

ONLINE EDUCATION FOR RURAL TRANSFORMATION

Online Education for Rural Transformation in the Indian Ocean

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Abstract

This paper challenges the hitherto popular notion that education in rural areas is required primarily to increase literacy (to achieve EFA goals). It compels the policy makers to rethink about reengineering education for rural areas in the light of recent technological advancements and political will in the Indian Ocean region such that people may apply it in their unique contexts either to improve productivity in traditional occupations or to create new entrepreneurial avenues for their communities. Utilizing the case study method propounded by Yin (1994, 2003), the author shares his personal experiences of successfully using the Wiki tool in the creation of online content by the users themselves in their unique context. Issues and challenges in deploying this tool pragmatically in rural areas are highlighted. Subsequently, the paper explores specific cases of certain countries in the Indian Ocean to outline the scope of a proposed pilot project.

Keywords: Online Education; Rural Transformation; Indian Ocean

Introduction

Rural areas in developing countries have generally not received the same developmental priority as their urban counterparts due to several reasons. One of the reasons is their relatively lower population density and feeble local economy that is largely dependent upon agricultural produce. Most countries in and around the Indian Ocean are Third World countries, with huge swaths of rural areas. Unfortunately, access to education and its usefulness remains a chronic problem there.

Policy makers thought that education in rural areas is required primarily to increase literacy (say, for achieving EFA goals) and provide a platform for physical migration to urban areas for higher education and subsequently, for possible employment opportunities. In their vein to achieve the Education For All goals, a transplant of the hitherto successful educational model in urban areas appeared to them to be the readily implementable option. They did not realize that in complete contrast to rural areas, urban lifestyle and way of thinking does not automatically assimilate traditional educational systems. For generations, tacit knowledge and skills of agriculture, farming, and small businesses has been passed through unconventional means. This has generally proved self-sufficient for local populace, as anything that does not work out for them is deemed as “the act of God”. Education, therefore, does not fit into the scheme of things for rural populace, as it does seamlessly for people living in urban areas. Secondly, education in rural areas provided a stepping stone for higher education opportunities later, leading to employment avenues in urban areas. This essentially involves migration of young rural populace to big cities, thus depriving old parents of the love and proximity of their sons and daughters. It disrupts the continuity in traditional local occupations, while creating divisions in age-old joint family traditions

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prevalent in rural areas. Thus, many rural families consider education as a path to destruction rather than a panacea.

Perhaps, an organic approach to creation of a new educational system conducive to the requirements of rural areas would have proved much more useful and cost-effective in the long run. Policy makers should have tried to contemplate upon some fundamental questions in this context – Why is education required in rural areas after all? How could rural people apply education to improve their quality of life? Is achieving literacy adequate as the sole objective of education in rural areas? Logical answers to these questions could pave the way for planning a viable and sustainable educational system exclusively for rural areas. For example, an education system that helps rural people involved in agriculture to learn about modern methods of agriculture leading to higher productivity and better quality of produce would induce a natural stimulus for them to embrace education whole-heartedly. Similarly, education that helps rural people to create new entrepreneurial avenues for boosting the local economy would be an added incentive.

Thus, the objective of this paper is to compel the policy makers to rethink about reengineering education for rural areas in the light of recent technological advancements and political will in the Indian Ocean region such that people may apply it in their unique contexts either to improve productivity in traditional occupations or to create new entrepreneurial avenues for their communities.

It is evident from several previous researches that full-scale implementation of formal education systems in rural areas has largely failed to bring about the desired results. There is a clear disconnect between the way people lead their lives in these areas and the way in which formal education has been literally “forced” on to them. This generally results in low enrollments, high drop-outs, and disillusioned individuals grappling to understand why education is required after all.

Is online education a viable option in rural areas?

