Open Education Resources (OER's) and wiki's to support Entrepreneurship training in TVET institutions in Zambia. For OER's the author analysed the content of UNESCO's Entrepreneurship materials for trainers and learners. This is for secondary and informal learners. Also analysed were ILO's 'Self-Employment Skills for Young People'. The contents of the UNESCO teacher and learner OER's were compared with the TEVETA Curriculum. The table below shows the comparison:

TEVETA Entrepreneurship Curriculum (Contents)	UNESCO Starting My Own Small Business Facilitators Guide
Introduction to Entrepreneurship	<ul style="list-style-type: none"> ● Learning together ● My market ● Setting my prices ● Finding the money to start my business ● Banking
Developing Entrepreneurial Competencies	<ul style="list-style-type: none"> ● My entrepreneurial skills ● My ideas for small business
Developing Enterprise Management Skills	<ul style="list-style-type: none"> ● Keeping track of my money ● Communicating with my customers and business partners ● Making the best use of my time ● Observing rules and regulations ● Managing my workplace
Establishing an Enterprise	<ul style="list-style-type: none"> ● My business plan
Sustaining an Enterprise	<ul style="list-style-type: none"> ● Contacting my clients and partners with ICT ● The Internet and e-business
Integrated Learning Project	

Table 1: Comparison of Zambian TVET Curricula with UNESCO Starting My Own Small Business Facilitators Guide

The contents of the ILO teacher and learner OER's were compared with the TEVETA Curriculum. The table below shows the comparison:

TEVETA Entrepreneurship Curriculum (Contents)	ILO's Biz-up: Self-Employment Skills for Young People
Introduction to Entrepreneurship	
Developing Entrepreneurial Competencies	<ul style="list-style-type: none"> • Entrepreneurial skills • Business ideas and opportunities
Developing Enterprise Management Skills	<ul style="list-style-type: none"> • Market analysis • Resources • Financing
Establishing an Enterprise	<ul style="list-style-type: none"> • Business planning
Sustaining an Enterprise	
Integrated Learning Project	

Table 2: Comparison of Zambian TVET Curricula with ILO's Biz-up: Self-Employment Skills for Young People Facilitators Guide

The study used Anderson's theory of online learning to assess the suitability of OERs to support Entrepreneurship training in TVET in Zambia. Anderson (2004) explains the attributes of online learning, such as student centredness, as well as the various forms of interactions which take place in online environments, such as teacher-teacher, teacher-content and teacher-student. Therefore the study looked at whether the example's of OER's chosen were suitable for promoting interaction between teacher to teacher, teacher to student and teacher to content. Looking at the UNESCO's: Starting My Own Small Business which has guides for both facilitators(teachers) and learners(students) and the Biz-up: Self-employment Skills for Young People which also has guides for teachers and students, this facilitates teacher to teacher interaction and also teacher to student interaction and teacher to content interaction. In addition, it also facilitates student to student interaction and also student to teacher interaction and student to content interaction.

The author analysed the contents of the TEVETA Entrepreneurship Curriculum and searched for OERs and Wiki's that had suitable teaching and learning materials to support Entrepreneurship training in TVET.

For Wiki's the author, identified some key concepts such as: *Entrepreneurship, Entrepreneur, Innovation, Creativity, Business plan, market research, market-mix, family business and management* and searched for articles on these topics on Wikipedia, an online encyclopaedia. These were then compiled together into a book (Available on Google docs: <https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=1rUs-Q->

http://en.wikipedia.org/w/index.php?title=Special:Book&bookcmd=book_creator) using the ‘Book Creator’ feature available in Wikipedia. One needs to enable the “Book Creator” tool from the “print/export” box on a Wiki page and then gather appropriate articles which are added to a book. Then you review the created book and if it is acceptable download or a printed copy of your book.

Wiki’s allow for sharing and editing of resources. It was envisaged that some lecturers in TVET institutions would have basic skills to edit the wiki’s and collaborate with other lecturer’s in Zambia and outside Zambia. The author was also mindful that a number of the lecturers and students fit into the description of digital natives and therefore would be able to use the sample Entrepreneurship reference book as a text book which they could edit to suit their needs. The term ‘digital natives’ is used to describe modern students who are said to be native speakers of the digital language of computers, video games and the Internet (Prensky, 2001a:1). The term also describes those born during or after the general introduction of digital technology, and through interacting with digital technology from an early age, have a greater understanding of it’s’ concepts (Wikipedia, 2008:1).

