Providing Access to Education in Sub-Saharan Countries through Content-Oriented Technology

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Abstract

Access to education has been a growing concern for children in developing economies, namely lack of access to quality customized online content in the classroom and at home; lack of tools that make learning fun and effective in key subject areas; and lack of state resources to meet educational demands. The Rumie Initiative was founded to tackle these concerns. It is a non-profit organization bringing educational content to the world's underprivileged children through low-cost technology. The Rumie Initiative's vision is to redefine the way education is provided, and through this, significantly reduce poverty and drive economic development.

The primary advantage of The Rumie Initiative over all other educational technology solutions is that its content is specifically tailored to meet the local educational needs and curriculum standards.Utilizing the vast reserves of free online updated educational content available today; these android driven tablets are an affordable and intuitive way to deliver pre-loaded content without the requirement of internet access. Through mass global volunteerism, The Rumie Initiative collaborates with educators in choosing appropriate educational content and distributes content–loaded tablets through local Non-Governmental Organizations, communities and government entities.

The Rumie Initiative has started a program of trials around the world and recently received a positive response at a Computer - Based Math Education Summit in New York hosted by UNICEF from November 21st to 22nd 2013. The initiative was first launched in Haiti on 25th October 2013 and has since, been gaining momentum, currently exploring opportunities in Sub-Saharan countries such as Ghana, Kenya, Uganda, Rwanda, Burundi, South Africa and Nigeria.

This paper focuses on The Rumie Initiative's unique business model to reach the masses, emphasizing issues relating to the power of volunteerism, the forging of strategic development partners, and content-oriented technologies in increasing access to education.

Introduction

Irina Bokova, United Nations Educational, Scientific and Cultural Organization (UNESCO) Director-General, commented in her foreword in the Education for All (EFA) Monitoring Report 2014, "educate communities, and you transform societies and grow economies." This in essence is the Rumie Initiative's goal. According to the World Bank Report 2012, several African countries reported 100% school consensus return rate. The average ratio of textbooks per child is at approximately 1%. The report further notes that in 2011, around half of young children had access to pre-primary education, but in sub-Saharan Africa the share was only 18%. This independent EFA Global Monitoring Report further notes that this is a learning crisis. It has costs not only for the future ambitions of children, but also for the current Governments finances. Bokova (2014) stresses the imperative to make education central to the sustainable development agenda for the decades after 2015. She notes that the world will already miss the goal of full primary schooling for children, both boys and girls, everywhere by 2015. This is the second of the anti-poverty Millennium Development Goals (MDGs) adopted at the United Nations Millennium Summit in 2000. "As we advance towards 2015 and set a new agenda to follow, Governments must invest in education as an accelerator of inclusive development," she writes. This Report's evidence clearly shows that education is the backbone for progress in fulfilling all development goals.

Between 1999 and 2009, the school-aged population in sub-Saharan Africa increased by 25% and enrolment ballooned by 59%. The Adjusted Net Enrolment Ratio (ANER), reflecting the number of primary school-aged children enrolled in primary school, showed that 77% of children in this region were enrolled at this level, compared to the global proportion of 90%. Globally, 88% of children completed primary school in 2009, but in Sub-Saharan Africa, only 67% did. Girls are particularly disadvantaged. Nearly one-half of countries where girls were less likely to complete primary education than boys were in Sub-Saharan Africa (World Bank Database, 2012).

Against this background, this paper showcases how The Rumie Initiative is contributing towards achieving the second MDG on universal primary education for all. The initiative seeks to do this through a threefold strategy involving volunteerism, development partners and content-oriented technology – namely the Rumie tablet.

The Power of Volunteerism

Volunteerism around the globe has been increasing tremendously over the years.Canada is an example of a country where over 13.3 million people accounting for 47% of Canadians aged 15 and over did volunteer work(Canada Survey of Giving, Volunteering and Participating (CSGVP), 2010). This survey shows further that they devoted almost 2.07 billion hours to their volunteer activities: a volume of work that is equivalent to just under 1.1 million full-time jobs. The reasons for this growth can be traced to factors such as an increase in volunteering opportunities and on an individual level - internal and external factors that have led to more people getting involved in volunteering.