While arguing about the role of online education in rural areas, the author makes a case for an application-oriented and achievement-centric approach to education. A simple Wikipedia-style technological interface is proposed for creating modular content specific to the local educational context, in which local experts may serve as content-creators/moderators (say, on agricultural skills and knowledge) and rest all be the learners. It would not only help in capturing the tacit knowledge passed verbally from one generation to the next, but also provide an authentic context for learning among the rural populace.

The abduction of about 300 girls from a secondary school in the rural district of Chibok (Nigeria) by Boko Haram terrorists in April 2014 has accentuated the perils faced by traditional education system in terrorist inflicted areas (Oduha, 2014). A regular physical congregation of humans (particularly women) is an easy target for terror groups; especially in rural areas that generally have scanty police and security system. In Pakistan, the case of Malala Yousafzai (who was shot in the head by terrorists for openly condemning the ban for the girls going to school) in the rural area of Swat Valley, highlighted this issue internationally (Bryant, 2013). These incidents strengthen the case for online education in rural areas, whereby children (particularly girls) may receive contextualized education in the comforts and safety of their homes. The Indian Ocean region has innumerable communities in several countries that bar the girl child to go to school for receiving formal education. Unfortunately, persistent efforts by policy makers and implementers have largely failed to make a significant impact to change this situation, especially in rural areas. Online education can be a means to fill this gap till the time conservative perceptions change in the minds of the parents of the girl child. This is akin to accepting the harsh realities of our society till the

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time desirable transformation takes place and coming up with workable solutions to circumvent the issue.

Most countries in the Indian Ocean are democracies, with their politicians increasingly showing inclination towards promoting the use of technology in education. In India, for example, the previous Indian government helped to develop and promote the USD35 “Aakash” tablet for college-going students (ToI, 2012). The project though fizzled out gradually due to lack of capacity of the vendor to deliver such huge orders in the specified time frame. In a similar exercise, the Malaysian government assigned USD 1 Billion for distribution of 1 Million units of free “Notebook 1 Malaysia” together with broadband subscription packages to students hailing from families with income of RM 3000 or lower (Mohammed, 2012).

In its highly populated state of Uttar Pradesh (India), the Chief Minister personally distributed free laptops to 10+2 pass students, thus fulfilling his election manifesto (Sheikh, 2013). The success of pilot studies involving the use of mobile phones to promote lifelong learning among rural women in Southern India have further provided an impetus in this direction (Balasubramanian et al, 2010).

Despite all such experimentation in the rural areas, the role of technology in education is limited to transmission of educational programs on state-owned TV channels (like Doordarshan in India). Clearly, there is a dire need to explore the viability of a technological option that is inexpensive, expandable, and self-sustainable. This paper attempts to test the viability of such a technological tool, which is successful globally in harnessing upon the knowledge pool of diverse people.

Utility of the Wiki as a knowledge creation tool

'Wiki' is the Hawaiian word for 'quick'. The first Wiki was developed by Ward Cunningham in 1995, as the Portland Pattern Repository, to communicate specifications for software design. A Wiki is a set of linked web pages, created through the incremental development by a group of collaborating users (Leuf and Cunningham, 1999), and the software used to manage the set of web pages. Entire projects are being drafted, designed, edited and coordinated by teams through the use of a Wiki, where the observable principle allows visitors to view, contribute and collaborate at much faster rates through virtual real-time conversations (Dickerson, 2004).

Launched in 2001, today Wikipedia is the world's largest encyclopaedia with 33 million freely available articles on the Internet in 287 languages authored by 48 million registered users and innumerable anonymous contributors from across the world (History of Wikipedia, 2014). A key feature of the Wiki tool deployed in Wikipedia is its ability to allow anyone and everyone to contribute content through the Internet. Volunteers act as watch dogs and help in making sure that the content on any Wikipedia page is up to date. They ensure that any wrong entry made by somebody is deleted soonest possible and a quick revert to the original version is done through its "History" tool.