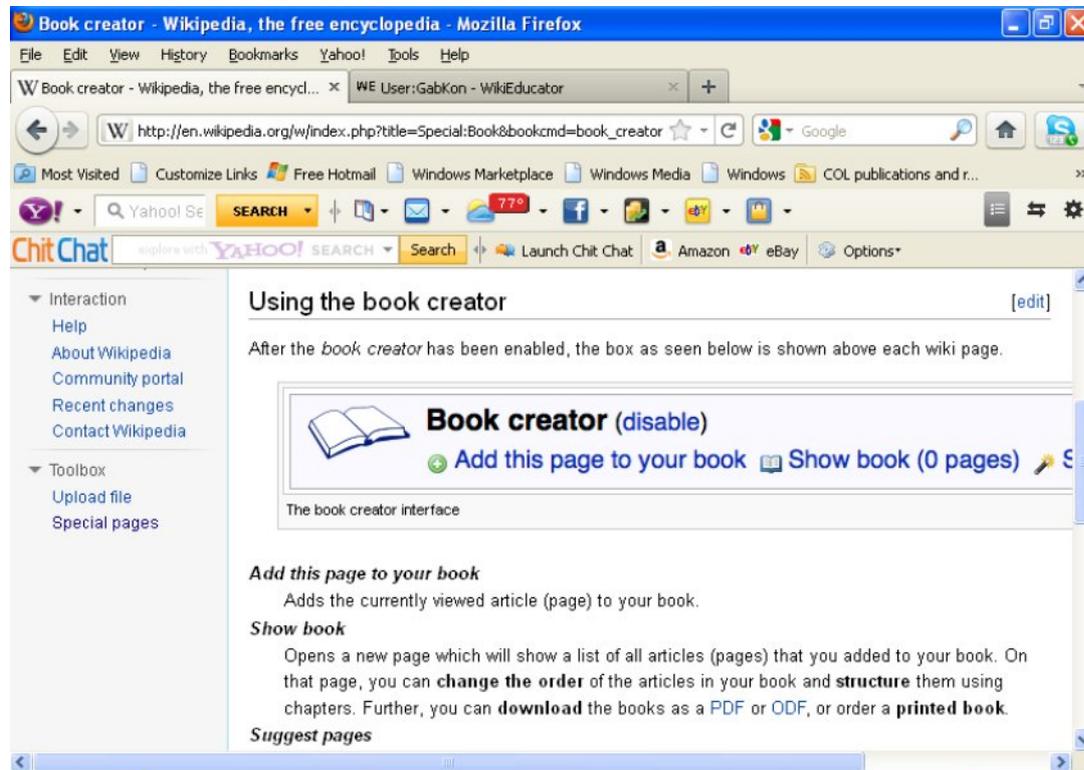


Fig. 4: Book creator example in Wikipedia (Wikipedia, 2011)

Discussion

From the brief literature survey it can be noted that wiki's and OERs offer a lot of scope for teaching and learning. OERs and Wikis can be used to support Entrepreneurship training by adapting it to learners needs. It needs to be noted however, that entrepreneurship training has a number of challenges as alluded to by very wide as Hytti (2002) and Gibb (2001, 2005). This calls for carefully analysing available OERs and Wiki's to ensure that they suit the needs of TVET learners. Entrepreneurship training can be approached from a theoretical perspective or from a very practical perspective which gives student studying entrepreneurship knowledge and skills on how to start an enterprise. OERs offer the trainer and/or student the opportunity to learn from entrepreneurship experts. In some cases it may not be easy to get successful entrepreneurs to share the knowledge and experiences on entrepreneurship face-to-face, but by using Wiki's and OERs entrepreneurs can achieve this as their knowledge and skills will be available to many students. Entrepreneurship textbooks in Zambia are not easy to find and where available they may not usually be appropriate. Wiki's and OERs therefore can go a long way in ensuring that students have access to useful and practical entrepreneurship materials as they can be adapted and adopted for local entrepreneurship needs before use unlike text books which are difficult to adapt.

