“Education for All” in a connected world: a social technology-driven framework for e-mobilizing dormant knowledge capital through sharism and mass collaboration

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Abstract

In a digitally connected world, collaboration through the use of social technologies (enabling anytime-anywhere internet mediated communications) is giving rise to a new form of market where strangers exchange goods and services effortlessly (e.g Airbnb, Kickstarter, Lyft, etc). This brings about the concept of sharing/collaborative economy which includes shared creation, production, distribution, trade and consumption of goods, services and ideas by different people and organizations. The motivation and philosophy behind the collaborative building of value that results from sharing content and ideas is termed “sharism”. Billions of connected individuals can now actively participate in social development and they collectively have the capacity to solve social problems. Keeping this perspective in mind, the objective of this paper is to show, how sharism and mass collaboration using internet-mediated communications and social media have the possibility of solving one of the greatest problems of the world: delivering quality education for all. For this purpose, we propose and examine a framework for investigating how dispersed knowledge resources and wisdom of the senior citizens all over the world (the “dormant knowledge capital”) can be mobilized to improve the quality of education and learning outcome of the masses.

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1. Introduction

Social technologies can be defined as technologies used with any social basis and include social hardware (traditional communication media), social software (internet-enabled computer mediated media), and social media (social networking tools) [1]. Chui et al [2] defines social technologies “as digital technologies used by people to interact socially and together to create, enhance, and exchange content”. Social technologies distinguish themselves through the following three characteristics [3]: (i) they “are enabled by information technology”; (ii) they “provide distributed rights to create, add, and/or modify content and communications”; and, (iii) they “enable distributed access to consume content and communications”. Social technologies have the potential to affect positive change in communities and governments by allowing people to connect at a different scale and create a unified, powerful voice. Social interactions via technologies allow people to raise questions, share knowledge and ideas, and discover human skills regardless of hierarchy [3]. Virtual communities created from interaction and communication through

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social media tools have made economic systems more efficient, because they are reducing the costs of communication, collaboration and coordination.

The entire discussion of positing social technologies in spheres of social development transports us to a new form of market where strangers exchange goods and services effortlessly, collaborate and create simultaneously (e.g. Airbnb, Kickstarter, Lyft, etc.). Social media has given rise to the concept of a sharing/collaborative economy, which includes shared creation, production, distribution, trade and consumption of goods, services and ideas by different people and organizations. Billions of connected individuals can now actively participate in innovation, wealth creation, and social development in ways that were previously inconceivable. And when these masses of people collaborate, they collectively advance the arts, culture, science, education, government, and economy in surprising but ultimately profitable ways [4, 5]. The motivation and philosophy behind the collaborative building of value that results from sharing content and ideas is termed “sharism” [6]. This contemporary sharing economy is predicated on peer-to-peer relationships rather than existing market actors to mediate exchange. Thus the focus has shifted to globalization and democratization of information where the connected generation is empowered to the extent they can disrupt industries, transform education and shape global politics in ways never imagined before. In the world today, we have been subject to considerably successful business models heavily relying on this collaborative consumption that are transforming industries globally from hospitality (Airbnb) to transportation (Lyft). The domain of education, it seems, is ripe for a similar disruption.

Keeping this perspective in mind, the objective of this paper is to show, how sharism and mass collaboration using internet-mediated communications and social media have the possibility of solving one of the greatest problems of the world: delivering quality education for all. For this purpose, we propose and examine a framework for investigating how dispersed knowledge resources of senior citizens (the “dormant knowledge capital”) can be mobilized to improve the quality of education and learning outcome of the masses.

