Project Report

FREE
Primary and Secondary Education for India

(To reduce the drop rates of students before completing their 12th grade)

Akik Kothekar

Student, Grade 12.

Singapore International School,
Mumbai.

Contents

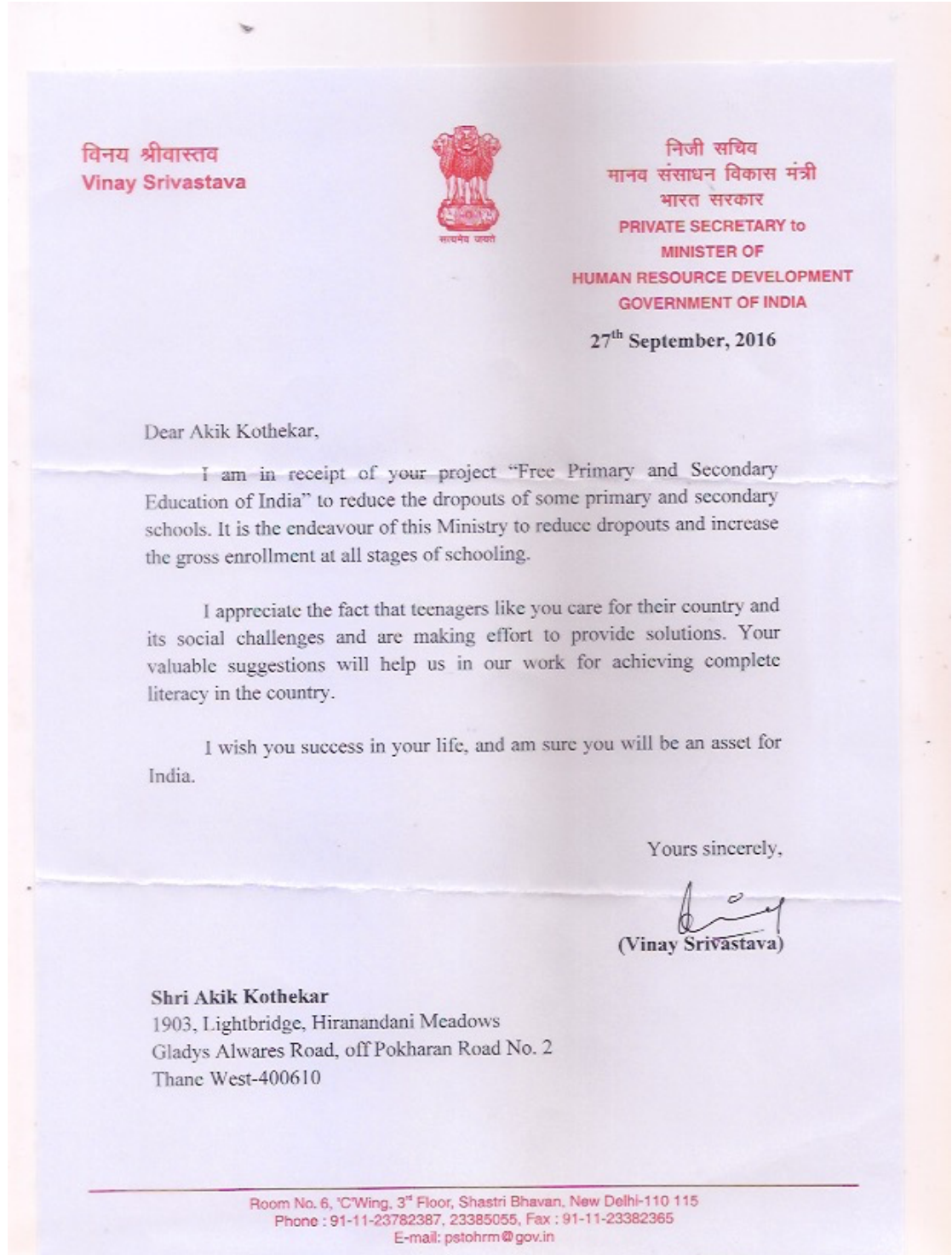## 1. Letter of acknowledgment and encouragement from the Ministry of Human Resource Development, India
This is a letter from the office of the Cabinet Minister's office

विनय श्रीवास्तव
Vinay Srivastava

निजी सचिव
मानव संसाधन विकास मंत्री
भारत सरकार
PRIVATE SECRETARY to
MINISTER OF
HUMAN RESOURCE DEVELOPMENT
GOVERNMENT OF INDIA

27th September, 2016

Dear Akik Kothekar,

I am in receipt of your project "Free Primary and Secondary Education of India" to reduce the dropouts of some primary and secondary schools. It is the endeavour of this Ministry to reduce dropouts and increase the gross enrollment at all stages of schooling.

