

## **Role of ICT in Mitigating Social Problems<sup>1</sup>**

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### *Abstract*

As India destines to achieve the Millennium Development Goal of Universal Primary Education, by attending 96 per cent enrolment of children in primary schools, it was revealed that enrolment by itself is not a full-proof indicator of learning. It was found that due to poor school quality, a wide gap in learning continues to remain in spite of attending school. To overcome this problem of poor educational outcomes, in spite of enrolment in primary schools, the paper proposes remedial e-learning for the primary school children. It is further proposed to utilise the services of the elderly people to provide remedial teaching to the children remotely from their homes by utilising educational technology and ICT with necessary support and training. In addition to addressing the problem of poor educational outcomes in deficient primary schools, this would enable the elderly to contribute meaningfully to the education of the disadvantaged children and at the same time equip them to lead a better quality of life by utilisation of ICT to meet some of the needs of their day to day living.

A quasi-experimental study in e-learning for the underprivileged children was undertaken for testing the validity of our above proposition. The paper presents the results of this experiment. Developing appropriate teaching materials and pedagogy for e-learning, identifying elderly people for teaching, developing training materials for the elderly teachers etc. have been initiated. We propose to develop a replicable model of providing e-learning to the underprivileged children in a self-sustaining manner following a 'social business' model.

Key words: Learning outcomes, Primary education, Remedial distance teaching, Use of ICT, E-learning, Education of underprivileged children, Problems of the elderly, Social business.

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## 1. Introduction

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 (UN, 2000). Thus the findings of the ninth Annual Status of Education Report (ASER 2013) about India released on 15<sup>th</sup> January 2014, that the enrolment in the 6-14 age group (the primary schooling age group) continues to be very high, with more than 96% of the children in India are enrolled in school, appeared very encouraging. India has almost fulfilled the MDG of universal primary education! Unfortunately, some other piece of information in this Report poured coldwater on this thrill. The Report pointed out to the dismal picture of the existing gap between school attendance and learning outcomes. It pointed out to the deficiency in basic reading and numeracy skills of the children in spite of school attendance. For instance, at the all India level, for Std. III, the proportion of children able to read at least a Std. I level paragraph is 40.2% in 2013. Similarly, nationally, the proportion of all 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. III or Std. IV curriculum in most states of India. Because of these types of revelations, since 2012, 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 Twelfth Five Year Plan document states that education policy "...will place the greatest emphasis on improving learning outcomes at all levels." In this context, the present paper explores the causes of the deficient learning outcomes in primary education in India and to the ways of overcoming this problem.

The remainder of the paper is organised under following sections. Section 2 probes the causes of poor educational outcomes in primary schools. To suggest a solution to the problem of poor educational outcomes, section 3 explores the role of Information and Communication Technology (ICT) in addressing this problem and section 4 discusses the possibility of enabling the elderly population to contribute in this process, thereby also contributing to their quality of living. Section 5 presents the finding of a pilot study conducted in this regard. And finally, section 6 sums up the proposed scenario.

## 2. Causes of poor educational outcomes in primary education

In this section, we will probe into the reasons of poor educational outcomes at primary education in India. In analysing the causes of educational deprivation in primary education in India, Dreze (2003) examined three distinct reasons: inadequacy of parental motivation, economic deprivation, and the poor quality of schooling. He pointed out that as far as male education is concerned, parental motivation is very high, though parental commitment to female education is rather inadequate in many regions. Regarding economic deprivation, he pointed out that child labour is not the cause of children dropping out from the school rather it is the other way round, drop out children take up productive work. He concluded that the main reason for children dropping out from school is low school quality. If there is little activity in the classroom or if the child does not make any progress, the parents may not feel it is worth of making the effort in sending the child to the school. Similarly, the child also may not be willing to go to school if the classroom activities are not stimulating.

Various surveys have reflected a shocking picture of school quality in India. A survey by PROBE Team (1999) reported that only two-thirds of the pupils were present on the day of the survey. There is considerable absenteeism among teachers as well<sup>i</sup>, in addition to widespread late arrival and early departure. Following estimation of the actual teaching time by Dreze and Sen (2013) is revealing:

In the PROBE states<sup>ii</sup>, the official number of school days per year is around two hundred. But with a teacher absenteeism rate of around 20 per cent, and a pupil absenteeism rate of about 33 per cent, the combined probability of a child *and* his or her teacher being present on an average day is only just above 50 per cent. This brings down the number of teaching days effectively to one hundred days or so. But this is not the end of the story, because the survey also suggests that even during those hundred days, about half of the time is bereft of any teaching activity. So the actual teaching time is like fifty days – about *one fourth* of what would happen in a well-functioning school system.