The author of this paper experimented with the Wiki tool during 2006-12 for testing its applicability in the creation of unique contextualized content in a team-based scenario. The participants were executives of a large corporation in the Oil, Gas and Petrochemical sector, who were engaged in a customized online corporate training program on project management. Each year during the period stated above, about 50 participants stationed at various parts of India were enrolled in a batch of the program. About 8 batches of the program were completed by the end of 2012.

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Media Wiki (a brand name of the Wiki tool) was installed in the online classroom for conducting the final project by participant teams. This project was made a final assessment component in the online training program with heavy weightage of marks assigned to it. Participants in each batch were divided into 10 teams such that they could choose their own team members according to a real-life project they had worked upon together within the corporation. Thus, 5 participants in each team were assigned the topic of their choice and a basic framework was provided to them on a Wiki page designated for the team. Earlier during a face-to-face orientation, the author (who was also the professor facilitating this program) provided them basic training about using tags for authoring and formatting content on Media Wiki. This exercise proved to be helpful in dispelling any phobia related to the technological aspects of using the Wiki. The participants were advised to choose their team members such that at least one member was technology savvy.

Twelve case studies on the Wiki were authored by the teams in the first batch (Fig. 1). The quality of content created was pretty decent as shown in the screenshot of Fig. 2.

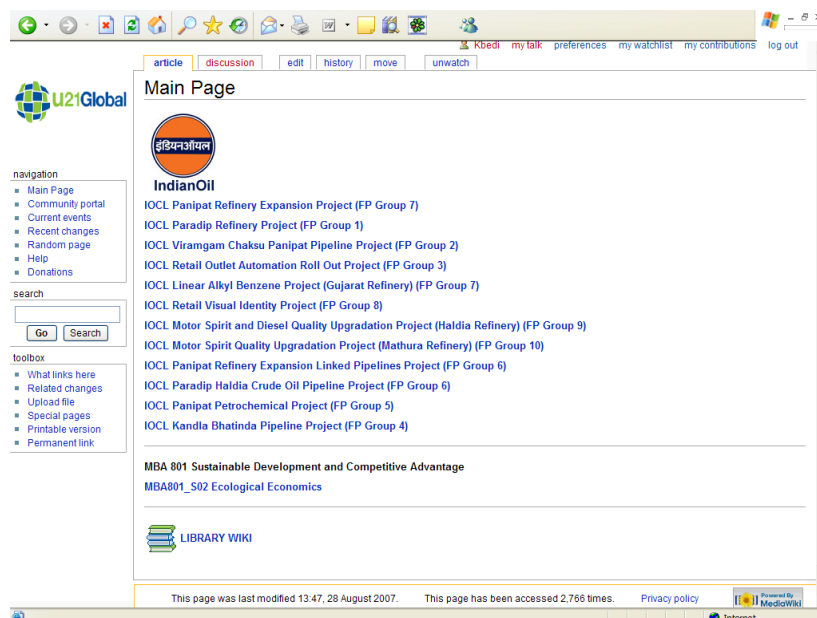


Figure 1. Various Wiki projects created by the first cohort

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The case studies developed by the first batch were provided in their original form to the second batch with the option that in place of choosing a new final project topic, a team may choose to work on any of the existing case studies of the first batch. Some teams did choose to work on any of the existing case studies of the first batch. Some teams did choose to work this way and provided new insights on the existing case studies. This way, knowledge transfer took place not only within a particular cohort, but also from one cohort to the next and so on. About 80 case studies were developed on the Wiki by the time eighth batch was completing. Thus, organization specific original content was developed by the participants themselves with little guidance from the professor facilitating the program.