TEVETA Entrepreneurship Curriculum (Contents)	Entrepreneurship Wiki Text Book
Introduction to Entrepreneurship	Entrepreneurship Business Small Business
Developing Entrepreneurial Competencies	Entrepreneur Creativity Innovation
Developing Enterprise Management Skills	Management Organisational Culture Bookkeeping
Establishing an Enterprise	Business Plan Business Operations Market Research
Sustaining an Enterprise	Small and Medium Enterprise Marketing Mix
Integrated Learning Project	

Table 3: Comparison of Zambian TVET Curricula with Entrepreneurship Reference Book developed from Wikipedia

During a meeting organised by TEVETA to discuss some of the challenges to Entrepreneurship training, one issue that came out was the challenge that some trainers of education faced in using the recommended textbooks. Some were reported to have stated that the textbooks were too advanced and not easy to understand and therefore opted to use materials from the International Labour Organisation (TEVETA, 2011).

Findings

The study found that there were a number of suitable OER's and Wiki's that could be used to support the teaching of Entrepreneur. The author identified UNESCO's Starting My Own Small Business Facilitators Guide and ILO's Biz-up: Self-Employment Skills for Young People Facilitators Guide as suitable OER's that could be used as teaching guides for lecturers in TVET. These materials were selected because ILO and UNESCO are involved in developing Entrepreneurship training and materials for TVET in African nations and other nations. On the suitability of these materials for use in TEVT by Entrepreneurship lecturers, Ngosa (2011:1) states:

“I found them to be very appropriate for the TEVET sector as reference materials. Most interesting is the one titled 'Starting my Own Business' which has been done in units. It is suitable for all levels especially for the first stages of the course in the main streams. It is also easy to modularise it for Open and Distance Learning”.

For the Wiki Entrepreneurship Reference Guide for TVET lecturers the following comments were made:

“The online Wiki articles on Entrepreneurship have been very well condensed. They may well form the main content of the course outline. The 'Buzup-self skills for young people' article is practical oriented in terms of application. It may form part of the assessment and evaluation instruments. It reads very well too” (Ngosa, 2011:1)

Conclusions

Arising from the study, the following conclusions are made:

- (a) OERs can provide a useful resource of teaching and learning materials for learners in a number of nations including developing nations.

- (b) Wiki's allow for collaboration among teachers and students to share and edit teaching and learning material without requiring much technical expertise on their part.
- (c) The socio-economic conditions make the use of OERs and wiki's a suitable means to support the use of teaching in Entrepreneurship in TVET in Zambia.
- (d) The increased availability of affordable ICTs devices such as laptops, personal computers and mobile phones that have Internet access in Zambia among lecturers and students provides an opportunity for the use of OERs and Wikis to support educational goals in Entrepreneurship training in TVET.

Recommendations

Arising from the study and the conclusions above, the following recommendations are made:

- (a) There is need for MSTVT, TEVETA and all relevant stakeholders to promote the use of OERs and wiki's as a useful resource of teaching and learning materials for learners in a number of subjects in TVET including entrepreneurship.
- (b) There is need for increased studies and research by training providers and policy makers on what are the most suitable ways of integrating ICT's in education in a socio-economic environment like Zambia, where textbooks cannot be easily afforded by most students and lecturers.
- (c) There is need for training providers and policy makers to establish on the best use of OERs and wiki's to support the teaching of Entrepreneurship in TVET in Zambia.
- (d) There is need for the Government and key stakeholders to ensure the increased availability of affordable ICTs devices such as laptops, personal computers and mobile phones to enhance the use of these devices in supporting education and training.

Conclusion

The literature cited shows the possibilities that OERs and Wiki's offer to educators. For educators to maximise these possible there is need for entrepreneurship educators and policymakers to analyse the content of online entrepreneurship training materials available

and exploring how these could be adapted for use in TVET institutions in Zambia. A number of recommendations that could lead to a right use of OER's and wikis to support entrepreneurship training has been outlined.

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