I appreciate the fact that teenagers like you care for their country and its social challenges and are making effort to provide solutions. Your valuable suggestions will help us in our work for achieving complete literacy in the country.

I wish you success in your life, and am sure you will be an asset for India.

Yours sincerely,

(Vinay Srivastava)

Shri Akik Kothekar
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2.   Premise

The premise is a letter written by me addressed to the Honorable Prime Minister of India.

This letter was published in the Economic Times of India (www.economictimes.com) on 23rd February 2016.

Link to the article- http://economictimes.indiatimes.com/news/press-releases/open-letter-to-the-prime-minister-from-a-teenager-of-india/articleshow/51107691.cms.

Open letter to the Prime Minister from a teenager of India

Respected Sir,
The wants of today's youth, is a hot topic of discourse among politicians, officials and social activists. Rarely have I read a discussion on what the young teenagers (young boys and girls who are between 10 and 17) want. Maybe because they are not the voters. It is a sad fact that a disgruntled youth is created when he is a teenager. The minds of most young people are moulded when they are teenagers.
More than 95% of the teenagers want a future which is better than their current status. They have innocuous ambitions. Their primary need is to get good education or skills to get a decent job or to earn a decent livelihood. Their inability to get the skills and education when they are teenagers, kills their dreams. This frustration is manifested in many negative ways, which is not good for the country.

What do Young teenagers want? We want a safe country, with immense opportunities for all, irrespective of our caste, creed and religion.

It is easy to talk about problems and the desirable state. I understand you need solutions, which are feasible, effective and permanent. I take the liberty to put forth my views and solutions to address these problems and possibly strengthen our society.

I think the key leverage is the internet. The world is changing into a digital society and economy. Internet technology has advanced a lot in the last 2 or 3 years and its ability to gather and disseminate knowledge should be harnessed.

Education
Today, in India, about 40% teenagers drop out of school i.e. don't complete 10th and 12th grade because of three primary reasons:

1. They cannot afford the cost- the cost of books, school fees and travel.

2. The teachers are either not qualified to teach the course or they do not do their job with enthusiasm. As a result, students soon develop a disinterest, and eventually fail. These students don't get appropriate guidance or cannot afford the available guidance (tutors and coaching classes).

3. Need to work to provide for the family.

The government can start by eliminating the need to buy books. This can be brought about by setting up a server / portal where all the books are hosted in an e-book format and made freely accessible to everyone. The e-books can be accompanied by interactive video lectures that can be developed by skilled and experienced teachers. These videos can result in better understanding of a particular topic by an individual. This duo of videos and e-books can eliminate the need for good quality teachers to an extent.

Moreover, these resources can also be beneficial for the teacher which indirectly benefits the student. This portal can also host several mock tests which can benefit the underprivileged students who cannot afford coaching classes. Sir, you could have a section of the Education Ministry, analogous to the ICSE, CBSE etc., that would own this portal and ensure that it is updated regularly. There are innumerable teachers in this country who would step up for such a noble cause.

The key component that would enable all this to exist is the access of internet. You need to provide free Wi-Fi all over the country, that is, it should reach each and every corner of the country and give basic electronic devices for free to all students who reach 3rd standard that are capable of connecting to the portal via the Wi-Fi. The device should be configured in a such a way that it can connect only to the portal and cannot be used for anything else except for accessing the resources hosted by the portal— just like Amazon's Kindle gadget, that can connect to the Kindle store from anywhere. I believe such a basic device can be built at a cost of Rs.5000 per unit. Yes, it is subsidised, but this is for a good cause. To recover the costs, you can stop some of the other subsidies like the LPG subsidy for the rich or levy an extra 0.1% of income tax from the affluent people and companies. I am sure that these people would extend their support for a better India. Not to forget, you also have an education budget to help finance this cause.

Providing free Wi-Fi is not a hindrance as well. Any internet provider would willingly cater to this cause just for a paltry 5cm on screen column as space for his advertisements. This would prove a profitable venture for the ISP as these ads can reach an innumerable audience.

Sir, you will have a country where education is completely free in the true sense- free of books, private classes and the need for quality teachers.

Sir, even the children in Kashmir will get a good education. Even they long to be in the mainstream.