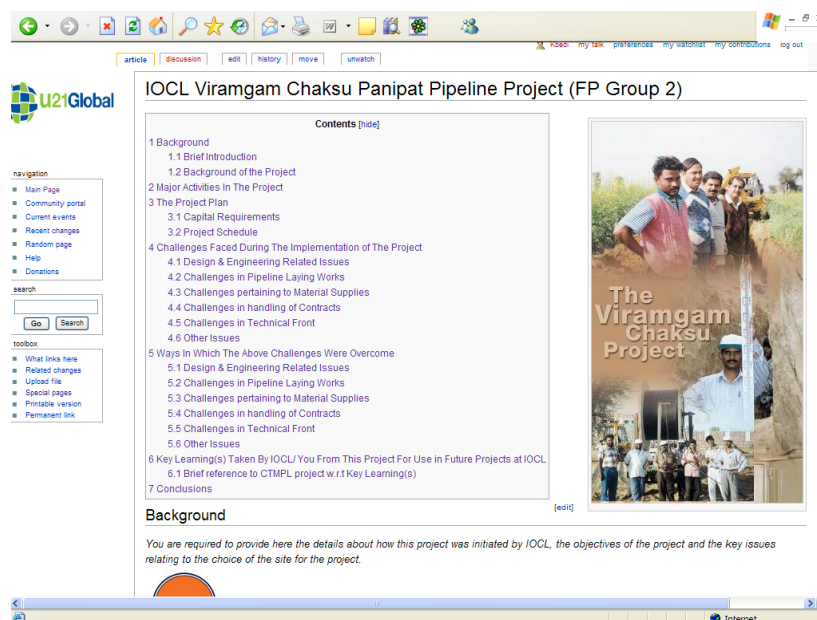


Figure 2. Sample of a Wiki page developed by one of the teams in the first batch

In order to gauge the effectiveness of the Wiki, a survey instrument was designed and executed on the participants. Out of the 50 participants in the class, 24 participants responded to the survey. The findings of the survey (Bedi, 2008) are shown in table 1. There were some participants who did not find the editing tools of Wiki easy to use, while a large majority found it difficult to coordinate with the team members for adding information to the project on the Wiki. It is noteworthy that a large proportion did not communicate with their team

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members through email, phone or online chats before adding any new information on the Wiki. These issues require further investigation to know if this lack of communication between student team members through other tools before sharing ideas on the Wiki is indicative about self-efficacy of Wiki as a collaborative tool. However, there seems to be some contradiction on this due to the survey findings about large majority of students finding it difficult to coordinate with the team members through Wiki.

Table 1: The survey findings

Wiki		SD	D	N	A	SA	NA
1.	Wiki is better compared to the online discussion board for creating organization specific case studies.	0	8.3	20.8	37.5	33.3	0
2.	The instruction documents provided by the professor regarding the use of Wiki were useful.	0	4.2	4.2	50	41.7	0
3.	The editing tools in Wiki are simple to use.	4.3	4.3	13	39.1	39.1	0
4.	It was easy to insert pictures/ images on the Wiki pages.	0	8.3	20.8	50	20.8	0
5.	Wiki is an effective tool for group learning.	0	0	4.2	45.8	50	0
6.	It was difficult to coordinate with the team members for adding information to the project on the Wiki.	20.8	45.8	12.5	16.7	4.2	0
7.	I often used the “History tool” (to compare previous versions) in the Wiki to see the latest changes incorporated by my team members.	0	8.3	16.7	50	20.8	4.2
8.	My team members communicated with each other through emails/ phone/ chats before adding any new information on the Wiki project.	0	25	4.2	45.8	25	0
9.	The case studies of IOCL projects created on the Wiki would be useful as knowledge objects to other IOCL executives.	0	0	0	16.7	83.3	0

Legend used: SD – Strongly Disagree; D – Disagree; N – Neutral; A – Agree; SA – Strongly Agree; NA – Not Applicable

MediaWiki used in the program was not configured to have the “Undo” or “Reverse” feature commonly found in applications like the Wikipedia. This might have posed challenges for the team members to reverse to an earlier version of the content promptly and might be the reason for difficulty in team coordination. Overall, the survey findings support the utility of the Wiki in improving the learning environment, skill development and knowledge construction/ dissemination.