Internal factors are solely linked to people's strong sense of giving back to society and their belief in having a positive impact on the underprivileged society.Today with generous philanthropic initiatives where billionaires around the world are pledging more than half their wealth to the development of the underprivileged world(Acs & Phillips, 2002), there is a huge rise in individuals having a stronger commitment towards giving back to society. On the other hand, external factors involve people looking to get involved in volunteer work as part of enhancing their resume and exploring opportunities across borders to have a unique experience.

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According to the study, Measuring the Economic Value of Volunteer Work Globally (2011) conducted by the John Hopkins University, 971 million people in a typical year volunteer around the globe at organizations or directly to persons outside their household. Volunteerism not only adds to an individual's persona and resume when looking for career growth but also has an immense effect in having a happier and healthier life. It is the power of an individual to contribute towards social change without expectations that provides an individual a sense of purpose and confidence to perform for the betterment of others.

The Rumie Initiative is an example of an initiative that has attracted a great pool of volunteers who work and invest time for the benefit and success of the initiative. The current pool of volunteers includes full time working professionals and student groups from renowned universities assisting the initiative in Fundraising, Technology, Education and Strategic Planning. The passion and drive of the volunteers is justified by the initiative gaining a lot of momentum and spreading its reach internationally. The Rumie Initiative not only has volunteers from diverse backgrounds but people from different parts of the world such as Asia, Africa, Caribbean and North America. This diversity has played a pivotal role in coming up with unique ideas and helping the initiative receive attention in other parts of the world,which is extremely important for its success.

The Rumie Initiative going forward looks to involve more volunteers from universities and build helpful alliances with organizations which can offer volunteers in the developing world to help the initiative with the ground work and enhancing the product offering in terms of content. The success of the initiative would be a great justification of the power of volunteerism in taking the initiative from a concept stage to the stage of global impact and recognition.

Development Partners

Mohiddin (1998) in Bailey and Dolan (2011) refers to a partnership as the "highest stage of working relationship between different entities brought together by commitment to common objectives, bonded by long experience of working together, and sustained by subscription to common visions" p 5. Partnership is a term, which evokes much sensitivity with its implicit connotations of sharing and trust (Gutierrez, 2008). 'Authentic' partnership is associated with: long-term commitment, shared responsibility, reciprocal obligation, equality, mutuality and balance of power (Fowler, 2000 in Bailey & Dolan, 2011). Core principles of accountability, joint decision making, respect, trust, transparency, sustainability and mutual interest are an integral part of partnerships (Wanni, 2010; Dochas, 2010; Crawford, 2003 in Bailey & Dolan, 2011).

The Rumie Initiative's success largely depends on its ability to raise funds and form valuable partnerships with corporate organizations, governments, philanthropists, non-profit organizations, local partners, schools and teachers who will use the Rumie tablets in educating children. This has to be done in an environment of respect and trust. The Rumie Initiative invests in identifying, networking, and doing due diligence on potential partners to ensure that there is a strategic fit between both organizations before selecting the partner for deployment of the Rumie tablets. An important selection criterion for partnerships is if the partnership would create a lasting change in the lives of underprivileged children, which in turn provides a positive impact for the economy of a country. The Rumie Initiative and its potential partners must however identify the benefits that neither organization would have been able to achieve without partnering with each other. The basis for this principle is to ensure that an incentive that drives commitment exists for the partner. Incentives may vary depending on the type of organization.

A company that engages in corporate social responsibility initiatives and wishes to partner with The Rumie Initiative may have a goal of obtaining corporate citizenship. Partnering with other non-profit organizations could be to complement both organizations' product offerings. And lastly, partnering with philanthropic organizations may be as a result of the philanthropist's passion to help underprivileged children. One similar benefit that cuts across the aforementioned group is the goal of being perceived as giving back to the community. The Rumie Initiative's ultimate goal is to leverage the power of collaboration, volunteerism, cooperation, and building relationships with valuable partners to ensure the achievement of its goals, which is to provide quality education to every child in the world. This is the reciprocity, mutuality and balance of power aspects of Rumie partnerships.

