OwlishOracle: architecting a social media-based e-learning platform for primary education of underprivileged children by senior citizens of India

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Abstract: Quality of primary education in rural India is a matter of great concern due to teacher absenteeism, non-availability of good teachers at remote areas and non-availability of attractive teaching methods. In this context, our work wishes to architect a scalable online e-learning platform based on Web 2.0 technologies in order to facilitate primary education for underprivileged children in all parts of India. Additionally, the work wishes to create a group of online primary teachers by utilising the vast pool of knowledge resource of the educated senior citizens, who are capable but otherwise not involved in any mainstream productive activities. Using ethnographic approach to system design and using an iterative and incremental development model, we have designed and pilot-tested OwlishOracle, our internet-enabled social media-based synchronous e-learning environment, to serve the stated purpose.

Keywords: Web 2.0 technologies; virtual communities; social knowledge management; social capital; ethnographic design; iterative phase model; India.


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Introduction

The internet and Web 2.0 technologies have the possibilities of placing the entirety of human knowledge in the hands of everyone. Internet thus creates the opportunity to reduce inequalities, as the information on the internet is open and free (Breck, 2006). Literacy and learning follow naturally from the internet interfacing what humankind knows. Keeping this perspective in mind, the past five years or so have seen growing excitement within the educational community about Web 2.0 technologies. ‘Web 2.0’ is an umbrella term for a host of recent internet applications such as social networking including multimodal conferencing, wikis, virtual societies, blogging and so on. We also call them ‘social media’ in short. All these applications share a common characteristic of supporting internet-based intra- and inter-group interaction, which is why the term ‘social software’ is used to describe Web 2.0 tools and services (Waks, 2013).

Waks (2013) defines Education 2.0, a natural consequence of Web 2.0-based education system, as ‘a networked, learner-centric model’ with the internet’s ‘knowledgeweb’, open courses and textbooks, and informal learning, serving as its centerpiece. Web 2.0 facilitates ‘interactive’ rather than ‘broadcast’ forms of exchange, in
which information is shared ‘many-to-many’ rather than being transmitted from one to many. Web 2.0 applications are built around the appropriation and sharing of content amongst communities of users, resulting in various forms of user-driven communication, collaboration and content creation and recreation (Selwyn, 2009).

There are strong links between Web 2.0 and socio-cultural theories of learning, which see active and authentic learning taking place best where knowledge can be constructed actively by learners who are supported in communal social settings (Selwyn, 2009). It follows that Web 2.0 tools may offer learners a more participatory experience of learning in which individuals have increased opportunities to interact with more learners and with more learning resources. Nehme (2008) describes how a sociocultural learning environment would work in a synchronous online community of learners. The use of online learning environment brings with them the availability of an extremely complex network of information and personnel that enrich the learning community.

By using this paradigm of learning, we are trying to develop a model, which combines the correct elements of e-learning with the knowledge resources available in the cyberspace, to bring forth a knowledge revolution and spread education to the remotest corners of the country. According to our approach, the entire process of learning is oriented towards developing abilities to connect to the global knowledge network of the cyber-world with a specific social context and purpose in mind (Mitra, 2009). Additionally, our approach relies on synchronous e-learning, where the students always find a remote teacher at the other end of the social web to teach, guide and mentor their learning process. This would eventually enhance social inclusion of rural children through digital inclusion, creating self-sustainable forms of social development. The primary teaching staff participating in distance teaching in this study would comprise of a much-neglected knowledge resource – the educated elderly community (Bardhan et al., 2014).

Throughout the last century, mainstream visions of ageing have largely seen the senior years as a time for withdrawing from making contribution to the larger community, a time for winding down. However, history tells us that, until the Industrial Revolution, elders had honoured roles in the society that were defined and supported. Elders have been the nurturers of the community, the spiritual leaders, and the guardians of the traditions, the teachers, mentors and initiators of the young (Thomas, 2004). Use of web-enabled social media platforms can help us to redefine the roles of elderly in today’s global society for educating the marginalised children more effectively through video-based interactive remote teaching by forming virtual community (Bandyopadhyay et al., 2013).