Courses to build skills for basic jobs

The portal can host certain courses, such as on welding, fitting, computer repair, electrician, plumbing, motor mechanic etc., which any person would like to take up to build skill to earn a decent livelihood. These courses, mostly of videos, would allow people to learn and perfect basic jobs. For example- if a garage owner has recruited a relatively inexperienced staff, he can buy this device for his employees in order to enable them to perfect their job. This would save him a lot of time and money. If a person wants a certificate acknowledging his/her specialisation in a particular course, he/she can register on the portal for an examination and go to a nearby certified centre to take the exam which would give him/her a certificate. Such certified centres can be set up in several towns and cities. As many people are not fluent in English or have no knowledge of the language, the courses/ videos should be offered in various regional languages.

Employment

There are many opportunities of employment in the government departments of India. Though they are qualified, many poor people who actually need them find it difficult to get them, due to the malpractices in selection and appointments. We all know how the computerised ticketing system for trains has eliminated the black marketing of tickets and trouble for poor people. The same solution can be used for employment of lower skill jobs in the government. A central database and allocation of jobs by a central server will help the poor aspirants. All the students should have a common id, with which a personal database would be associated. This database would be a collection of the personal details of the students along with the courses taken and the marks obtained. All vacancies will be reported on the server. The central agency will then allocate a job to the next candidate in the list living close to the office having the vacancy. The agencies would be able to apply certain filters depending on which the candidate on the list would meet the requirements of the job. The computer does not consider caste, creed and religion, just the number in the waitlist. No official can intervene. Government Officers may complain they want the best people and so want to select them themselves. Sir, everybody wants to do well in life. All people will work hard to get a better life for themselves and their family. Don't make the exceptions rule the policies. Sir, when you were selling tea, no one around you thought you would be Chief minister of a state and then the Prime Minister of this great country.

This will eliminate all biases and will result in transparency for students to gain employment. These students will also know how they can jump the list- by taking more courses and increasing their skill set, list of capabilities, etc. All the resources will be available for free on the government portal.

All this can be implemented very fast. You have demonstrated vigour and capability in pushing the projects that build the nation. Please do the same for this one as well. A crack team can complete this project in about 6 months.

To conclude, you need to- enable Wi-Fi all over the country which should be free for all; Build a portal which would host free resources for primary and secondary school students and vocational skill courses; Make and distribute devices which can only access the portal and the resources hosted by it.

Hope you appreciate the systemic changes that I am suggesting, to be implemented by a central system, that does not take sides with caste creed and religion, and only with efforts, and qualifications.

Hope we see a more harmonious and progressive society when we grow into youths. Thank you for your time,

Yours sincerely,

 Akik Kothekar
11th Grade
akkothekar@gmail
(23rd February 2016)

3. Components of the System

2.1 The Portal

A web portal is a specially designed site that brings information together from diverse sources in a uniform way. Usually, each information source gets its dedicated area on the page for displaying information.

The portal in consideration is quite similar to a conventional portal, in that it brings together educational content stored on a main cloud server. This web site will act like an intermediary, because it is through this website that the students gain access to the educational content hosted by the main server.

The main server, as mentioned above, is a cloud server which will be managed by one of the education boards belonging to the government or a new board (if the government decides to bring such a body into existence). As the server is a cloud server, the body/organisation managing it has flexibility- the content can be scaled up or down without worrying about expansion of server space or change of server. The educational content in the server will be arranged in the format portrayed by the System Architecture diagrams.

The main server will be connected to a advertisement server which will be managed by the Internet Service Provider. This server will provide the Internet Service Provider with revenue required to provide internet to students who want to access educational resources through the portal. Although the Advertisements would take only a small strip (10 cm) in either side of the screen, it is a great source of revenue as the advertisements would reach, potentially, ten thousands of people all the time.

Technical Specifications of the cloud server (Main server)

Number of processors	4
RAM	16 to 32 GB
Storage	It is a cloud server, and thus the storage can be scaled up or down depending upon the size of the user base.

2.2 The Device

The device is as important as any other component of the system. The device enables the user to view the content hosted on the server via an internet connection. This device should have a display that is adequate for viewing videos at least 480p. It should also be capable of accessing the portal via an internet connection. It should, preferably, have a touch screen to increase the usability of the system as a whole. The device I have proposed her is a tablet with technical specifications which are, I think, which are good enough to support the demands of the user and the system. After the launch of the much acclaimed Freedom 251, a device with the specifications mentioned below will not prove to be expensive to manufacture.

This Tablet will run the Android operating system but will not have any other application except a browser and a media player which will be configured in such a way that no web site, other than the aforementioned portal, can be accessed and other apps will not be granted permission to function on the device.