Issues and challenges in deploying the Wiki in rural areas

The above experiment brought about positive results in the use of Wiki for organizational-specific case studies, but it was essentially involving qualified executives of a corporation of India. Before extending this experiment to rural areas, we must address the below issues and challenges:

1. *Erratic power supply in rural areas in most developing countries in the Indian Ocean region:* Electronic devices like tablets, laptops, mobile phones, etc. to be used in rural areas require recharging through electricity at regular intervals. Power cuts in rural areas are a norm rather than exception. Therefore, the choice of devices to be used in the experiment would definitely involve long-lasting battery life. Earlier experiments like one-laptop-per-child have already created and used sturdy devices like XO-4 Touch with long lasting battery life and easy repairs (One-laptop, 2014)
2. *People in rural areas may have a steep learning curve with the technological interface:* Earlier experiments have already dispelled such concerns – for example, Hole-in-the-wall experiment led to the conclusion that groups of illiterate children in urban slums may learn using computers on their own (minimal invasive education) when computers are provided to them at safe public locations (Mitra et al, 2005). Recent proliferation of mobile telephony in rural areas of the Indian Ocean region has further made people comfortable with the use of technology. Experiments on the use of mobile phones for life-long learning among rural women in South India have already been successful (Balasubramanian et al, 2010).
3. *The Internet may not be available in most rural areas:* This is a genuine concern, though technology has made it possible to beam the Internet communication in any

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part of the world through communication satellites in geostationary orbits. Some countries in the Indian Ocean region have a distinct advantage in this regard. India, for example, has several communication satellites of its own that are already being used for beaming TV channels across rural areas. Edusat (GSAT-3) was a satellite launched by India in 2004 specifically to support the distance education sector across the country, particularly the rural regions not having access to traditional forms of education (ISRO, 2014). Private companies like Reliance have laid extensive fibre optic cables throughout the length and breadth of India for various communication purposes, including the Internet.

4. *Funding may be an issue for large-scale implementation:* Most countries in the Indian Ocean are democracies, with their politicians increasingly showing inclination towards promoting the use of technology in education. In India, for example, the previous Indian government helped to develop and promote the USD35 “Aakash” tablet for college-going students (ToI, 2012). In its highly populated state of Uttar Pradesh, the Chief Minister personally distributed free laptops to 10+2 pass students, thus fulfilling his election manifesto (Sheikh, 2013). Thus, funding for large-scale implementation can be secured if planned for and timed properly. More importantly, politicians need proactive planning and support of academicians to generate maximum advantages for the needy. They do not realize that just distributing tablets and laptops to students would not bring about the desired results, unless there is clarity on the learning objectives to be achieved in the long term. It is likely that an elaborate plan for purposeful education in rural areas backed by a successful pilot project would be seen favourably by the government for funding suitably in future.
5. *Safety and security of the device:* This issue was reported to have been faced earlier by one-laptop-per-child project, whereby devices distributed to rural children in a

developing country were stolen. In order to circumvent this issue, the Village Head or a senior citizen in the village may be entrusted with the responsibility of storing the device(s) with them. Secondly, the risk of devices getting damaged when in use by villagers cannot be ruled out. This essentially requires that the devices used should not be too expensive and should be easy to repair.

6. *Language issues*: The Indian Ocean region has almost every country with a unique language in the written form. Fortunately, Wikipedia has several languages supported by it. However, certain scripts like Dhivehi (Thaana script) used in the Maldives is not supported by Wikipedia. Therefore, exclusive Wiki tool would need to be deployed in rural areas of such countries with in-built local language option.

It is likely that several other challenges may be encountered due to the unique context of the rural areas where a project is considered and novel solutions may need to be worked out to make the project viable. Challenges to online education in rural areas have been reported in developed nations like the USA as well. Murin & Watson (2012, pp.11-12) reported challenges like broadband access, communication/ messaging, funding model, and professional development of teachers for expansion of blended/ online learning in the rural areas of Colorado.