The objective of this paper is to show the design and development process of a social media platform called OwlishOracle (http://www.owlishoracle.com), through which educated elderly people can connect with rural classroom online and provide tutoring and grand-parenting online to them. This online platform uses elderly-friendly interfaces that would be helpful for the elderly and would allow live interactions between children and elderly. OwlishOracle is a purposive social media platform where educated senior citizens teach or share knowledge (both formal and informal) to children (from both urban and rural areas) remotely in a synchronous manner.
2 Overview of literature

2.1 Current scenario of primary education in India

Enrolment in school is 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 enrolment figures. The findings of the ninth Annual Status of Education Report (ASER, 2013) about India, released on 15th January 2014, indicate that the enrolment in the 6–14 age group (the primary schooling age group) continues to be very high. The fact that more than 96% of the children in India are enrolled in school appears very encouraging. However, the Report also pointed out to the dismal picture of the existing gap between school attendance and learning outcomes. It pointed out the deficiency in basic reading and numeracy skills of the children in spite of school attendance. For example, the proportion of children in Std. V who could solve a three-digit by one-digit division problem is 25.6% in 2013. Typically, this kind of division problem is part of the Std. II curriculum in most states of India. Because of these types of revelations, the policy framework in India for elementary education is changing. The focus is shifting to learning outcomes rather than just on school enrolment. Thus, the 12th Five Year Plan document states that education policy “…will place the greatest emphasis on improving learning outcomes at all levels” (ASER, 2013). Moreover, the dropout rates at rural areas are still high at 40% and 57% respectively at the primary and elementary level of education (Kumar and Rustagi, 2010). Hence, India lags behind substantially with regards to learning achievements at the primary level.

Three major reasons of this unfortunate outcome in spite of large investments at rural classrooms are: teacher absenteeism, poor quality of teaching due to non-availability of good teachers at remote areas and non-availability of attractive teaching methods including teaching-learning materials in remote areas (Dreze and Sen, 2013; Vora and Dewan, 2009). In fact, teacher’s absenteeism is wide spread in some other developing countries also, India being worst affected, as a survey by Banerjee and Duflo (2011) reveals.

Apart from teacher’s absenteeism, lack of class-room activity, non-comprehension of what is taught, fear of beating or humiliation, and social discrimination in the class room are common causes of child discouragement in school attendance.

There are two major aspects of our proposition of high quality teaching. Firstly, we propose interactive remote teaching for the primary school children by using social media-based e-learning platform OwlishOracle that utilises the potential of free learning resources available in the cyberspace. Secondly, for making teaching manpower affordable, we propose to utilise a rich unutilised resource – the services of educated elderly population to contribute as remote teachers.

2.2 Utilising dormant knowledge capital of elderly

In pre-industrial societies, older adults were valued for their insights, wisdom and experience they can share with others. The older members of the extended family used to act as teachers who guided the young members to choose correct path in life and also try to ingrain in them values, modes, cultures and norms of the society (Ahuja, 1993; Bisht and Sinha, 1981; Muttalib, 1990). However, in industrial societies, the elders are less
valued than that in pre-industrial ones. The breakdown of intergenerational ties in industrial societies has led to disvaluing of elderly roles in communities. As a result, in nuclear families, children living with their parents often feel deprived of the affection from their parents owing to their stressful professional life. Affection from a grandparent can, to some extent, mitigate their feeling of deprivation. Elderly can feel more socially included by way of interacting with younger generation. They can play an important role in contributing to the knowledge capital of the society, by imparting their wisdom and knowledge to those deprived of it (Bandyopadhyay et al., 2013; Bardhan et al., 2014).

