Asha Kanini - Pravartak Proposal

Background

Asha for Education

Asha for Education is a worldwide action group formed to catalyse socio-economic change in India through education of underprivileged children. ‘Asha’ means hope — the hope that we aim to bring into the lives of these children.

Asha for Education was established in California in 1991 and has 55 chapters. Asha India started in 1998 and headquartered in Varanasi is a registered public charitable trust. Asha Chennai was founded in 2002 and is actively executing about 10 projects which together support more than 100 schools impacting 5,000 students.

Asha Chennai focuses on government school education and digital literacy. We have gained the experience and expertise needed over the years. Asha Chennai is completely managed by volunteers with overhead costs generally borne by the volunteers.

Charity Navigator ranks Asha For Education consistently in the top tier. Asha for Education is also a recipient of the Times of India Social Impact Award.

Founders

Sandeep Pandey is an Indian social activist. He co-founded Asha for Education with Dr. Deepak Gupta (Professor, IIT Kanpur) and V.J.P Srivastava while working on his Ph.D. at the University of California, Berkeley. He has taught at IIM Ahmedabad, IIT Gandhinagar and BHU Varanasi.

He was awarded the Ramon Magsaysay Award in 2002 for the emergent leadership category. Pandey led an Indo-Pakistan peace march from New Delhi.

Asha Chennai was founded by Lakshmi Suryanarayanan in 2002. As Headmistress of 115-year-old Olcott Memorial School, Chennai, dedicated her life exclusively to children from the poorest parts of Indian society.

Asha Chennai Focus

At Asha Chennai, we believe that public education supported by the Government is what will propel India to the next century. Prosperity in most developed and rapidly developing countries came on the backs of a strong public education system. The schools in Tamilnadu and probably the rest of India promote memorization as the primary mode of learning and not conceptual understanding. It is imperative that our education system improves the conceptual understanding among students and thus moves towards a more meaningful education. There is a huge digital gap in rural India compared to the rest of the world in terms of access to digital resources.

Asha Chennai would like to change that attitude and the attitude toward government school education, so we have created a strategy to address the issues that could improve learning at the elementary and middle school levels. We would also like to provide access to the wealth of educational content available online and device ways to use these effectively to promote meaningful learning.

Asha Chennai Initiatives

Asha Chennai has been supporting government schools since 2003 all over Tamilnadu. We currently support close to 100 government schools. Most of these are remote rural schools and all of these are primary and middle schools.

We typically do the following work at the schools we support,

1. Provide a regular teacher where the teacher student ratio warrants it.
2. Provide a computer teacher. Depending on the size of the school we typically provide a teacher for 1 or more days a week to work at these schools teaching digital literacy and programming as well as teach Maths, English and other subjects using innovative contents on the computer.
3. Setup where possible and maintain computer labs at these schools.
4. Train our teachers to improve their skills as well as use the best pedagogical practices in their classrooms.
5. Provide contents that are aligned to the lessons in the curriculum to improve the education. We would provide contents suitable for primary schools with particular emphasis in English and Maths.
6. Develop a curriculum for teaching computer science that teaches both computer literacy and programming to children in classes 1 to 8 with an emphasis on project work.
7. Support the schools in conducting annual day functions and other functions which make the learning a rich and enjoyable experience.
8. Provide laptops for our teachers. Train the teachers on using the laptops.
9. Provide Internet enabled Wifi hotspots to the teachers along with data plans so that they can all use the Internet. Provide Wifi dongles for the computers in the schools so that they can also access the Internet
10. Conduct annual oral and written assessments to benchmark the schools and identify potential areas of improvement.

Technology and Education in Tamilnadu Govt Schools

While there were a couple of false starts in the past with CAL (Computer Aided Learning) centers, there is a concerted push currently in Tamilnadu (and all over India) to enhance learning through technology. However there still are problems in their approach.