In fact, teacher's absenteeism is wide spread in some other developing countries also, India being

worst affected, as the following reporting of another survey by Banerjee and Duflo (2011) reveals:

In 2002 and 2003, the World Absenteeism Survey, led by the World Bank, sent unannounced surveyors to a nationally representative sample of schools in six countries. Their basic conclusion was that teachers in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda miss one day of work out of five on average, and the ratio is even higher in India and Uganda. Moreover, the evidence from India suggests that even when teachers are in the school and supposed to be in class, they are often found drinking tea, reading newspaper, or talking to a colleague. Overall, 50 percent of teachers in Indian public schools are not in front of a class at a time they should be. How are the children supposed to learn?

Apart from teacher's absenteeism, there are problems of grossly inadequate infrastructure of primary schools, low level of teachers accountability which has been enhanced by the collective political power of the teaching profession, 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 (Dreze, 2003). Teaching methods are quite often dominated by mindless rote learning, including repetition without comprehension – of what has been read, and endless chanting of multiplication and other tables (Dreze and Sen, 2013).

Based on the findings of ASER Surveys Banerji and Chavan (2013) made a very pertinent point when they observed that, "In India, teachers teach using the textbook prescribed by the government for that grade. This practice is based on the assumption that if children are in school they must be learning and each year "value" is being added to their capability. But given that most children are at least two to three grade levels behind, teaching from the grade level textbook does not have much of an effect as a majority of children in any class are not able to gain much from such teaching."

They also pointed out that as close to half of all mothers of children who currently attend primary school in India have not been to school themselves, the children are deprived of any help from parents at home in their school lessons.

As a result of these ailments of primary education in India, it is not at all surprising to find poor

educational outcome of primary schools as presented in Table 1.

To overcome the problem of poor educational outcomes of primary education there is a need to work on solving the problems mentioned above. Need for which cannot be overstated, though this appears to be a herculean task. However, to overcome the problem of poor educational outcomes, in this paper we propose a method for providing high quality e-learning based interactive remedial teaching to the primary school children. Of course, the need for addressing the problems mentioned above would remain to make the need for remedial teaching redundant.

There are two major aspects of our proposition of high quality remedial teaching. Firstly, we propose interactive remote teaching by using educational technology to the primary school children by utilising the potentialities of Information and Communication Technology (ICT). Secondly, for making teaching manpower affordable, we propose to utilise a rich unutilised resource - the services of elderly population to contribute as teachers. We also aim at improving the quality of living of the elderly by additionally enabling them to take the advantage of ICT in their day to day leaving. In sections 3 and 4 that follow, we elaborate these two aspects of our proposition.

### **3. Interactive e-learning**

We propose interactive e-learning for the disadvantaged primary school children for overcoming the problem of poor learning outcomes in a cost effective manner. We would address two important aspects of teaching in primary schools. One is related to improved pedagogy and the other relating to quality teaching to be done from distance.

#### Pedagogy

We have seen in our earlier discussion that a major reason of poor learning outcomes is related to various aspects of pedagogy. In consultation with experts, we would develop appropriate teaching materials and teaching methods so that learning becomes an enjoyable experience for the children and they can learn quickly. ICT and educational technology including videos, power point, pictures, animation will be used for achieving this. There already exist a rich mine of useful material for this in the net<sup>iii</sup>, which can be adopted as per the requirement.<sup>iv</sup>