In context to our work, elderly citizens can use their knowledge, wisdom and experience for imparting education to school children using OwlishOracle, a social media-based e-learning platform. Such a social media platform would not only facilitate learning but also connect generations over the cyberspace, thereby improving intergenerational solidarity which would ultimately lead to overall development of a child.

2.3 Internet-enabled Interactive e-learning

ICT is currently widespread in schools and colleges of developed countries (European Commission, 2013). In the developing countries, it is being primarily used to support education in the form of ‘computer aided learning’. However, the focus of these efforts was more towards offline, computer-supported learning in the classroom than online distance e-learning. Distance e-learning is the combination of distance education and e-learning which is characterised by the extensive use of internet-enabled web technology in the delivery of education and instruction and the use of synchronous and asynchronous online teaching methods (Garrison, 2011; Laschewski, 2011).

Synchronous online classes use fixed-time-anywhere concept where students and instructors are geographically separated but meet online at a pre-determined time. Lectures, discussions, and presentations occur at that specified hour. 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.

Asynchronous classes are anytime-anywhere: instructors provide materials, lectures, tests, and assignments 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.

A recent development in distance e-learning is massive open online courses (MOOCs), aimed at large-scale interactive participation and open access via the web or other network technologies. MOOCs, aimed at unlimited participation and open access via the web, are online courses that have emerged as a popular mode of e-learning in 2012. MOOCs are often geared toward college kids or curious adults. However, there has been very little research on MOOCs at the primary or K-12 level in general. Debate has been polarised – some very excited and positive, others dismissive or hostile (Cairneagle Associates, 2014).
Table 1

<table>
<thead>
<tr>
<th>Synchronous e-learning initiatives for primary and secondary schools</th>
<th>Target groups</th>
<th>Significance</th>
<th>E-learning materials and exceptional technology</th>
<th>Social capital formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Vidyaloka (non-profit organisation) Based in India <a href="http://www.evidyaloka.org">http://www.evidyaloka.org</a></td>
<td>Students in remote rural schools on one end of the online platform and passionate volunteers from around the world acting as teachers on another end.</td>
<td>Supplementary learning using Skype. Aims at improving quality teaching in rural schools.</td>
<td>Structured teaching materials are not available and the teachers are free to use any teaching methods.</td>
<td>Since this is based on volunteerism, creation of long-term individualised bonding between teachers and students are absent.</td>
</tr>
<tr>
<td>Granny Cloud and Hole in the Wall (part of a larger initiative: The School in The Cloud) <a href="http://www.theschoolinthecloud.org">http://www.theschoolinthecloud.org</a></td>
<td>Children in remote rural areas on one end of any online platform and elderly around the world on another end. The emphasis here is less on formal education.</td>
<td>Informal learning based on self-oriented learning environment (SOLE) where these virtual grand-parents ask children to learn any topic on their own.</td>
<td>Internet enabled SOLEs where students learn and explore on their own and with peers. unsupervised learning.</td>
<td>Interactive sessions with the elderly create a connection between both the ages through informal knowledge dissemination.</td>
</tr>
<tr>
<td>Edmodo (an educational technology company based in USA) <a href="http://www.edmodo.com">http://www.edmodo.com</a></td>
<td>Classroom teachers, parents, children, administrators, content developers on alternative ends of this online platform. Participants are mostly from urban areas.</td>
<td>Enables teachers to share content, distribute quizzes, assignments, and manage communication with students, colleagues, and parents.</td>
<td>Content partners – Learn Zillion, Khan Academy and Better lessons. Teachers can create their own digital library or use other’s.</td>
<td>Educators, teachers, parents, children can follow each other’s posts, share other’s materials and in doing so creates a community among themselves.</td>
</tr>
<tr>
<td>My Big Campus Based in UK Educational community between students and the web <a href="http://www.mybigcampus.com/">http://www.mybigcampus.com/</a></td>
<td>Students, parents, educators are involved in alternative ends of this online platform.</td>
<td>Provides LMS (like lessons, assignments, reporting, calendars) that are used by parents, schools to improve learning. It has virtual classrooms where educators or students can share ideas in a more informal manner.</td>
<td>Teachers all around the world create their own materials here.</td>
<td>Forms community among teachers, parents and students by sharing interesting TLMs.</td>
</tr>
<tr>
<td>Owlish Oracle</td>
<td>Underprivileged children from remote rural/remote areas and educated elderly from urban areas on alternative ends of this online platform.</td>
<td>Both curriculum-based and supplementary teaching. Educated elderly use their dormant knowledge resource and act as virtual grand-parents to the children. Elderly can connect with other elderly here.</td>
<td>Research team collates interesting free teaching learning materials (lesson plans, PPs with embedded videos). Adobe connect meeting room is integrated in Owlish Oracle where virtual classes happen.</td>
<td>Connects generations between elderly teachers and children. Beyond curriculum teaching, elderly teachers share values, morals to children and the children in turn spends some quality time with them which leads to the idea of ’virtual grand-parenting’.</td>
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</tbody>
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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 (Laschewski, 2011). Educators are now engaged with Web 2.0, with significant interest in the use of social networks in formal education, leading to a new paradigm of Education 2.0 (Selwyn, 2009; Waks, 2013). There is a wealth of literature that discusses Web 2.0’s potentials as a technology for transforming education (Alexander, 2006; Brown and Adler, 2008; Bonk, 2009; Downes, 2005; Richardson, 2009; Waks, 2013).