Content-Oriented Technologies

"The ongoing, unprecedented growth of information and communication technology (ICT), coupled with the globalization of the economy, has created a huge challenge for education" (Cheng, 2002 in Li & Wong, 2006 p 248). The implementation of ICT is on the forefront of education reforms worldwide. This swift growth of infusing ICT in education is demonstrating the effectiveness and the impact of technological applications to educational stakeholders. The Rumie Initiative aims to meticulously align the chosen content with Bloom's Taxonomy based on the understanding that effective use of ICT has to be construed in a pedagogical and organization context. Additionally, it draws on transformational leadership and learning organization literature with a view to foster innovative changes in classroom practices.

Bloom's Taxonomy (1956) is the widely accepted framework or classification system through which teachers guide their students through the cognitive process. It is useful for all subject areas, grades and school forms. It not only allows teachers to organise the objectives in the content to be taught, but also provides a perspective on the requisite cognitive, affective and psychomotor skills that students need to develop from learning the content. One can think of Bloom's Taxonomy as a pyramid, with simple knowledge-based recall questions at the base. Building up through this foundation, students are asked increasingly challenging questions to test their comprehension of given material. This guided structure from simple to complex knowledge and

skills quintessentially represents the approach that will be used to organise the content of The Rumie tablet.

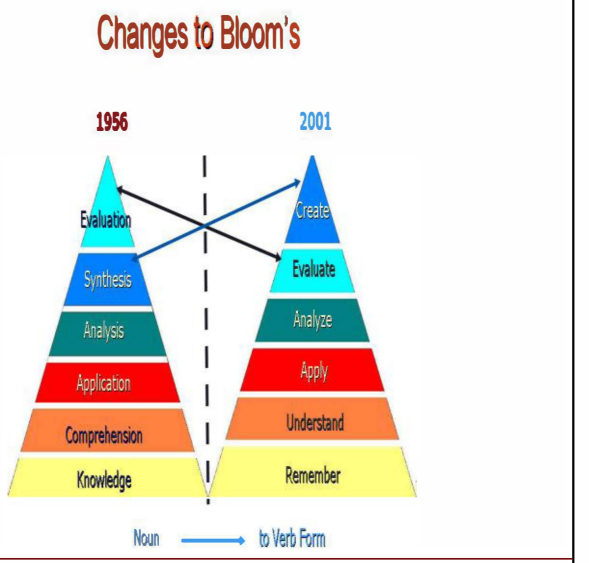

Fig. 1Bloom's Taxonomy

Source: http://justincrawford.co/blooms-taxonomy/

The Rumie Initiative has opted to use the revised version of 2001 as it was purposely designed to be more valuable to educators and to mirror the customary ways in which it had come to be used in schools. In the new version, three categories within the cognitive domain of the taxonomy were renamed and expressed as verbs rather than nouns. Knowledge, Comprehension and Synthesis becameRemembering,Understanding, and Creating respectively, with Creating now becoming the highest level in the classification system, switching places with Evaluating (see Fig. 1). The revised version is now Remembering, Understanding, Applying, Analysing, Evaluating, and Creating, in that order (Education Reform Glossary, 2013). Additionally, the taxonomy is easily adaptable to technology in learning wherein an iPadagogy wheel has been developed to reflect this (Hopkin, 2013). Resultantly, the Rumie tablets can be integrated into the current teaching practices to support the curriculum,which is essentially the organization of knowledge and the instructional delivery, which helps to make it more efficient and fun. Wong, Li, Choi and Lee (2008) support this integration of ICT into current teaching practices to aid curriculum development.

The Rumie tablets can be used to facilitate curriculum extension wherein not only does the instructional process evolve but the content changes as well guided by the local Ministry of Education Policies and Guidelines. As technological innovations open up many new ways of teaching and learning, the tablets used in classrooms can be used for tracing changes in teaching and learning towards a student-centred approach. Pedagogical innovations, teaching, and learning instructional strategies will range from sheer exposition to investigative learning (Wong, Li, Choi and Lee, 2008). The Rumie Initiative believes that allowing students to use their devices in the classroom directly contributes to key factors for success for implementation. There is a greater allowance for students to develop independence in learning. Students gain the ability to actively construct knowledge, have a stronger use of collaborative work to facilitate learning, develop courage to express ideas and attain a higher level of motivation in learning.More importantly, the Rumie tablets can be used to aid the advent of information age citizens, particularly in the context of Sub-Saharan Africa where the digital age has not been fully realised.Through the selection and organization of relevant content, the Rumie tablets can also stimulate the development of higher order thinking skills, problem solving, and critical thinking among students, which is crucial for their success. The need to prepare students for adulthood is a recurring theme throughout educational reform. They must learn how to analyse, critique, cross-reference, and transform information into usable knowledge (Hopson, 2002).