Table 1: Pupil Achievements in Primary Schools

Source	Basis	Sample findings
Indian Human Development Survey, 2004-5	Large, all-India random sample	*Only half of all children aged 8-11 yrs enrolled in a govt. school are able to read a simple para. with three sentences *43% of these children are able to subtract a two digit no. from another two digit no. *36% are unable to write a simple sentence.
ASER Survey, 2013	Large, all-India representative survey of schoolchildren in rural areas	*Only 47% of children enrolled in Class 5 can read Class II level text. *Only 25.6% are able to solve a 3 digit by 1 digit division.
PROBE Revisited, 2006	Random sample of rural govt-school pupils in Hindi speaking States	*Only 37% of children of Class 4 or 5 can 'read fluently' *Only 45% are able to divide 20/5 *1/3 <sup>rd</sup> is unable to add with carry-over.
CORD-NEG Village	Random sample of children in govt. schools of 9 villages in peripheral districts of Bihar, Jharkhand and Odisha	*Out of 110 children in Class 4 or 5, only 1/2 were able to recognise a two digit number. *Less than 1/4 <sup>th</sup> of these 110 children were able to subtract a 2 digit no. from another 2 digit no.
WIPRO-EI Quality Education Study 2011	Survey of more than 20,000 students in 83 'top schools' in metro cities of Bangalore, Chennai, Delhi, Kolkata, and Mumbai	*Reading and maths skills of Class 4 pupils in India's 'top schools' are below the international average. *Only 16 % of Class 4 pupils could master the measurement of length of a pencil with a ruler. *Only 22% of Class 6 pupils could understand that crumpling of paper does not alter weight.

Source: Adopted from Drez and Sen (2013, p.122, Table 5.2).

### Distance Education

In India and elsewhere Correspondence Courses, Satellites TV, Interactive Courses, Web Video Courses are already in use. But unfortunately in consonant with the elitist bias in our education system, in our country these are primarily used in higher education – for college and university education and in elite institutions like IITs and IIMs. For instance, we already have a National Mission on Education through Information and Communication Technology (NMEICT) which has been envisaged as a Centrally Sponsored Scheme to “leverage the potential of ICT, in providing high quality personalised and interactive knowledge modules over the internet / intranet for all learners in *Higher Education Institutions* in any-time, anywhere mode” (emphasis added)<sup>v</sup>. We propose to promote the same for *primary education* in our

country. We propose e-learning for primary education in our country which is ‘the combination of Distance Education and e-Learning which is characterized by the extensive use of Internet enabled web technology in the delivery of education and instruction and the use of synchronous and asynchronous online communication in an interactive learning environment or virtual communities, in lieu of a physical classroom, to bridge the gap in temporal or spatial constraints’ (Garrison, 2011).

It is not that no attempt has been made in using ICT for improving primary education in our country. For instance, two such important attempts are the Computer Aided Learning programmes under Sarva Shiksha Abhiyan and Pratham’s Computer Aided Learning programme.

Government of India as a part of its 11<sup>th</sup> Five Year Plan, initiated a centrally sponsored scheme, known as “Sarva Shiksha Abhiyan, (SSA)” with the objectives of providing school education to every child between the age of 6 and 14 years and improving the quality of school education in the country. One component of this programme is to promote ICT based education in primary schools. Thus, under the Sarva Shiksha Abhiyan, several Computer Aided Learning (CAL) programmes have been created by developing multimedia content.<sup>vi</sup>

Apart from this government effort, Pratham, a remarkable educational NGO in India, has initiated a school based programme which caters to school going children from 6-18 age groups with the objective of 1) impacting children’s basic learning levels using IT and 2) to provide relevant IT knowledge and skills. This program also tries to improve schools performance by encouraging them to adopt various IT solutions like MIS, Database etc and to get teachers to adopt technology through teacher training. The curriculum includes software developed by Pratham in local languages that helps build the reading and math skills of the children.

Though these are examples of very important attempts in using ICT in strengthening primary education, the limited nature of use of ICT in primary education can be guessed from the fact that in the year 2009-10 only a 10.6 per cent of government schools in our country, taking primary and upper schools together, had computer (Dreze and Sen, 2013, Table A3 Part 5). Making proper use of it is yet another story.

However, it may also be noted here that the McKinsey report (Madgavkar, 2013) states that there will be 330 million Indian users of the internet in 2015, thus making it the second largest connected population in the world. Thus, rural access to education can be vastly improved by means of exploiting this revolution, and creating a networked virtual classroom system.

In our proposed model, apart from the technology, teachers will play most vital role. We propose to identify this important manpower resource among the elderly people in the cities or towns who are keen to render their service for fruitful utilisation of their unoccupied time in teaching underprivileged children from their homes through distance education mode. In the section that follows we discuss this.