However, the effectiveness of Education 2.0 in remote or rural areas of developing countries like India relies fully on the availability of internet connectivity. Fortunately, the internet connectivity in rural India is growing at an exponential rate. According to a report by the internet and Mobile Association of India and IMRB International (IAMAI, 2014), the number of internet users in India is expected to grow 32% to 302 million this year from 213 million at the end of December 2013. Rural users, as a percentage of the internet population, will rise from 29% in 2013 to between 40 and 50% in 2018 (Singh, 2015). The McKinsey report (Dobbs et al., 2012) states that there will be 330 million Indian users of the internet by the end of 2015, thus making it the second largest connected population in the world. Rural access to education can be vastly improved by means of exploiting this revolution, and creating a networked virtual classroom system.

Keeping this in mind, we have designed and pilot-tested our social media-based e-learning platform OwlishOracle to facilitate quality primary education for underprivileged children in all parts of India. Table 1 presents a chart highlighting similar initiatives and indicating the uniqueness of our proposed platform.

3 A conceptual framework of OwlishOracle

In this section, we discuss the conceptual framework behind the design and development of a social media-based e-learning platform, OwlishOracle, through which elderly people can connect with rural children online and nurture them using their knowledge and wisdom together with the knowledge resources available in the cyberspace.

3.1 Education 2.0 and social capital development

Education 2.0 is not only a channel for knowledge dissemination; more importantly, it provides a unique environment that brings educators and learners together from all over the world and creates a global socio-cultural phenomenon (Youmei, 2013). In e-learning community, people interact and collaborate with each other, establish community norms and values, share resources and build trustful relationship, which are the core value of social capital (Bourdieu and Wacquant, 1992; Putnam, 2000). Social capital refers to the networks of social relations that may provide individuals and groups with access to resources and supports. Social capital is a concept that refers to connectedness within and between social networks. Social capital has been considered by researchers as one of the developing links between country development and education. Researcher believes that the open distance education can affects quality and quantity of social capital in country
OwlishOracle: architecting a social media-based e-learning platform

(Sadegh, 2011). Regarded originally as being a relatively immutable endowment, inherited from a distant past (Putnam, 2000), researchers have argued and demonstrated that social capital can be created and built up (Krishna, 2002). Our aim is to create a virtual community using OwlishOracle as a platform, bridging the gap between educated urban elderly and rural children and creating and building social capital, leading to impartment of holistic education for the masses.

