

Smart Education for Smart City: A Solution to School Dropout

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Abstract:-- School dropout is a major factor responsible for low quality education and lack of relevant skills among the students. The findings reveal that both the school and family related factors were responsible for the increase number of dropouts. In order to reduce the dropout rate of the students make education system more efficient the use of modern technology can definitely help using low cost solution that can be even deployed in the Government schools also for Smart City Application. The present study is analysis of dropout rate and the proposed solution to reduce the same.

Index Terms— Quality of education, low cost solution, school dropout, smart city application.

I. INTRODUCTION

School Dropout is the most pervasive problem in the Indian Education System, multiple factors like unawareness of importance of education among the students and their parents, financial instability, abuse of girl child, irresponsible behavior of teachers, lack of accountability, and unavailability of transport facility leading to students dropping out of the school. Domestic and financial problems create a negative environment that affects the quality of education. Other factors like migration of parents from one city to another in search of new jobs and opportunities, discrimination of the children and complete absence of extra-curricular activities accounts for the high dropout rate.

When students experience failure in school, they become frustrated up alienated with lack of achievement and experience exclusion leading to eventual dropout. Further, girl student could dropout as a result of lack of sanitation facilities, etc. It is important to design a sustainable solution and strategies that could be adopted in order to help the dropouts. For this study dropout is defined as the children who takes admission in the school but leaves the school before the proper completion of the secondary education without transferring to another school. Dropout rate is the percentage of dropouts in a given year out of the total number of those enrolled in a program in

the same year. Dropout can also be count as the total number of children who start a program and do not finish it.

Taking this into consideration the present paper includes all the major and minor factors responsible for the dropouts and provides an innovative solution that can be easily implemented to overcome this problem for Smart City. In a study in 2010, Reddy Anugula and Sinha found that more than 27 million children in India, who joined in Class I in 1993, only 10 million of them reached Class X, which is only about 37% of those who entered the school system [1]. Out of 100 children enrolled in Class I only 47 reached Class VIII, putting the dropout rate in primary and elementary schools at 52.79% [2]. In a study in 2011 Chugh found that about 33 percent of children were interested to study further if given an opportunity to continue the studies, provided additional coaching and special attention by the teachers of the school. Few were keen to complete secondary education [3]. Providing right type of education at right time will surely help the right people to become more productive and to the potential in them, build the necessary condition requires high school retention and the quality education. Therefore the quality education and reducing the number of dropout will prove as master key for the development of the smart city that how we utilize and develop this section of people.

II. DROPOUT RATE

In 2011, Chugh found that very few children complete elementary education and even fewer transits to secondary education. Despite a small proportion of children actually reach secondary education the dropout rates at secondary level are found to be very high. Though, the available data does not give precise figures on how many enroll and how many actually dropout at secondary stage but the difference between children who dropout at upper primary and secondary stage may hint at the volume of dropouts. The dropout rate for Delhi stands at 36.04 percent compared to 56.71 percent at the all-India levels between classes I-X in 2007-08. It may further be noted that the dropout rate fell drastically by 10 percentage points in one single year i.e. 2005-06 and 2006-07 whereas between 2007-08 and 2006-07 it remained constant. Surprisingly in case of SCs, the dropout rates are lower than the general population in 2005-06 and 2006-07 whereas in 2004-05 and 2007-08 the dropout rates of SCs are higher than general population. This implies that the data on dropouts is very inconsistent and more so in case of Scheduled Castes. This raises questions about the quality of official data on enrolment and dropouts. But this does not hide the fact that the dropout rate is still very high.

Though, the dropout rates at secondary level are lower than elementary education but soon it may increase consequent upon persistent efforts to reduce dropout at elementary education. This necessitates studying the dropout phenomenon at micro level on who drops out and what factors contribute for dropout at secondary level. This paper presents results from a micro study of dropout from secondary schools that serve children of slums in Delhi. Before discussing the solution, an overview of a few root causes of dropout is given in the next section [3].