#### **4. Utilising the rich resource of the elderly for remedial teaching of children**

As a part of the global trend, in our country longevity of people has increased. Thanks to the

advancement of medical research and improvement in living condition of people. However, the extended longevity has also added some new dimensions in the process of aging in our country. As a consequence of increased longevity, often when people retire from regular work life they remain physically and mentally capable. However, given the unemployment condition in our country, the retirement age could not be extended as per with increased longevity. Hence, when people retire from work life, often they enter a stage of life when they remain physically fit, at least during the earlier period of post-retirement life, but as they do not get any opportunity of getting employed or meaningfully engaged, they are forced to lead a life of being unoccupied. We may call this a state of forced unoccupied status of the elderly. This process, adversely affecting their mental and physical health, advances the aging process. It was found (Bardhan et al., 2013) that this also results into fatalism among the elderly, adversely affecting their motivation to contribute to the society.

The changes in the family life due to industrialisation and urbanisation and small nuclear families replacing joint and extended families add further to the unoccupied life into lonely living of the elderly. This is particularly true about urban India. In a study conducted in Kolkata city it was found that most often elderly people live alone as either their children live away in their place of work or even when they live with parents, are preoccupied most of the time with their work or other engagements, resulting in lonely unoccupied living among the elderly. Thus, though due to better medical support life span is extended, due to the above type of circumstances often it becomes prolonged inactive survival for the elderly, resulting into gradual deteriorated health condition. This also results into greater demand of care givers support for the elderly which the urban nuclear families are ill-equipped to provide. This has resulted into proliferation of home based care service of the aged in urban areas of India. However, these services may takes care of the physical aspect of care giving but does not bring any reprimand to the lonely living of the elderly people in their solitary urban homes devoid of the presence of their children or other younger members (Mandal, 2013). This is the emerging picture of elderly living in urban India.

The problem of aging depicted above could be mitigated to a great extent by transforming unoccupied status of the elderly who are physically fit and mentally alert, into a socially productive planned engagement. Elderly people could be a rich resource and contributors to the society which is lost when proper avenues are not created for the same. It is in this context we propose utilising the

services of elderly to meet the problem of deficiency in teaching in underprivileged primary schools. We propose engaging the elderly in providing remedial teaching to the children from their homes, through an interactive distance education mode through ICT with the needed support. This arrangement, apart from enabling the elderly to fruitfully contribute to the society and lead a longer better quality life, may also work out to be economically viable. This will also facilitate transferring the wisdom of the elderly to the younger generation in a grandparental ambience.

We are in the process of interviewing elderly people to find out, among others, their willingness to participate in distance teaching of children. We found two types of responses. A majority of them were keen to acquire computer literacy and keen to participate in remote teaching of children. Some of them are already familiar in using computer and internet. We also found a group of elderly who were not willing to learn anything new, like acquiring computer literacy, at this stage of their life and thus were not keen in taking part in distance teaching of children. They do not want to change their living pattern at this stage of their life. One encouraging thing we found in our survey is that elderly people invariably expressed a keenness to interact with children. Many of them felt that they can also learn a lot from the children and apart from teaching from the books; they wanted to share lessons from their experience of life with the children.<sup>vii</sup>

Towards above goal, we are engaged in developing the required teaching materials following the primary school syllabus of the central board and state boards and utilising educational technology and materials already available in the web. This has been an exciting journey and we are amazed by the rich mine of materials available in the web to be utilized.

We also initiated the process of developing training materials for the elderly teachers and provide computer literacy to them. A later part of this computer literacy programme will be to open up the possibility of utilising ICT by the elderly in their day to day living, like accessing required information through internet, using email and Skype for communicating with children, relatives and friends living in distance places, listening to music, watching movies in the net, contacting doctors or other medical facilities, purchasing through internet and undertaking bank transaction through internet etc. In other words, we also aim at contributing to the quality of living of the elderly by enabling them to make use of ICT and removing the existing digital divide.

We face several questions on our above proposition. Will the disadvantaged children like learning via computer by a remote teacher in place of face-to-face teaching? Will they learn from such interventions? For getting an answer to some of these questions we conducted a pilot field study. Finding of that study is discussed in the section that follows.