2. Education for All through Sharism and Mass Collaboration

2.1. Problems and Challenges

Enrolments in schools are often taken as an indicator of educational attainment. For instance, the indicator of Millennium Development Goal (MDG) of Achieving Universal Primary Education is based on the net enrolment ratio in primary education. However, education is not simply about making schools available. It is about being proactive in identifying the barriers and obstacles learners encounter in attempting to access opportunities for quality education, as well as in removing those barriers and obstacles that lead to exclusion. According to the UNESCO Convention against Discrimination in Education and other international human rights: “If the right to education for all is to become a reality, we must ensure that all learners have access to quality education that meets basic learning needs and enriches lives”. Still, today, millions of children, youth and adults continue to experience exclusion within and from education around the world [7].

Ensuring inclusive, lifelong learning for all, and improving the quality of education are among the top priority action areas identified by Asia-Pacific education ministers to guide the regions learning sector over the next 15 years [8]. A study undertaken by the World Bank [9] analysing the performance of South Asian educational system in terms of student learning pointed out to the poor quality of education in South Asia. The study observed that poor quality of education is a major obstacle to the region’s future economic development. The study emphasized to the need of improving the quality of education in schools in South Asia.

India, for instance, has undergone significant educational expansion in recent years with regard to physical infrastructure of schools and enrolment of students, both at the primary and secondary levels of education. However, the dropout rates at rural areas are still high at 40% and 57% respectively. Hence, India lags behind substantially with regards to learning achievements both at the primary and secondary level. Three major reasons behind this unfortunate outcome in spite of large investments in traditional classroom programmes are:

- Teacher absenteeism
- Poor quality of teaching due to non-availability of properly trained teachers, especially in remote areas
- Non-availability of attractive teaching methods including teaching-learning materials in remote areas [10, 11]

Dreze [11] concluded that the main reason behind children dropping out from schools can be directly attributed to lower or inferior quality of education received in schools.

2.2. Sharing Economy and Education: Knowledge as a Shared Resource

Sharing economy, when applied to education, has the potential to accelerate a highly advanced teaching and learning model. There are two main signs that show the sharing economy being the catalyst of education’s future [12]:

- OER and Creative Commons [13]: Both OER and the Creative Commons (e.g. www.oercommons.org) demonstrate an initiative to utilize widely accessible and free resources within education. Pioneers of this initiative, such as Khan Academy and Rice University’s Openstax, have brought free education to the mainstream and made tremendous strides in providing access to quality educational resources.
- Internet-mediated Communications and Social Media: There is no question that social media has not only changed the way that we communicate, but also the way we share and consume information. Most importantly, we are no longer just
consumers of content. We now have the ability to be authors, leaders, even experts. Internet-mediated communications and social media enable us to create virtual classrooms for sharing knowledge, enabling connected learning based on the theory of connectivism [14].

2.3. Harnessing Collective Knowledge Capital of the Crowd

Traditionally, the term ‘crowd’ is used in the context of a self-organized collection of people around a common purpose or experience. Today, firms often try to engage the power of the “crowd” for organizational benefits. Crowdsourcing—defined as the use of information technologies to outsources business responsibilities to crowds—can now significantly influence a firm’s ability to leverage previously unattainable resources to build competitive advantage. As a result, firms build crowd capital: organizational resources acquired through crowdsourcing [15]. In other words, crowd capital is a heterogeneous knowledge resource generated by an organization, through its use of crowd capability, which is defined by the structure, content, and process by which an organization engages with the dispersed knowledge of the crowd [16].

Use of crowd capital as an effective tool for creating knowledge resources in the cyber-space is a well-known phenomenon. Wisdom of the crowd has been used successfully in the creation of Wikipedia and similar cyber-knowledge-resources available over the Internet. Crowdsourcing education on the web is a comparatively new topic for research and development [17] and numerous e-learning platforms are available on the Internet where knowledge seekers can get connected with knowledge providers through the Internet. In our context, we use the concept of dispersed knowledge derived from the contribution of F.A. Hayek’s “The Use of Knowledge in Society”, where he described dispersed knowledge as a “body of very important but unorganized knowledge…the knowledge of the particular circumstances of time and place” [18].