III. ROOT CAUSES OF DROPOUT

A. Children as Economic Potential

Children act as bread earners, are the economic support of the family. They are forced to stay as caretaker of their younger siblings if both the parents are working. Some type of social as well as parental pressure is also responsible that students have to act as economic potential of family and can't attend the school. Considering the importance of the family decision to send the children to school or to discontinue their studies, information should be collected from the families of the drop out children to look at their environmental, social and economic compulsions which may act against their continuation in school. Besides household income, the education level of the parents is also expected to influence the continuation of children in school

B. Migration of Parents

Parents those who are contract labors or farm labors or seasonal labors have to migrate occasionally due to financial instability, in search of new jobs, tribal festivals. Some illiterate parents are unaware of the importance of the education and the process to be followed to transfer student from one school to another one. In 2005, Ersado observed that parental education is the most consistent determinant of child education. Higher parental education is associated with increased access to education, higher attendance rates and lower dropout rates [5]. Parents, who have attained a certain educational level, might want their children to achieve at least the same level.

C. Absence of efficient tracking of dropout children

There is complete absence for monitoring of the dropout students. Student has to leave the school according to their parents' jobs, migration; there is no record of the migrated students and no transfer certificate availability that restricts them from taking admission in another school. This obsolete and inefficient tracking should be eliminated.

D. Non Interactive Teaching System

Lack of activity based learning, old teaching methodology, language barrier, unskilled and untrained teachers, resistance to implement new technology, old teaching methodology, not updated modules, no incentive to teachers for implementing interactive system are some of the root causes of the dropout of students.

Proper environment should be created so that we can attract the students to the school. It has been repeatedly observed that low-achievers and students from low socio-economic backgrounds are at much higher risk of dropping out which could be due to several reasons such as inadequate parenting, inability to afford the educational expenditure, poor schooling infrastructure, de-motivated teachers, pressures to augment family income, accompanied by a view that schooling has limited economic returns, peers with low aspirations, poor nutrition and health, and too few role models in the community. Dropout decision also depends upon the academic performance of the student. In 2012, Rupon found that poor school performance, low attendance and late enrolment are likely to be act as signal for teachers that the student is more likely to dropout [4]. However, one of the key problems is that students don't usually dropout for a single reason. Multiple factors are at play and no single risk factor can accurately predict who will dropout.

IV. A REVIEW OF RELATED STUDIES

Over the past years appreciable research has been undertaken to find the root causes for the dropout and by using the relevant data from the Census of India, the NSSO and other sources. Multi-level statistics model that focused on the school efforts and individual efforts to address the

dropout problems. Over the decades we have not yet been able to address the poor attendance of both teachers and students which has a direct correlation to the drop out ratios in schools across India. The studies are based on experimental studies examining particular aspect of the dropout. These studies proved useful in determining at risk students and the developing estimates of the extent of the dropout, symptoms of dropping out much before they actually dropout.

Researchers have consistently found out that the socio-economic pressure that is mostly measured by the parental education and economic condition, is a powerful predictor of dropout behavior [6] [7]. Very less number of children completes the elementary education and even fewer transits to the higher secondary education. Despite a small proportion of children actually reach secondary education the dropout rates at secondary level are found to be very high. Though, the available data does not give precise figures on how many enroll and how many actually dropout at secondary stage but the difference between children who dropout at upper primary and secondary stage may hint at the volume of dropouts. The dropout rate for Delhi stands at 36.04 percent compared to 56.71 percent at the all-India levels between classes I-X in 2007-08[3]. These studies help in identification of the factors related to the child and household and those related to their respective schools and is influenced by both the social and academic experiences of students. In 2002, Brown and Park found that good family income makes it convenient to provide more resources to support children's education like access to better quality schools, private tuitions and more support for learning within home. Therefore, poverty still remains as one of the significant causes of children dropping out of school [6].