Scope of the proposed pilot project

The author proposes a pilot project covering rural areas in two countries in the Indian Ocean – a village near Bangalore (Karnataka, India), and a village near Peradeniya (Near Kandy in Sri Lanka). The choice of villages would be undertaken to fulfill the basic

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requirement that a computer tablet with 3G/ 4G Internet accessibility should work seamlessly there.

The project is envisaged to be conducted in two phases – the first phase would be undertaken in Bangalore, followed by the second phase in Peradeniya. This would allow for fine-tuning the nitty-gritty of the project in the first phase before proceeding into the second phase. The choice of countries and villages therein are purely on the basis of convenience sampling, as the author either has easy access to a country or has fellow researchers/ friends located there (who are likely to support the proposed pilot project).

Wikipedia is available in Kannada (the language largely spoken & written in Karnataka, India) as well as Sinhala (the spoken/ written language in Peradeniya, Sri Lanka). The preferred approach would be to use this facility to create Wiki pages specific to the villages considered in the study. If the need be, special permissions may be sought from Wikimedia Foundation (organization in the USA running the Wikipedia). However, if some operational difficulties are encountered, the author may consider the use of exclusive Wiki like the one used for the corporate training program detailed out earlier.

It is proposed that the Wiki pages would initially cover the following aspects of the villages under study for attracting the attention of the local populace:

- Demography
- Local administration
- Climate
- Agriculture
- Businesses
- Education

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The emphasis in content development would be to highlight the current state of affairs in the villages on the above aspects, while incorporating hyperlinks to international best practices (say, in related agricultural production, local businesses, etc.). As shown in Fig. 3, four stages of the pilot project are envisaged. Stage 1 would involve the creation of a core team for content development. It is likely that the Village Head and/ or the School Teacher would be part of the team along with some literate individuals (preferably women and adolescents). In Stage 2, the researcher (author) would provide an orientation and hands-on experience to the core team members to showcase the World Wide Web in general and the Wiki tool in particular. The Stage 3 would involve the creation of the local content by the core team with overall supervision by the researcher. The content would include photographs/ images of key local persons, places of worship, iconic milestones, etc. to make it relevant and interesting for the ultimate users –the local villagers. Stage 4 of the project would be used to showcase the content developed to the villagers including women and children, while inviting their suggestions for further improvement. The final stage (Stage 5) would be mainly observational, with intermittent observations of the further usage/ activities of the villages with the device and the content on the Wiki. This stage would largely be free from direct involvement of the researcher in order to allow all possible outcomes of the pilot project.

The proposed pilot project would utilize the case study method propounded by Yin (1994, 2003). As suggested by Stake (2000), case studies can provide unique insights into an issue or area of concern (instrumental), inherent nature of a situation (intrinsic), and can be based upon more than one location (collective). The two phases of the proposed project (Phase 1 in Bangalore and Phase 2 in Peradeniya) would form two separate case studies for comparison. For comparing the results in the two regions considered, the study would utilize the four steps of comparative education methodology viz. description, interpretation, juxtaposition and comparison (Bereday, 1964).

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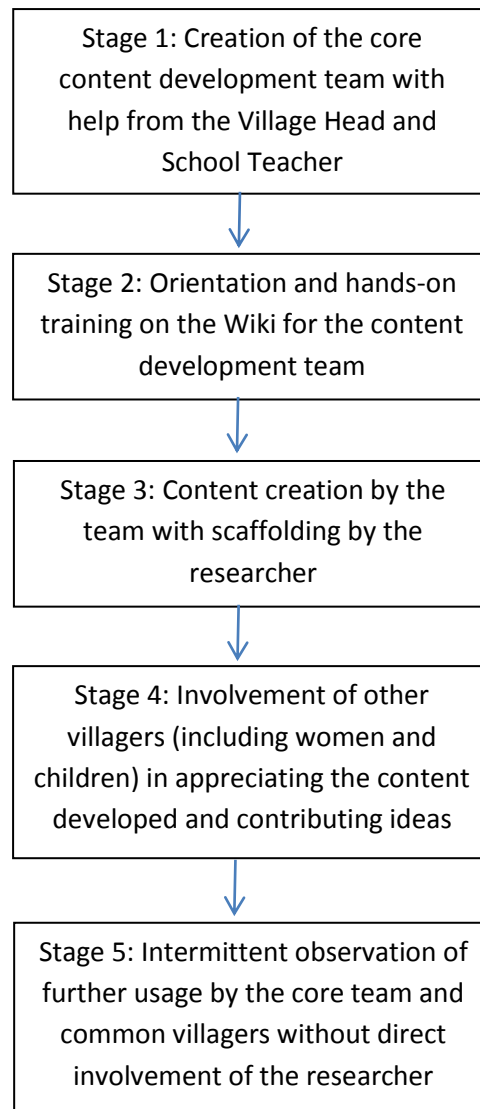