In this context, three models are generally available to connect knowledge seekers with knowledge providers over the Internet: Asynchronous, Synchronous and Blended. In asynchronous mode, anyone who is knowledgeable and interested to contribute can provide teaching learning materials, video-recorded lectures, tests, and assignments in different platforms in the cyber-space (e.g. OER Commons, Youtube, etc.) that can be accessed by a student anytime, from anywhere. Students are generally free to learn at their own pace, whenever they choose. In such cases, students use the internet merely as a support tool rather than a tool for online interactive classes. In synchronous mode, students and instructors are geographically separated but meet online at a pre-determined time. Lectures, discussions, and presentations occur at that specified hour in the virtual classroom. In these days, there are several e-tutoring platforms, where interested teachers and students interact through virtual classroom [19]. All students must be online at that specific hour in order to participate. Synchronous e-learning supports online interactions through videoconferencing software with associated tools like Skype, Adobe Connect, etc.

In blended learning, instructors use facets of self-paced instruction and live, collaborative learning to moderate the offline setting. In recent years, the interaction model of the WWW has dramatically transformed e-learning systems with the emergence of the Web 2.0 interaction paradigm. Web 2.0 refers to web applications that facilitate interactive information sharing, social networking, collaboration and user-centred social software [20]. Educators are now engaged with Web 2.0, with significant interest in the use of social networks in formal education, leading to a new blended-learning paradigm of Education 2.0 [21, 22]. There is a wealth of literature that discusses Web 2.0’s potentials as a technology for transforming education [23, 24, 25, 26].

It is to be noted that the meaning of blended learning has widely diverged to encompass a wide variety of synthesis in learning methods. In our context, ‘blended learning systems’ can be defined as learning systems that use social technologies to combine synchronous interactions in virtual classroom setting with asynchronous access to pre-stored teaching-learning material in the cyber-space, created by individual (as in Khan Academy) or by anyone who is qualified to do so (as in Wikipedia or OER commons: www.oercommons.org).

2.4. The solution for the underprivileged: Role of Local School Authorities / NGOs as Administrator

The disparity of education between rural and urban areas is primarily based on access to quality learning. Quality education through collaborative efforts of individuals from across the world can be accessed by using social technologies. This access can be brought in to remote rural areas primarily through efforts of local NGOs as administrators and mediators between social enterprise and rural schools as they are closely associated with the local needs and dynamics of the villages.

For example, problem of education in India which comprises of poor quality of learning, learning environment and teacher absenteeism primarily in remote rural areas can be addressed by using blended learning platforms. However, underprivileged children in remote rural India face the problem of accessing those social technologies which enables the process on-line blended learning. The problem of access is primarily because many schools in rural areas either do not have a computer or they don’t use the same. In this light, local NGOs with help from local self-government of the villages play crucial role in facilitating and ensuring students with access to computer and Internet connection. Social entrepreneurs aiming to improve quality of education in rural schools take help from the local NGOs to initiate the process of disseminating knowledge through social media tools.

E-Vidyaloka (www.evidyaloka.org), one such Non-Profit Organization based in Bengaluru, India working on improving quality of education in remote rural schools using synchronous e-learning environment initiates the process by approaching a local NGO in a targeted village. The local NGOs in turn identify the areas and the schools that need maximum support with quality learning. These NGOs are selected on the basis of their familiarity with the demography of the region, enough knowledge of the needs of schools and their ties with the local people and local government. One such NGO is IDEAS working in the sector of child and women rights for 25 years based in Tiruvuru, a village in Andhra Pradesh. These local NGOs represented by a
coordinator in the classes also have the responsibility of maintaining the digital infrastructure in classes and addressing local level problems.