V. PROPOSED SOLUTION

One of the solutions for tackling transportation problem is either providing movable schools to them like School-On-Wheels, an amazing mobile-van platform for reaching out to far off communities' children founded by Sachin Joshi and its implemented in Nashik City of Maharashtra[8], young kids of around 7-8 years who cannot reach to school and hence such platform can foster a little hope for them in their dark lives, children taught about maintaining health hygiene and made aware about daily life needs it will also create awareness about the importance of education among the student. Another option is to promote, provide the 'Bicycle Sharing' concept in Smart City so that they can reach to the nearest school. To tackle with lack of awareness and caretaking of younger siblings Self Help Groups can help to a good extent.

Out of these we propose to address solution to major problems directly related to dropouts of the student also it includes solution to teachers' and students'

attendance and accountability. The detailed solution to these problems is mentioned here

We could design an Android or iOS application that helps to track the dropout children, this will be for the citizens and college students and volunteers, as it is a social issue we should take involve the society to help us. Application will verify the volunteers, citizens those who are interested to help the society and we will have complete database of such volunteers, citizens and it is proposed to divide the volunteers' area wise and allot them specific area of the City. The complete process will include following points.

A. Identify

Starting from the month of June every year, verified volunteers, citizens, college students with the help of NGOs will search for the 'out-of-school' children. In the application approach we will include some basic question related to children that help to collect the information and prepare the databases and following questions will be asked to every child like i) Child name ii) Age iii) Address iv) Why you are out-of school v) How many days since have not attended the school and why? Along with these we will click a snap of student. We will further share these data with the NGOs.

B. Connect

In this stage the collected data goes to the City Administration, who shares this information with the local NGOs of the specific area based on GPS/location of these students. Now it is responsibility of the NGO to analyze the relevant data, to convince, consult the child and his parents and to make a reliable network.

C. Counsel

The local NGO will visit to the specified location of the children and NGOs will counsel with the child and their parents regarding the importance of education, how education will help their child to fulfill his dreams, government facilities available and some other benefits related to the education.

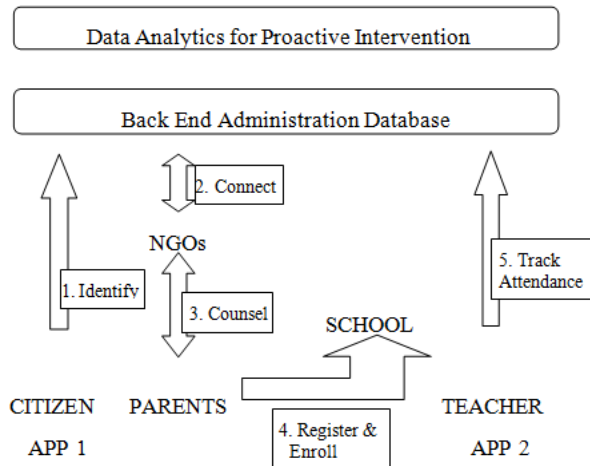
D. Enroll

After counseling these students will be enrolled in the nearest public school by the NGOs. Students will be provided with all the essential facilities.

E. Track

Now it becomes important to keep track of the enrolled students, a simple mobile application for teachers can be developed to capture the attendance everyday Properly maintaining the children information and keeping the track of enrolled students will surely solve this major problem of dropout.

Fig. 1 Proposed Solution



F. Awareness

Society is involved to find out the children not pursuing the education, so most of the people in the city will be aware of the need to enroll students into schools and will actively participate in this campaign. Parents will be aware of various government schemes and incentives, advantages of enrolling their wards into school and it will prove helpful for them to emphasize the need for their child's education.

G. Real time measures

Teacher and student attendance will be available on real-time basis. Real-time availability of attendance data will help track various parameters such as school and teacher quality, mid day meal expense tracking, health tracking during outbreak of diseases to ensure availability of medicines at Public Health Centers. Incentivization programs can be implemented with more transparency and outcome-focus.

H. Quality Improvement

Push model can move to a pull model over time with better data availability and program effectiveness. The improvement in quality of both educations as well as of teacher and student is likely to create a major impact while moving towards smart education.

VI. CONCLUSION

Using the above mentioned methodology to solve the dropout problem will surely going to help the government as well as the citizens of the city. Improving our elementary education system for the betterment of

society will surely help us to build Smart City by the providing Smart Education to every citizen of society.

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