The Government of Tamilnadu has started to deliver software for all the lessons through Diksha to the Government Schools. There are QR codes embedded within the lessons in the textbook. When these QR codes are scanned with a mobile phone, it takes them to relevant contents on the Diksha website.

There are ways to access the same through laptops and smartphone devices as well by visiting the Diksha website. This solution that Diksha provides is a walled garden where the navigation of the material is directed and the selection of material is limited.

The emphasis of the content provided currently under the Diksha platform is passive contents like videos and presentations. In other ways too, the government emphasises passive contents. The main spending on infrastructure at the schools these days seem to be in “smart classes”. When you have a single screen for a big class, the way you use it tends to be passive. Research has found passive learning by watching videos is not very effective in furthering education. There are many active contents available like PhET, NLVM, Azim Premji Foundations activities, TuxMath, GCompris, Geogebra, etc. which provide excellent ways for students to learn.

Further Diksha is hosted on a web server. Network availability is often an issue at remote rural schools. While it is always possible for a teacher to download the content ahead of time, this rarely happens in practice. Another key problem at government schools, especially remote rural schools is the maintenance of the infrastructure. HMs of these remote schools struggle to maintain the PCs given to them. Getting maintenance engineers to service these is very difficult. And given the dusty, humid environment they are used in, they develop problems often.

Asha Kanini Solution

Technology in education has become pervasive across the world. The lack of resources in India threaten to diminish our ability to stay current with the changing education ecosystem. At Asha Chennai, we have developed Asha Kanini, a software package that facilitates teaching using the best available content around the world to teach specific concepts to children. There is an abundance of high quality free content available from organizations like Khan Academy, University of Utah, University of Colorado, Azim Premji Foundation and others. PhET is an example of the high quality of the content developed by Nobel Laureate Carl Wieman included in Asha Kanini.

There is no need to deprive students of such quality software when it is available for free. Our Asha Kanini App also works with the QR codes in the textbook and when the QR codes are scanned from within our App, we show them the Diksha contents as well as other contents. We also hope to give the other contents we have collated to the government so that they can also show these contents when the teachers land on the Diksha website through the QR codes. Asha Kanini provides most of the contents including the contents provided through the Diksha platform.

These contents are downloaded and locally available in the language of choice. This enables the teacher to use contents of their choice at their school without being constrained by network availability. As a part of this project we also will assist the schools in maintaining the computers that they have and also help them use the contents at their schools. Current State of the Project Asha Kanini software and packaged contents are available for all schools to use. The software can be downloaded and installed from our server.

The software is also distributed in the form of a DVD. Asha Kanini is already being used at about 100 schools that are currently supported by Asha. The contents are being remapped to the new textbooks in Tamilnadu as the new textbooks are being released. Further we are also developing Kanini lesson plans that explain how the digital contents available through Asha Kanini can be used when teaching various lessons.

Asha Kanini has packaged these contents and made it easy for teachers to identify specific passive content like videos for conceptual clarity, active content like games for practice and mastery over a concept and simulations for practical applications.

Asha Kanini Features and Contents

Please refer to the appendices for information on the features of the Asha Kanini software package and the contents included in it.

Appendix I - Contents included in Asha Kanini is listed.

Appendix II - Current Features of Asha Kanini.

Appendix III - List of features we intend to incorporate in Version 2 of Asha Kanini.

Asha Kanini Version 2 - Proposal

Asha Kanini now works on the Windows platform and we would like to port our software to the Android platform since Android devices are more ubiquitous in rural India and their costs are just a fraction of Windows devices.

Development of Asha Kanini v2

Asha Kanini 2nd Generation includes the following activities:

1. Software development to port the existing codebase to the Android platform.
2. Data Capture and Analysis of Content Usage and the correlation between several factors that affect learning including poverty, malnutrition, parental education, student-teacher ratio and others.
3. Continue to enhance our content offering with specific focus on the Android platform. Towards this end, also provide lesson plans for all subjects-lessons for classes 1 to 8 to make best use of digital resources.