The Rumie tablets are not only to be used in the classroom. In facilitating continuous learning, students can be allowed to take home the Rumie tablet so that they can have the opportunity to interface with this content-oriented device outside the classroom. Allowing students to take the device home facilitates a higher level of engagement that comes with the ability for a personalization and a sense of ownership especially ownership of content. The Rumie tablet has a two pronged effect of not only benefitting the student but allows the involvement of families. Family members will gain exposure not only to the technology,but also to a wide range of educational content, thereby impacting the wider community.

The Rumie Initiative is aware of the general educational challenges faced by Sub-Saharan Africa as it relates to financing and internet access to connect students to online learning resources. To circumvent these challenges, The Rumie Initiative offers recommendations to the schools on alternative routes to access these learning resources offline. Educational facilities may choose to have a set of Rumie tablets stored in a library and shared amongst students and teachers in the institution or community. Ideally The Rumie Initiative does not recommend this because it does not help to engage new users. It instead builds a barrier on the already unfamiliar technology. Without integrating the Rumie tablet into users existing schedules, structural and cultural forces (from opening hours to chores to the balance of power in a community) can prevent students from attending the library with frequency. A student with a Rumie tablet is a student who holds in his hands a library that never closes.

If cost is an issue for allowing individual ownership of a Rumie tablet, a more affordable implementation strategy is to have a set of Rumie tablets within a classroom. This allows for an easy scale-up to individual assignment of

Rumie tablets. Having a classroom set of Rumie tablets limits the amount of personalization and ownership of content. If two students are assigned to share a Rumie tablet, where internet access is available, they will be able to download educational content of their choice onto the device and access the content each time that particular Rumie is handed to one of them. However, conflicts can arise if students disagree on how to organize content and they might pass the blame if the Rumie tablet breaks or goes missing. For this latter reason, it will be difficult to allow students using the classroom set Rumie tablet to take their devices home. This can only be mitigated if an institution takes responsibility to develop a library-like system where students can borrow a specific Rumie tablet and return it.

While the emphasis is more on content, the technological component is also an important ingredient for success. Whereas the default Android launcher lets a user see and run all of the applications freely, the Rumie launcher is designed for classrooms and includes three sections: Learn, Play and Admin (Administration). The learn section consists of educational applications (apps) that can be run normally and in unlimited quantity by students. The play section consists of games for which playing time is unlocked through the use of codes given by the instructor. The admin section consists of the apps for device settings as well as the code generator. The code generator generates device specific codes that the admin user can configure to last for a specified length of time. This Rumie launcher is also designed to track usage data. This data includes what programs a student is using and for roughly how long. This information is then stored and sent back to a server whenever the device is connected to a Wifi. This will occur in the background automatically. The device once kept on and in standby mode with Wifi off will ensure battery longevity in areas of little to no internet connectivity. This accommodates home use of the device.

Conclusion

It is from the context of political, institutional, social and economic fragility that many Sub-Saharan African countries have concentrated their efforts to achieve education for all, over the decade. The Rumie Initiative's goal is to redefine the way education is provided by moving from the teacher being the main repository of knowledge to personally empowering students with the knowledge and tools for learning so that they can learn in their own unique way through guided discovery – the teacher serving as the guide. The desired net effect of this initiative is poverty reduction through improved access to quality education. The total summation is economic transformation through education, particularly in Sub-Saharan Africa. The Rumie tablet contains information that is worth at least $5,000 dollars in terms of the value of textbooks and printed materials. The Rumie Initiative ensures that the value produced in several textbooksis multiplied in this one device. This content-filled tablet is priced only for $50 due to excellent supplier relationships. The Rumie Initiative supports the United Nations thrustin educating communities and transforming societies with intention of forging partnerships and developing affordable content-oriented technology that is usable by all through volunteerism.

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