Figure 3. Stages in the proposed pilot project

Conclusion

Online education is increasingly replacing the established traditional ways of education in developed countries. In developing nations, this trend has just started to pick up in major cities and towns. However, rural areas are almost untouched by this technological revolution in education.

It is not as if technology has not touched the lives of rural populace. Rapid proliferation of mobile telephony in rural areas is phenomenal and telecommunication

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companies are scrambling to reach out to this large and lucrative business opportunity. Interestingly, this very technology that is entering the lives of rural people for long distance communication, is also paving the way for the Internet and online education. Modern technology is thus becoming an excellent medium for bridging the widening gap between rural and urban population in developing countries in the Indian Ocean.

The political will of governments in the Indian Ocean region in promoting the use of technology in education is increasingly becoming obvious. Ironically, such intent has gone largely in vain due to lack of strategic planning and implementation in the long run. It is likely that the policy makers would lend a helping hand to projects related to rural transformation through online education if these are backed by solid reasoning grounded in reality. This paper therefore proposes a pilot project to test the hypotheses relating to the utility of state-of-the-art knowledge creation and dissemination tools in the rural areas of developing nations in the Indian Ocean.

Wikipedia has swamped the world since its inception in 2001 and has become the world's largest encyclopedia. Its content creators are common people from all over the world, many of whom also act as watchdogs to keep the content up to date and flawless. The diversity of languages used in Wikipedia makes it readily acceptable in different parts of the world. This paper presented a case study on the deployment of the Wiki tool in a corporate training program setting wherein organization-specific content was developed by the executive teams enrolled in the program. The success of this project in creation and dissemination of tacit knowledge not only within a particular cohort but also from one batch of participants to the next encouraged the author to explore its applicability in rural areas.

Conventional educational systems have been used so far in rural areas in expectation that these would help in increasing the literacy rates. This approach is based upon the notion that the objective of literacy is all encompassing in itself. This paper attempted to challenge

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this view point with the argument that the objective of literacy would remain incomplete unless it is directly linked to the ultimate benefits it would provide to the rural people either by way of improving their lives through increase in agricultural productivity and quality of produce or by providing new avenues of small local businesses. This paper therefore proposes a pilot project to link rural areas to rest of the world through the Internet while retaining the local flavor through the development of local content by the rural people themselves.

The proposed pilot project would be conducted in two phases – the first phase in a village near Bangalore (India) and the second phase in a village near Peradeniya (Sri Lanka) - in a staggered time frame to allow for any possible mid-course corrections. Five stages have been outlined for the project without constraining them in time frames to allow enough flexibility to the researcher to tweak the pragmatic aspects of the project for achieving its objectives. Possible issues and challenges in the pilot project have been identified and mitigation measures have been proposed. The findings of the project would allow for critical comparison between the two case studies developed in relation to the two locations of the proposed project, namely Bangalore and Peradeniya. The project though suffers from an inherent disadvantage that only these two locations cannot be deemed representative of rural areas in numerous countries dotting the Indian Ocean. Perhaps, the success of the pilot project would help in attracting the required funding to transplant the project in the rural regions of other countries in the Indian Ocean.

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