Another way to implement the above mentioned state would be to configure the SIM card in such a way that only the portal can be accessed and nothing else.

Technical Specifications of the Device (Tablet)

Screen Size	7 Inches
Resolution	1024 x 600
Processor	1.3 GHz Quad Core Processor or 1.6 GHz Dual Core Processor
Internet Connectivity	Should support 3G connectivity
SIM card	Micro/Nano SIM (SIM will be present in the device and cannot be replaced/removed)
RAM	1 GB
Internal Storage	8 GB
Operating System	Android 5.1
Battery	2000 mAh

2.3 Internet Connection

As mentioned before, an internet connection is required for the student devices to access the portal. The download speed offered by the Internet Service Provider should be adequate for streaming videos hosted on the aforementioned main server.

The devices will access the internet via a SIM card which would be pre-installed in the device.

The Provider can generate revenue with the help of advertisements which will occupy a paltry 10 cm on either side of the screen and be seen by ten thousands of people at a time.
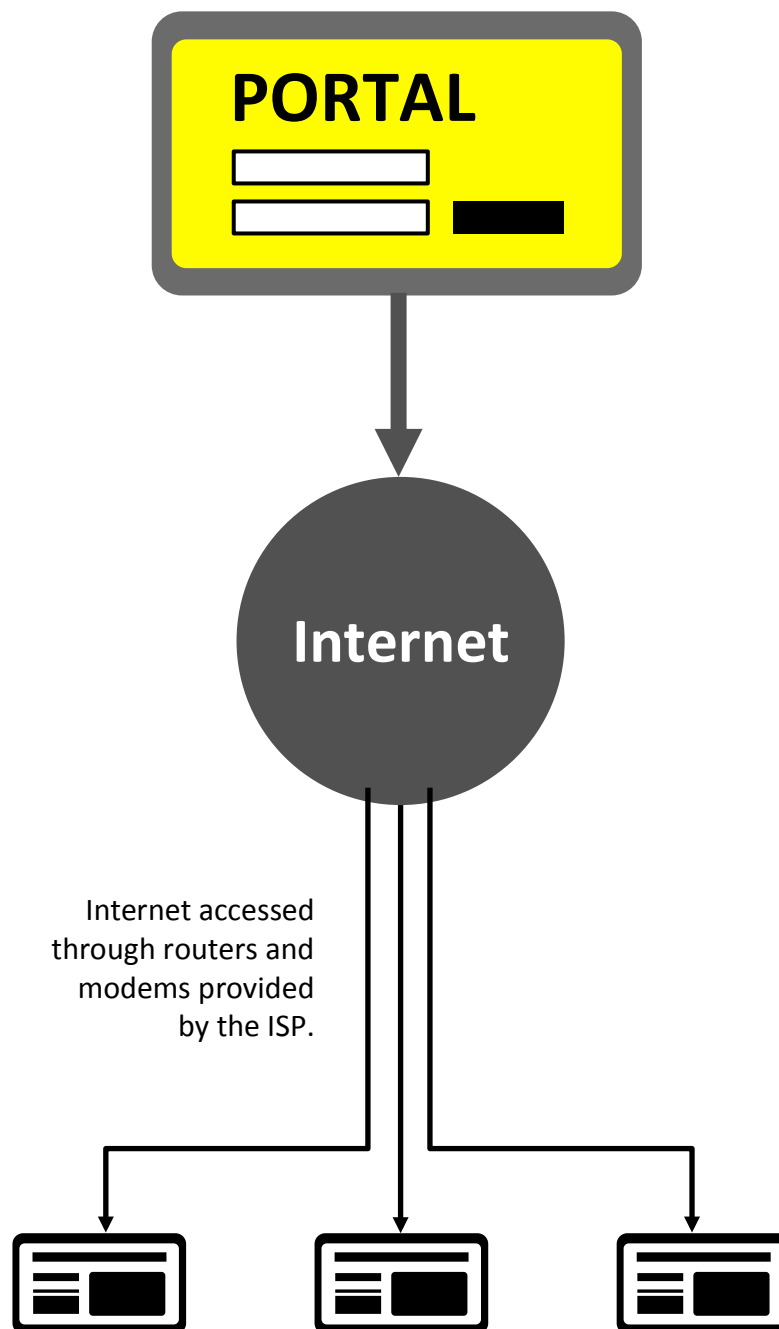
To summarize:
Internet will be provided with the help of pre-installed SIM cards.