Asha Kanini Training

As indicated in the sections above, we believe there will be significant value in making Asha Kanini available for all the primary and middle schools in Tamilnadu. Future versions of the software and contents will also be suitable for high and higher secondary schools. They will be able to use the Diksha contents more easily and also use more effective games and simulations for education.

Just providing information about the availability of Asha Kanini will not be sufficient to get the teachers to use it and use it effectively. Teachers will need to be trained to use the software and also about the various contents that are available for them. The training will focus on the following areas.

1. Installation of Asha Kanini and registering the teachers.
2. How to browse and access contents available with Asha Kanini.
3. Passive contents, Active contents, Teacher instruction materials, and Classroom activities. The different types of contents available and how these can be effectively used in a classroom.
4. Accessing our support and other tools available for them through our server.

Asha Chennai has a significant presence in Thiruvallur district (supporting 65 schools spread across 4 blocks). The plan is to pilot the training programme in Thiruvallur district in 2021. The pilot will also help us validate the program with metrics. The nature of use of technology in education can be studied based on the data collected by the Asha Kanini app. This will help us define the fully deployed project for the subsequent years. We hope this will be taken up by the government education department itself based on the success of the pilot.

Schools are grouped in clusters with a single cluster having about 20 schools. It would be best to conduct the training at a cluster level. We expect to conduct two training sessions at each cluster to cover most of the teachers in the schools. Once the training sessions are conducted it would be good to have our trainers visit the schools in the cluster after a period of 1 or 2 months. This will further take about 3 days to cover a cluster. Thus it will take one week of work by a pair of trainers to cover a cluster.

There are 131 clusters in Thiruvallur district. There are a total of 4021 clusters in all of Tamilnadu. In 2021-22 we will ramp up gradually to cover the clusters in Thiruvallur. We will run the full pilot covering Thiruvallur. We have computed the number of trainers required based on the number of clusters with the assumption that the trainers can work for 40 weeks in a year. The other 12 weeks will be utilised in training for the trainers and also some additional content related work.

Impact

1. Empower government teachers to use computers effectively to teach primary and middle school children.
2. Create a radical change in the way that children learn in Tamilnadu by shifting focus from grades to learning through the use of good quality contents.
3. Create a scalable model that can be used all across Tamilnadu for the effective use of technology to improve education at the primary and middle school level.
4. A majority of the children in Government schools will have access to the best available teaching techniques and software irrespective of whether they live in a city or in a remote rural village.

Metrics

1. Percentage of the schools that have taken the training that use Asha Kanini and its contents. We expect 75% of the schools trained to use the Asha Kanini app.
2. Percentage of the schools that continue using the contents on a “regular” basis. We expect 50% to use the Asha Kanini and its contents actively. We will continue working with the remaining 50% of the schools.
3. Usage patterns: Which contents are being used and how often? How is the app being used (search, by QR codes, search by tag, access contents through the lesson plan etc.)? These can provide valuable feedback for the further development of the Asha Kanini app as well as the contents provided by the government to the schools.