3.2 Education 2.0 and Connectivism: the learning theory for the digital age

Learning should not be seen as passive acceptance of knowledge, but an active process that is intimately associated with human interaction. In this context, Siemens (2008a) has proposed a new learning theory for the digital age: Connectivism. Connectivism, derived from socio-cultural theories of learning, is a hypothesis of learning which emphasises the role of social and cultural context. Connectivism emphasises on the use of technology to create a connected environment. Connectivism is often associated with and proposes a perspective similar to Vygotsky’s ‘zone of proximal development’ (ZPD), a framework for collaborative learning (Obukhova and Korepanova, 2009). The ZPD is an area of learning that occurs when a student is assisted by a teacher or peer with a skill set higher than that of the student. The teacher’s job is to move the child’s mind forward step-by-step. Emphasis is on dialogue that participants engage in as a means of collaboration. This process allows the learner to internalise what is being taught, and thus, they become an active part in shaping the learning environment. In today’s context of internet-enabled arena, Siemens (2008b) suggested that modern day learning occurs through network connections as individuals share their interests, knowledge, perspectives, expertise, and opinions in online or virtual learning environments (Dunaway, 2011). The learning theory behind OwlishOracle is derived from Connectivism, as will be illustrated in the next section.

3.3 OwlishOracle framework

Figure 1 illustrates the framework where students are connected to remote teachers over internet using their personal tablet or classroom video conferencing system through OwlishOracle. This unique platform aims at providing quality education to all children by experienced elderly teachers who would in turn become their virtual grand-parents. Our objective is to create an impact on the learning process of underprivileged children at different levels of primary education by

1. providing accessibility and organising free online teaching-learning materials available in the cyber-space

2. utilising the vast pool of knowledge resource of the educated senior citizens as online teachers, who are currently not involved in any mainstream productive activities

3. architecting an internet-enabled social media-based e-learning environment that would help to connect online the urban elderly teachers with the rural underprivileged children through rural classroom (for classroom teaching) and rural internet kiosk (for personalised tutoring).
The primary hypothesis is that, social media 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.

**Figure 1** The framework (see online version for colours)

The website will thus have three arms for creating an all inclusive facility (Figure 2):

- **Grandparents:** senior citizens, who are generally less mobile but knowledgeable enough to act as remote teachers to those children/students who are deprived of quality education in their (rural) school.
- **Children:** school children who want to take help from elderly tutors online in different subjects in the form of supplementary teaching, as and when they need it.
- **Schools (or voluntary institutions managing primary schools):** a large section of rural children in our country attend government or private run primary schools that is incomplete in imparting holistic education. To cater to this need, OwlishOracle provides a platform for distant learning in primary schools via internet.

OwlishOracle will also provide social networking opportunity between teachers and students, teachers and teachers and between students and students, fostering a high degree of collaboration and connectedness in virtual communities.
4 Research methods towards designing and developing OwlishOracle

4.1 An ethnographic approach to system design

Successful adoption of products/services (physical or digital) relies heavily on an individual’s ability to judge appropriateness, usefulness and ease-of-use (Giolo, 2012; Paay, 2008). All product design systems depend on understanding what customers truly desire in the products they consume. The fundamental difficulty faced by designers is that customers frequently do not know what they desire themselves. This creates an informational vacuum where the elements that create consumer acceptance are unknown. Ethnographic research helps achieve the elusive goal of discovering what the consumers truly desire in a new product or service and what will inspire them to acquire and use the product (Beeman, 2015).