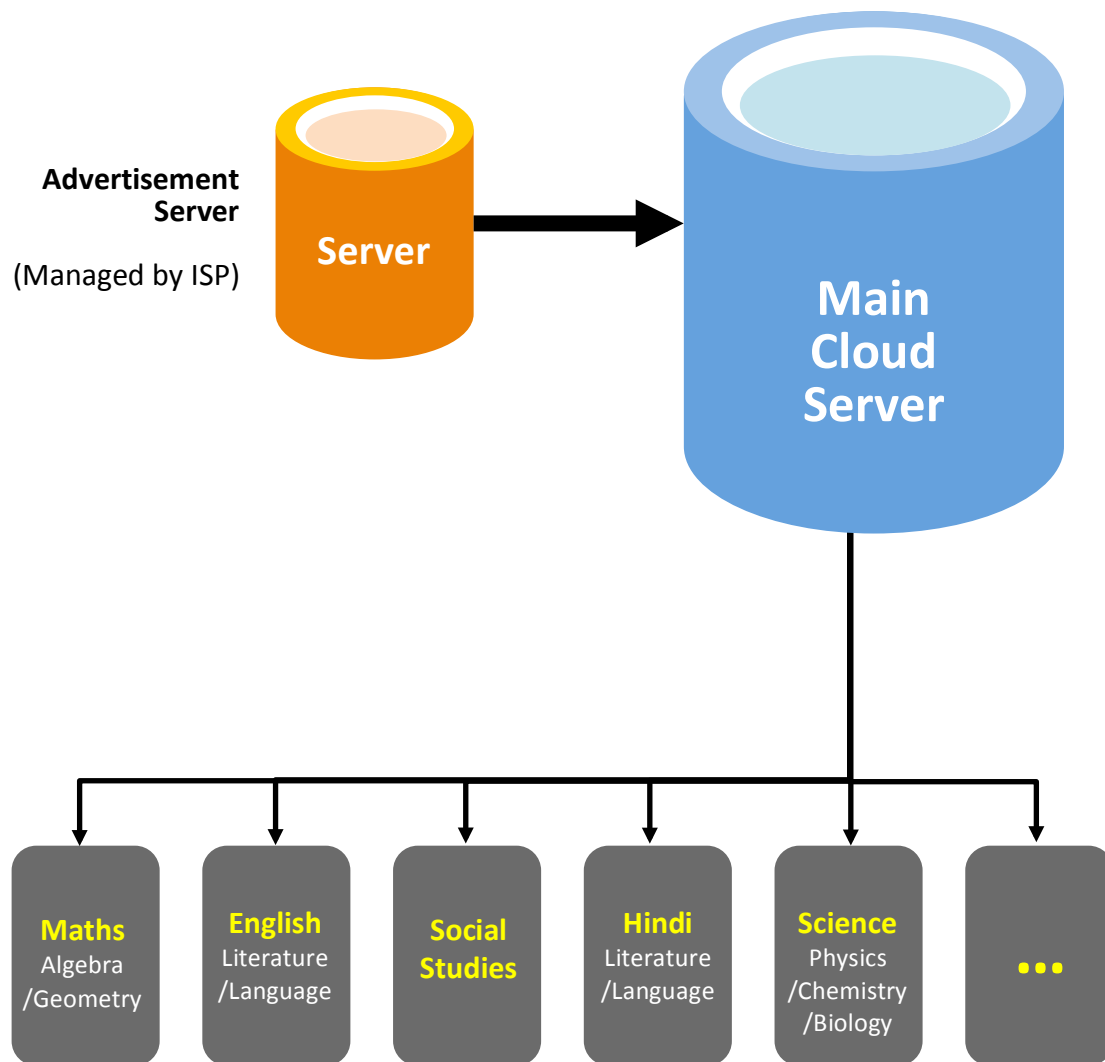|	
Internet speed	2 - 4 MB per second
Bandwidth	Assuming that the size of the video is 100 MB (10 minutes), the amount of data downloaded by the user per second will approximately be 100,000/600 »167 KB per second. Assuming that at least 1000 students will use the platform to stream educational videos every second, the bandwidth has to be more than 16700 KB per second

4. System Architecture

Overview

Server

Example
Subject Directory

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                          ┌─────────┐
                          │  Maths  │
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| 1st Grade | 2nd Grade | 3rd Grade | 4th Grade | And other Grades up to 12 |

Different topics for different grades depending on the difficulty level and extend of syllabus.

Content offered in various languages such as Hind, English and other reginal languages.