## **5. Results of a pilot experiment**

We conducted a pilot experiment to find out about the viability of our above proposition. We have already reported the findings of that experiment in another paper (Banerjee et al., 2014). Here we reproduce those findings. We selected a residential school for tribal girls (most disadvantaged section of Indian society), Ma Sarada Sishu Tirtha, located in a rural area near the town Kirshnanagar in Nadia district of West Bengal, India. We conducted a quasi-experimental study for finding out the impact of ICT based remote teaching on these students from disadvantaged background. The study focused on 16 students of Class V and 28 students from Class I. Students were tribal girls from very backward area and were the first generation learners. Our intervention involved a remote teacher delivering lessons in Mathematics and English via the video conferencing software Skype, and Power Point Presentations shown during the video conference. Sessions were made interactive as the teacher addressed individual students by name. This brought the additional dimension of familiarity and added to the success of the teaching intervention.

For having an idea of the academic achievement of the pupil before this intervention, we conducted a test in Bengali, English and Mathematics. The test was based on the well established test used in Annual Status of Education Report (Rural) (ASER) by the renowned educational NGO, Pratham. Additionally; we also collected school examination results of the students. We found that while the children were fluent readers in Bengali, their mathematical ability was below average, with only 50% of the students being able to solve Class 2 level division problems. It was further revealed that English and Mathematics remained a major concern for the students.

Our intervention consisted of conducting lessons in Mathematics and English for class V and English lessons for class I, remotely via the video conferencing software Skype, and PowerPoint Presentations shown during the video conference. The intervention was preceded by a short introduction session to make the students feel at ease. After the intervention, a follow-up

questionnaire was used, using some exercises covering the topics taught via ICT, to gauge their interest, retention and possible improvement.

Photo 1: Children Being Taught Remotely



(Inset: The Remote Instructor)

Our experiment has undertaken before-after studies to evaluate the impact of the intervention. On the basis of before study, the students were ranked in accordance with their performance in class (more specifically on the basis of school examination results). Next, the students have been ranked on the basis of their performance after the intervention in English through ICT. The impact analysis comprises of assessments and interactive observation with the students.

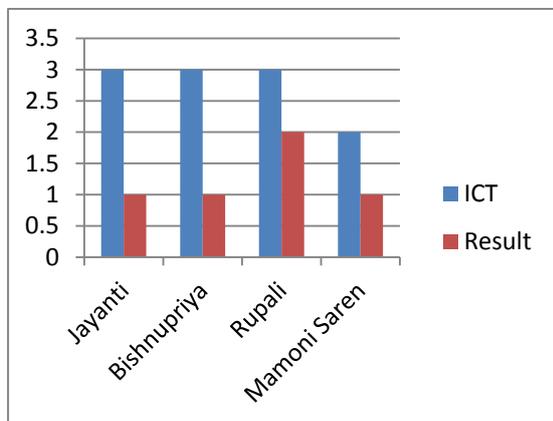


Figure 1: Relative performance of four students of Class-V based on Results of school examination and evaluation done after ICT intervention

It can be seen that those who had been near the bottom of the class benefit the most from this intervention (Fig.1). A majority of the others perform at the same level as their class performance. Among the five students of class V who have a normalised score of 1 in their school examinations, three (i.e. 60%) achieve a normalised score of 3 in the evaluation conducted post-ICT intervention. Although the sample size is small, this is a significant finding.

Fig 2. shows the examination performance of 28 Class-I students in (i) the regular school examination before remote teaching, and (ii) an examination taken after a month-long remote teaching intervention in English (20 hours total). The students have been indexed on the basis of their rank in the school examination. The chart shows marked improvements in student performances. Specially, the students who received very poor marks in school examination (student number 24 to 28) have shown significant improvement in their English language skills. This finding is consistent with the findings presented in Fig. 2. and this is significant finding. How does one explain this? Is it because ICT intervention operated as more neutral, devoid of any preconceived stereotype perceptions about the students?