Ethnographic researchers are primarily concerned with the routine, everyday lives of the people they study. Ethnographers collect data about the lived human experience in order to discern predictable patterns rather than to describe every conceivable instance of interaction or production. Ethnography is conducted on-site and the ethnographer is, as much as possible, a subjective participant in the lives of those under study, as well as an objective observer of those lives (Crabtree et al., 2012; Prabhala and Ganapathy, 2013). While ethnography is being utilised more often in market research settings, it is underutilised when trying to uncover usability issues (Jeffers, 2010). Influence of cultural factors on product design are sorely lacking from the discussion of user experience (Payne, 2012).
In our context, we have observed that current designs of social networking sites largely overlook older adults’ needs, which differ from those of the young adults for whom social networking sites were originally designed. There remains a huge potential for a social networking tool that matches older adults’ expectations and preferences (Gibson et al., 2010). Majority of elderly persons are still conservative in nature towards modern technology. Most seem to have a mental block for modern technology and they do not even try to attempt its usage (Kaisa and Halonen, 2011). So, in developing this new information system for elderly, it is important to take a holistic view of the situation and to put the elderly users at the centre (Waterworth et al., 2012; Comyn et al., 2006). It is also important to remember that the elderly are not a homogeneous group but consist of individuals with their own preferences and habits. These are culture specific and country specific and important considerations in order to address improvement in quality of life for older people using ICT. We have used an ethnographic approach to understand the day-to-day life of elderly people and their inclination towards computer/internet, which in turn has helped us to design OwlishOracle that not only address their needs, but that also actually make sense in their everyday lives.

Our investigation is based on iterative phase model, where iterative cycle of ‘fieldwork-reflection-design-develop-evaluate’ has been used (Tedjasaputra and Sari, 2005) towards designing the system. The typical steps of iterative design in user interfaces, as suggested by Tedjasaputra and Sari (2005) are as follows:

1. Complete an initial interface design.
2. Present the design to several test users.
3. Note any problems had by the test user.
4. Refine interface to account for/fix the problems.
5. Repeat steps 2–4 until user interface problems are resolved.

To find out how elderly people perceive ICT and social media in their lives, we initially studied intimately the attitude and behavioural patterns of 20 elderly persons in city of Kolkata, India through close participant observation and interview. They were not known to be familiar with computers or social media. In our study the participants were 60–75 years old and they lived independently instead of supported housing. The results were useful in designing OwlishOracle’s user interface for elderly people, as it revealed the reasons for their attitude against ICT usage as well as aspects that were perceived important by the elderly. Also, the results helped us to identify cultural differences in the context of ICT usage between elderly population in Indian metropolis (Kolkata) as compared to that in more developed nations like UK/USA/Australia.

The same group were exposed to training and hand-holding on the effective use of ICT using internet access through PCs (e-mailing, video-chatting, social networking, e-learning, imparting e-tutoring etc.). Based on their feedback, grand-parent section of OwlishOracle prototype has been designed which has been validated by the same user community for further fine-tuning the design.

4.2 Our findings and user interface design for the elderly

Our study reveals that older users are used to connecting with people, not machines. Therefore the designing in OwlishOracle needed to have a sense of warmth and
humanised approach in order to appeal to this demography. Colours, photos and font choices can all have this effect on users. Soft, muted colour palettes and images of happy, satisfied people similar to the user’s age, gender, etc. can all be used to help achieve a positive emotional response. A major point that was taken into account while designing the user interface for elderly is attention and simplicity. Background noise and small details in the interface design can be the main factor that easily distracts the older people’s attention. The use of relevant graphics and pictures are more significant than the use of detailed decorations.

Based on our study, we have finally decided on the following design factors:

- **reduction of complexity**: rarely used items have been removed, number of items per working page has been reduced to a maximum of five icons and complex interactions have been avoided

- **clear structure of tasks**: the starting of tasks and every step has been made easily recognisable; use of wizard for complex tasks and placing of confirmations at completion of tasks has been introduced

- **interface optimisation**: buttons were designed big and spaced apart, scroll bars have been avoided, and text size was made 14pt and more with high contrast between foreground and background

- **consistency of information**: similar look of a particular item in all its occurrences

- **rapid and distinct feedback**: feedback for success or failure of tasks.

Figure 3 illustrates the user interface design of main page, the dashboard, of the elderly.