2021-22 Asha Kanini Budget

S No	Description	Number	Cost per month/ per person	Yearly Budget	Notes
1	Asha Kanini Developers (loaded cost)	2	35,000	8,40,000	Port Code to Android
2	Asha Kanini Data Analyst (loaded cost)	1	35,000	4,20,000	Analyze data about students and content
3	Lead teachers - Train, manage, map content and oversee other teachers (loaded cost)	2	17,500	4,20,000	Identify additional content, train other teachers and monitor progress and identify improvements needed
4	Lead Trainer and Project Coordinator (loaded cost)	1	32,000	3,84,000	Needs transportation
5	Trainers (loaded cost)	8	20,000	19,20,000	Trainers to be hired and trained
6	Hardware Engineer & Network administrator for managing the network and devices (loaded cost)	1	35,000	4,20,000	Manage all hardware including android devices, network devices and windows devices
7	Repair costs for devices	2500		1,00,000	Most devices will just work, so average
8	New Devices and Data plan for all devices		0	0	New devices for schools may be useful and even in some cases required. But these have not been included here.
9	DVD, brochure, writing pad, etc. to be distributed during training at each cluster.	40 clusters	Rs 2500 per cluster	100,000	Material for conducting training sessions
10	Teachers training expenses -- travel, conveyance and food during trips to Chennai and conveyance and refreshments/food during teacher meetings Rs 300 per person per month.	13	300	47,000 (rounded to 1000)	Basic computer/English training, participating in regular staff meetings, routine Asha teacher training etc.
11	Miscellaneous (Emergencies/Services)			30000	Rounded number.
	TOTAL			**46,81,000**	

Note that loaded cost includes salary, conveyance, sets of clothes as required, rent if required, yearly bonus etc.

Appendix I - Asha Kanini Packages

Package	Description
Agenda Web	This website is a directory for teaching English and refers to multiple other sites. It has its own simple worksheet like games as well.
Asha Impressions	Presentations made by various school children for the lessons in the textbooks as part of the Asha Impressions competition.
Azim Premji Foundation	Games etc. from Azim Premji Foundation. We do not have everything yet. It may grow by another 50%.
Basic-Mathematics.com	Online Maths games.
Boowa and Kwala Baby games (http://boowakwala.uptoten.com)	Site contains several games suitable for young children that are based on the characters Boowa and Kwala.
Clock	A small application just to teach analog clocks for children.
Cool Math for Kids	The site has good games, manipulatives, brain teasers etc.
Count Us In	A set of simple math games downloaded from ABC Australia.Can be played on the system.
DPE Phonics	Lessons on phonics by state education dept. Relates to the cards that some of the schools have.
E-Speak	Videos on English. Just 4 VCDs.
Easy Teaching	This has very good worksheets and classroom games that we can laminate and distribute to schools. Other contents are not that relevant for us.
Ectal V6	Presentations developed by Lakshmi and her teachers at Olcott Memorial school aligned to TN state board curriculum of 2005-06.
Educative 8	This is a standalone application that provides several educational games.
English Club (www.englishclub.com)	A website with a nice set of games in English.
ESL Games Plus	The site has many games for teaching English, Maths etc. The games are very basic and essentially give a worksheets in the form of a game. But the contents are suitable for the level of our schools and children.
Fun with English	Just 2 lessons in English. Not yet mapped.
FunBrain	A website with nice collection of English and Maths games.

Games to Learn English	Very good games to teach simple English grammar.
Gcompris	A collection of 150 games on Maths and English suitable for primary school children. This is downloaded and installed and thus can be played offline. Note the space required for this is in the system directories and not in our Kanini directory.
Geogebra	This is Maths visualisation tool to visualise all aspects of Maths learning. It also provides a rich programming environment. Many people have developed programs to visualise various topics in Maths.
Hello English	20 lessons in English developed by RIE-SI.
Helpful Games	This has several games for both English and Maths that will help with teaching these subjects.
ICT Games (www.ictgames.com)	A website with a good collection of Literacy and Numeracy games.
JFractionLab	This is a small java based tool just for teaching fractions. It can be used for teaching fractions to children in class 5 and above. It provides several practice sums with visualisation.
Kanini Lesson Plans	For each lesson in our TN textbooks, experienced teachers have put together a list of digital contents that can be used to teach the lesson. This also becomes a single page from which the most relevant content for teaching a lesson can be easily accessed. These are being developed currently for Maths, English and Science.
Khan Academy Tamil	Tamil translation of the video from Khan academy that pertains to primary schools. Need to be checked and updated.
Learn English Kids by British Council	A good set of games by British Council. It has other contents as well.
Manga High (www.mangahigh.com)	Manga High provides good quality animated games to explain Maths concepts. It also has some multiple choice question worksheets.
Math Games (www.maths-games.org)	A collection of online games from maths-games.org. This also provides links to games from other sites.
Math Pickle	Great set of offline games downloaded from www.mathpickle.com.
www.mathgames.com	Site offers lots of different contents on Maths including games and MCQ questions associated with grade / skills.