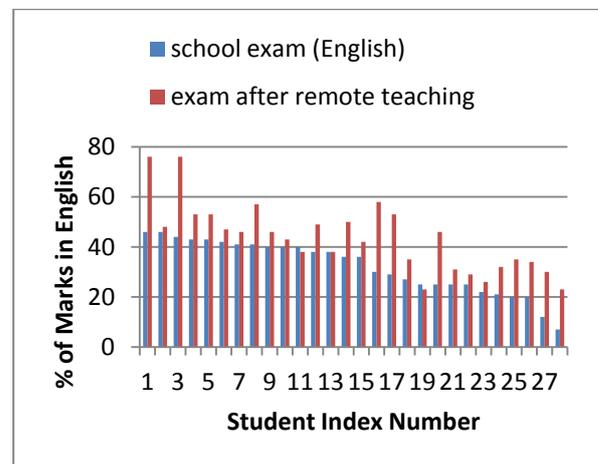


Fig. 2 Performance Improvement of Class-I Students after ICT-enabled Remote English Teaching

The intervention has generated positive results both in the attitude towards technology and learning outcomes. The children were aged between 6 to 11 years and it was earlier assumed that it would be difficult for them to cope with remote teaching due to their lack of attention span. However, during the intervention it was observed that the children on the contrary did not lose their attention. The social difference that is often created between teacher and student due to several disparities was absent in this context, the children were quite aware of the instructor's presence online but they did not have any hesitation in interaction. There was no fear of punishment although the instructor observed discipline in the class, but the children did not shy away from the instructor. Interactive sessions created a positive learning environment for them, leading to increased interest in the topics taught.

It can be deduced that technological aids, along with low/no teacher absenteeism and low social difference has lead to creation of a better learning environment. The teacher student ratio being comparatively low and the regular interactions with the teacher also lead to faster learning of concepts. Video based teaching created better cognitive understanding of the topics taught. Children were able to freely interact amongst themselves, and this also created a positive interest in the topics taught. Lastly, the expectancy created in the children, increased interest for both the instructor and the children in the classroom.

To summarize, one can make the following hypotheses about this intervention and, based on the data obtained, examine whether the nature of results for each has been positive or negative:

1. **The children enjoy the ICT-enabled classes more in comparison with their usual class:** We have received **positive response** from most of the students on the basis of the questionnaire and observations. 70% commented that they found the pictures/videos shown to be very engaging and interesting. This is natural, since an audio-visual presentation is more engaging for children and keeps children attentive longer than a routine class.
2. **An ICT-based remote teaching system serves to bring about higher teacher acceptability:** We have received **positive response** from most of the students on the basis of the questionnaire and observations. 89% students stated that they found the remote teacher to be highly acceptable. Further, since there is no physical threat from a “remote” teacher, the children feel more relaxed in presence of the teacher. 81 % students have stated they were mostly able to understand the remote teaching. There were no negative responses. Hence, acceptability is generally high during remote class.
3. **An ICT-based remote teaching system serves to bring about an improved performance in many, in comparison to school performance:** Although the data set is small, and time of intervention was short to draw any definitive conclusion about this; fig. 2 and fig.3 nonetheless shows marked improvements in student performances. Specially, the students who received very poor marks in school examination have shown significant improvement in their English language skills. This could be because the ICT-

aided material that was taught was better understood and retained by the children.

4. **The children will fear or be sceptical of new technology:** We have received **negative response** from most of the students on the basis of the questionnaire and observations. Rather, the children have shown a reasonably ready acceptance of it, and 81% interviewed have stated that they are open to change and would like to be taught in a different way.
5. **The children would offer some resistance in opening up to outsiders:** We have received **negative response** from most of the students on this. Being a close-knit tribal community at a remote village, with little interaction with the outer world, it was assumed that the children would not be open to the idea of complete strangers instructing or interacting with them. However, not only did the children show incredible openness to the idea, they also engaged very freely in all interactions and showed extreme enthusiasm.

Teachers are expected to enrich a child’s learning and schooling experience. But this is often not the case in rural India. Studies have shown that teachers frequently beat children, terrorize them, and humiliate them publicly. Many forms of discrimination and biases enter the classroom. A recent survey of rural schools, for example, carried out in West Bengal found disturbing evidence of primary school teachers showing much less regard for the interests of children belonging to Scheduled Castes. Teachers tended to perceive themselves as belonging to a different and higher class, often the result of earning much higher incomes than most parents. They rebuked children for not coming properly dressed to school, for being obviously dirty, for being stupid because they belonged to a certain community. Children were ridiculed for their eating habits. In some instances, they were made to sit separately. (Kumar & Rustagi, 2010)

Better-off sections belonging to higher castes are able to send their children to the fee-charging private school, which they can afford, for better quality of education. The poor belonging to lower castes, not being able to afford private school, are destined to send their children to inferior quality government schools. It has been found that most of the children enrolled in private schools are from general caste group, whereas most of the SC, ST and girl students<sup>viii</sup> attend government schools (Garg and Mandal, 2013).