3. **OwlishOracle: A Social Knowledge Management Framework for Educating the Underprivileged Children**

We propose OwlishOracle (www.owlishoracle.com), a social knowledge management framework that would act as an online, blended learning environment to not only improve access to quality education for the underprivileged youth in remote rural areas using effective and interesting on-line teaching-learning methods, but also to improve learning outcomes and students’ well-being. Additionally, the objective is to utilize the vast pool of "dormant knowledge capital" of the educated senior citizens including senior housewives and retired individuals, who are capable but otherwise not involved in any main-stream productive activity. The framework thus seeks to prove the hypothesis that an online learning environment that connects two generations (the urban elderly teachers with the underprivileged youth) facilitates quality learning of marginalized youth of the society. This would in turn, help the elderly to become productive contributors to the society by performing a critical role in shaping up an inclusive world where they connect themselves with young minds, nurture them, and, in doing so, enhance the state of well being for both the communities.

3.1. **The Framework**

Our framework seeks to apply and utilize concepts of sharism, collaboration, crowd-sourcing to create a distributed social knowledge management environment. This will allow its users to create and modify content collaboratively using social media and web 2.0 technologies for the benefit of society at large. Traditionally, knowledge management provides the means to generate, distribute, and use knowledge in ways that add value to business activity and provide new opportunities for enterprise. **Social knowledge management** on the other hand can be defined as management of knowledge using social media—where the aim is more towards social development—not only promoting competitive advantages for companies.

Through collaboration and sharing using social knowledge management framework, we intend to mobilize the vast pool of dormant knowledge resource of elderly population to facilitate holistic development of underprivileged young generation. This has a potential of establishing community norms and values and build trustful relations leading to social capital enhancement. Moreover, the proposed research project aims at mobilizing five agents of collaboration in the form of an ecosystem to sustain the social knowledge management framework:

- **Provider of Knowledge, the Senior Citizens**: They are generally not involved in mainstream productive activities but their knowledge and wisdom can be activated as a resource to be harnessed to create a social learning environment.
- **Recipient of Knowledge, the Underprivileged Children**: They need to have access to quality education that meets their basic learning needs.
- **Digital knowledge capital of the cyber-world**: The provision of free and open digital knowledge resources (free teaching-learning materials) available on cyberspace that may be used by knowledge providers as well as recipients.
- **Skill capital of cyber-citizens**: These are the people who may act as volunteers to provide (i) digital teaching-learning materials to augment the digital knowledge capital of the cyber-world. (ii) training to elderly knowledge providers on internet / computer usage.
- **Social entrepreneurs**: They will create the Social Knowledge Management platform to mobilize the other four agents mentioned above and provide web-based social networking together with an online virtual classroom where the actual interaction will take place between the provider of knowledge and its recipients using a synchronous distance learning paradigm.
3.2. OwlishOracle: The System Description

As mentioned earlier, the objective of this system (www.owlishoracle.com) is to promote and utilize sharism, mass collaboration of knowledge and crowd-sourcing by mobilizing the dormant knowledge capital of senior citizens in imparting holistic learning to underprivileged youth from remote rural areas. In our context, primarily educated elderly citizens will act as online teachers to teach underprivileged youth through web based social media platform. Each student will either (i) participate in a classroom setting where a group of students interacts with the remote teacher using video-conferencing system embedded in OwlishOracle (figure 2) or (ii) be equipped with a low-cost tablet and s/he will access the remote teacher in an one-to-one basis through WiFi using a rural internet kiosk that will also act as study center of this virtual school (fig 3). We are trying to create an impact on the learning process of underprivileged youth and children at different levels of primary, secondary and supplementary education by (i) providing accessibility and organizing free on-line teaching-learning materials available in the cyber-space. (ii) utilizing the vast pool of knowledge resource of the educated senior citizens as on-line teachers, who are currently not involved in any mainstream productive activities (iii) architecting an Internet-enabled social media based e-learning 2.0 environment (we call it “OwlishOracle: figure 4) that would help to connect online the urban elderly teachers with the rural underprivileged students through rural Internet kiosk (Fig. 3). The primary hypothesis is that, social technology can help elderly to play a critical role in shaping up an inclusive world where they connect themselves with young minds and nurture them as responsible teachers / mentors / grandparents and in doing so would enhance quality of education (both formal and non-formal) and students' wellbeing in remote areas.