Math Game Time	The site has many nice games for teaching Maths. Some of the games were a little difficult to understand how to play.
Math is Fun	The website has some very good games as well as worksheets and visualisations tools.
Math Learning Center	This is a free site run by teachers and supported by NSF in the US. They have good lesson plans and worksheets. They also sell these along with the manipulatives required to schools. But even without that their lesson plans are very good. The worksheets that go with it are well designed to teach a concept rather than just provide practice. They also have good manipulatives which may be downloadable.
Math Playground	Math Playground website has a lot of good games for Maths. The videos are difficult to understand because of the English. The word problems are nicely brought to number problem using blocks.
Maths Instructions	Instructions for all lessons from Mrs. Meena Suresh. Tamil instructions for Term II and Term III lessons are still required.
National Geographic Kids	The site by National Geographic has a good set of contents related to science and social science. The games are good, and so are the quizzes. However the level and topics may not be appropriate for our curriculum.
NLVM	A great set of virtual manipulatives for Maths.
One Stop English	A set of English games downloaded and can be played offline. Other contents of the site www.onestopenglish.com have not been mapped.
Owlieboo	It has games similar to GCompris. I guess as a variation, we can use these too. Once our curriculum is ready these can also be mapped without referring to in the lesson plan.
PBS Learning Media	This is a large collection of videos, puzzles and other contents by PBS and its sister organisations. It has several good quality interactive contents as well. The quality of the contents is good.
PhET	An excellent collection of games and simulations for Science and Maths. Unfortunately more suited for middle and high schools. Note the space required for this is in the system directories and not in our Kanini directory.
PSchool.in	This site is intended for a mobile device. It has several exercises suitable for our Indian style of education. The good thing is that it also has contents for Tamil.
Ramanujan Museum	A collection of games and worksheets for the teachers to use in their classroom provided by Ramanujan Museum.
Schoolhouse Bingo	This is a commercial software for generating good educational Bingo games. The package here contains only the generated games and not the software.
Simply English	A good set of audio lessons for children. However the accompanying book for conducting activities is missing.

Smarty Games	A nice set of games to teach Maths and English. This also has audio visual books, flash cards etc.
Soft Schools	Several games related to all subjects and also worksheets and general pages with interesting information etc.
Starfall	The website has a good collection of animated videos for beginning learners on phonics etc. Most of these were available as youtube videos which are shared here. Some extra content is also available only on the website.
Story Weaver	These are softcopies of books including animated and bilingual books from Pratham's Story Weaver platform. These can be used as general English resource by the teachers
Switch Zoo	Unlike other contents that we have. May be useful when teaching about animals, environment etc.
Tamil Academy	A set of lessons mostly in the form of Powerpoint slideshows from tamilacademy.com and noolagam.com mostly for teaching Tam
Tamilnadu Textbook Poems	This is a DVD created by Tamilnadu Government. It contains song adaptations of many of the poems found in the Tamil textbook. The quality of the content is very good.
TN text books	PDF versions of the Tamilnadu Samacheer Kalvi textbooks.
Toon Masti	A collection of animated lessons in English and Hindi developed by Ernst & Young foundation. This is originally mapped to the NCERT syllabus. Many of these can also be mapped to the TN syllabus.
Top Marks (www.top-marks.co.uk)	Lots of good Maths and English games.
Turtle Diary	This website has games, videos (in American English), worksheets etc. The quality of these is also good.
TuxMath	A set of arcade based Maths games from the creators of Tuxpaint. This is also downloaded and installed and can be played offline. Note the space required for this is in the system directories and not in our Kanini directory.
TuxTyping	This is a set of games for teaching children English and typing words on the computer. Note the space required for this is in the system directories and not in our Kanini directory.
Unite for Literacy	AV books like StoryWeaver. May be nice to have in our book shelf.
Youtube Videos	Rhymes and stories downloaded from youtube that are suitable for being played to the children when they have no other activities or in some cases aligned to their lessons. This also contains lessons in the form of videos from several Youtube channels like Kids learning tube, Watch free kids etc.