Use of ICT is a significant step to eliminate some of the barriers in terms of region, caste, class and gender by facilitating a high degree of permeability of education. Since this was a pilot study, the scope was limited by several constraints, but we certainly plan on using more sophisticated tools of e-learning for future interventions.

With regard to the survey conducted at Ma Sarada Shishu Tirtha, one probable reason for the ready acceptability of ICT, and the improvement in performance, could be that, if the teachers in a face to face teaching situation are from non-tribal background, a 'social distance' may be created which operates as a hindrance in learning. This is however more applicable with respect to weak students. ICT teaching being neutral to 'social distance' is more helpful for disadvantaged groups. It is clear that a long-term intervention is in order, and could prove to be immensely beneficial if implemented in a systematic manner.

While "digital inclusion" programs usually tend to focus on teaching people the usage of computers and the internet, the approach presented in this study takes a different perspective. According to this approach, the entire process of learning should be oriented towards developing abilities to connect to the global knowledge network of the cyber-world with a specific social context and purpose in mind. This makes it possible to improve the underdeveloped communities by obtaining social inclusion through digital inclusion, and creating self-sustainable forms of social development.

## 6. Summing up

We have discussed about the problem of primary education in our country resulting in poor educational outcomes. We have also discussed about the problem of the elderly, their unoccupied lonely living. We then discussed how ICT can be utilised in mitigating both these problems together. We also presented the findings of our pilot experiment which has shown positive results for our proposition showing the prospect of ICT in distance teaching, showing the feasibility of addressing both the problems through ICT. Thus, we propose killing two birds with one shot with the help of the ICT-gun.

We are aware of many a slip between the cup and the lip. And then the question that remains how this can be done in a financially viable manner. Here we propose to undertake this endeavour by adopting a 'social business' model (Yunus, 2008).

Unlike profit maximising business, social business aims at solving social problem in a self-sustaining manner on the basis of cost recovery or more. We are yet to work out the detail plan for the same. But we are hopeful that what we are proposing is achievable. And we plan to develop a replicable model for the same.

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### Notes:

<sup>i</sup> In a survey conducted by us (Garg and Mandal, 2013) in government primary schools in rural Rajasthan we found that often though two teachers were appointed in a school, through a mutual arrangement among them, the teachers take turn in attending school. Thus, only one teacher will be attending the school for the first half of the month, whereas the second teacher will attend the school for the later half of the month. In spite of having two teachers on the role, in effect the school functioned as a single teacher school.

<sup>ii</sup> PROBE Team studied seven large states of northern India, namely, Bihar, Chhatisgarh, Jharkhand, Madhya Pradesh, Rajasthan, Uttar Pradesh and Uttarakhand.

<sup>iii</sup> For instance, Khan Academy, a non-profit educational website with a stated mission to provide 'a free world-class education for anyone anywhere' is a source of rich resource in this regard.

<sup>iv</sup> We have initiated this work in the Social Informatics Research Group at IIM Calcutta.

<sup>v</sup> A committee has been constituted by the Ministry of Human Resource development for suggesting a framework for efficient use of Information and Communication Technology (ICT) to address the issue of dearth of qualified faculty in management field in the country and coordinating and implementing the same. The question is why don't we think of initiating a similar type of step for overcoming the problem of teaching in disadvantaged primary schools of our country?

<sup>vi</sup> [ssa.nic.in/quality-of-education/CAL-07.pdf/at\\_download/file](http://ssa.nic.in/quality-of-education/CAL-07.pdf/at_download/file)

<sup>vii</sup> This is based on the findings of a survey (2014), undertaken in Kolkata by student interns under the supervision of Arina Bardhan, Social Informatics Research Group, IIMC.

<sup>viii</sup> If a choice had to be made, poor parents preferred sending their daughters to free government schools and sons to fee paying private schools for 'better education'.

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