Fig. 1. the ecosystem for the social knowledge management framework

Fig. 2. On-line teaching through OwlishOracle in classroom mode
Owlish Oracle, as a platform, has been tested as a prototype platform in several locations in West Bengal, India:

- The first pilot was conducted in a school for underprivileged students named Ma SharadaShishuTirtha at Krishnanagar, West Bengal. Two elderly teachers (senior housewives) from urban areas taught English and math to a class of 32 students of 5 to 7 years of age (class I) using this platform of remote learning. The teachers used free teaching-learning materials available in the cyberspace.

- The second pilot was conducted on 44 students hailing from class 1 in a school named Vidya Tirtha Sishu Niketan in a rural location of South 24 Parganas, India. The school was a low cost private school and an elderly teacher taught these children English for a period of 1 month. The elderly, a retired teacher, used his expert teaching skills to interact with the children effectively. The children were engaged through audio-visual aids using a projector, along with story-telling sessions and poetry sessions by the elderly teacher. It was observed the children not only liked the sessions but retained a lot of what was taught. They particularly remember the songs and stories they were taught.

- Six more senior citizens from urban Kolkata taught six children from rural parts of West Bengal in a supplementary basis of teaching. The teachers taught on a one to one basis two subjects such as Mathematics and General Studies. These teachers have shown interest in interacting and sharing knowledge, both formal and informal, to the underprivileged children by explaining various concepts such as the feature of birds or developing concept of time through daily routine. They shared videos using the Teaching Learning Materials (TLMs) and also narrated stories of their childhood while teaching.

- The present test-beds are running in three different locations in West Bengal –
  - 14 children are being taught in two slots on supplementary basis in an NGO named Calcutta Rescue on the fringes of the city. There are 4 elderly teachers engaged here and are teaching the children English and Mathematics 4 days a week, using crowd-sourced TLMs.
  - 13 children hailing from class 1 are being taught at a school named Sree Baleshwar Adarsh Vidyalaya a government primary school, in Salkia, Howrah area. The children are initially being engaged with Grand Parenting lessons by two elders, 3 days a week. The elderly teachers are going to teach the children basic knowledge skills, English, mathematics, value education etc.
  - 4 children hailing from a residential school named Shiksha Niketan in Barddhaman are going to be taught by an elderly teacher from the city remotely. The children are hailing from class 2, and are going to be engaged through grand parenting lessons by 2 elderslies from city remotely. The children here are from extremely underprivileged background and are benefiting a lot from the programme.

The above pilots and on-going test beds of OwlishOracle have suggested positive outcomes with children showing interest in
learning new concepts and ideas through this unique method of teaching. Free TLMs from cyber resource were used while teaching. The teachers are showing them interesting videos while explaining the concepts and the underprivileged students learned with lots of patience and cooperation, despite the physical absence of the teachers. The children also shared their stories and anecdotes with the teachers who in turn shared theirs, leading to exchange of learning in an informal manner.

Fig. 4. social media based E-Learning 2.0 Framework, OwlishOracle, that contains digital teaching-learning materials and connects teachers and students synchronously / asynchronously

4. Conclusion

We observe that the idea of sharing economy and collaborative consumption can have a profound effect in the domain of education. By developing relevant social business models specifically aimed at e-mobilizing the necessary resources such as dormant knowledge capital possessed by retired sections of the community, we can contribute effectively and positively toward affordable and easily accessible educational programmes for one and all. The leap to an educational system governed by the dynamics of collaborative consumption is thereby, a promising one, and can go a long way in establishing an efficient model particularly aimed at bridging the gap concerning the availability of proper education as a basic resource. While sharing economy has revolutionized a number of sectors in the world of today and has altered the traditional outlook of developing business models by introducing the case of collaborative consumption, it is extremely obvious that education too will be transformed by this new phenomenon.

5. References

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