**Figure 3** Dashboard for elderly (grandparents) (see online version for colours)
4.3 User interface for the children

OwlishOracle as a purposive social networking website not only caters to the older adults but also the children. Therefore, the design process has taken into account the following points: design that stimulates the senses and bright and vivid colours with pictures. Text should be used sparingly, it should be easy to understand and straightforward. Figure 4 illustrates the user interface design of main page, the dashboard, of the children.

**Figure 4** Dashboard for children (see online version for colours)

4.4 Connecting generation

Since OwlishOracle is a virtual meeting place for grandparents and children, there is a need for a one-click video conferencing facility where both the age group can interact and mutually benefit from one another. We have interfaced with Adobe Connect for this one-click video conferencing. Additionally, attractive teaching-learning materials, collated from the free resources of the cyberspace, are provided in the website in a structured manner (following a specified curriculum), which will be used by the elderly teachers while teaching children.
5 Pilot study

Our pilot study focuses on a class of 32 students, five to seven years of age (class I) of Ma Sharada Shishu Tirtha, hailing from the tribal community in Krishnanagar, India (Figure 5). The undertaken intervention involved remote elderly teachers delivering English and Maths lessons for one month over the internet. Initial trials with OwlishOracle suggest positive outcomes. Children have shown keen interest in learning
new concepts and ideas through this unique method of teaching (Figure 6). Interesting
teaching learning materials from free cyber resource were used while teaching. The
teachers showed them interesting videos while explaining concepts. The students have
been very cooperative and obedient despite the physical absence of the teachers.
OwlshOracle as a social media platform aims at initiating children to connect to any
elderly already registered in the website and share their stories or problems. The children
also shared their stories and anecdotes with the teachers who in turn shared theirs. The
elderly teachers who taught a group of class 1 students English and Maths have shown
keen interest in using OwlshOracle while teaching remotely. They have liked the idea of
sharing materials constantly while teaching children which makes learning an interactive
and exciting one. Elderly teachers have unanimously agreed that remote teaching via
social media realises the longing of the elderly to be active members of the society

6 Limitation of the study

In this paper, we have discussed our framework and highlighted several design issues in
order to make our platform acceptable, usable and beneficial to the targeted community.
By far the greatest role of e-learning applications is to support – rather than replace –
classroom teaching [80% of e-learning applications, according to Allen and Seaman
(2008)]. However, in developing countries like India, where qualified teachers and good
teaching-learning materials are not available in remote classrooms, internet-enabled
e-learning may be the primary choice of future. Two major obstacles we are facing in
implementing OwlshOracle are

1 convincing the school authorities in rural areas about the effectiveness of distance
e-learning with virtual teachers

2 training the elderly on the usage of computer, so that they can operate OwlshOracle
independently.

We are trying to overcome these obstacles through demonstration of online teaching
activities to the school authorities and training the elderly on the usage of computer.
Additionally, this initiative is dependent on the regular availability of committed and
motivated online teachers; so, a carefully planned business model is needed to sustain this
initiative.

7 Conclusions

OwlshOracle is not only a channel for knowledge dissemination but more importantly it
provides a very unique environment that brings educators and learners together
disregarding geographic locations and creates a global socio-cultural phenomena. In
OwlshOracle community, people would interact and collaborate with each other,
establish community norms and values, share resources and build trustful relationship,
which are the core value of social capital. Our work wishes to create a pool of online
elderly teachers to harness the collective knowledge capital of the educated senior
citizens, who are capable but otherwise not involved in any mainstream productive activities. In restoring the position of elderly in society as productive agents of change, our work wishes to redefine roles of elderly as knowledgeable citizens and enables them to act as responsible mentors to the younger generation via Web 2.0 technology.

References


European Commission (2013) *Survey of Schools: ICT in Education-Benchmarking Access, Use and Attitudes to Technology in Europe’s Schools*, DG Communications Networks and Technology.