Appendix II - Current Features of Asha Kanini

Feature	Description
Easy Installation	Asha Kanini software, the contents and the required third party software can be easily installed using a network or DVD based installer. The network installer is only 50 MB. Further download of the contents is under 1 GB.
Registration	Teachers select the school they will be using the software from and we validate their identity using their email ID or their phone number. Non-teachers can register without selecting their school name.
Support for Contents	Handles all content types required by the contents in these packages. Required third party packages for viewing the contents are also installed along with Asha Kanini. Lesson plans are special contents which provide access to the other contents in Asha Kanini. These are also supported.
Easy Search and Access	Allows for searching the contents by class, term, lesson, subject and package name. These criteria can be used in any combination. Also allows for searching the contents for a lesson by scanning the QR codes from the textbook or by typing the Diksha code embedded in the QR code. You can also directly reach the content by searching for it using tags.
Network Independence	Network is required only during initial registration and for the first download of content that is not available locally. Shows contents that require network greyed out if network is not available. Operation with local contents will not be disrupted in any way by network unavailability.
Language Independence	Support for Unicode titles, file names, descriptions etc. The content can appear in any language on our Asha App UI. The button and menus in the UI itself are for now only in English.
Usage Monitoring	Every time a user starts the app, searches for a content, opens or closes a contents, a usage record is stored in the server. This is combined with a sophisticated UI for accessing the usage data and glean important information from the same. Access control supports limiting the information that can be viewed by various people.
Content Download	The software can be installed with just the configuration files. When users access a content that is not available, the content is downloaded and maintained in the client. Further use of the content will not require the network. Downloads can paused and resumed. Downloads can also be resumed after a network error.
Package Update	The system will detect a new version of the software, contents or mapping information and prompt the user to update these. Like content download these can also be paused and resumed.
Practical and pleasing view of contents	Supported for multiple views of contents as a list, a Thumbnail or card with details. Sorting and filtering options are provided for all these options. Users can like/not like contents. When viewing contents users can sort the list of contents based on the popularity of the contents (views or likes).

Support for multiple Curriculum	Currently Asha Kanini supports Tamilnadu and UP curriculum. It also supports English and Tamil medium for Tamilnadu and English and Hindi mediums for UP. It can easily be extended to support additional curriculum. Note auto-update feature will track which curriculum you are using and update just the contents for that curriculum.
Library View	For individual children we have an alternate view that shows just the contents like books, videos, games, worksheets etc. that can be used by individual children. Filters can be set by age or kind of contents.
Settings	Users can customise the behaviour of the app through settings which can set default behaviour (say on scanning a QR code), and control the way the contents appear to them.

Appendix III - Upcoming Features of Asha Kanini

Feature	Description
Android Version	Software development to port the existing codebase to the Android platform.
Data Analysis	Data capture and analysis of content usage with basic visualisation is already done. This needs to be enhanced. Similarly basic analysis and visualisation of assessment data is also done. This also needs to be enhanced along with correlation between students' performance and social factors that affect learning including poverty, malnutrition, parental education, student-teacher ratio and others.
Caching	This will allow us to place a limit on the size of the contents on the local device. When downloading a new content, the oldest accessed content will automatically be removed.
Assessments / Worksheets	Assessments and worksheets can be done by children right from the computer and their results will be tracked. This can be done in a network independent manner.