

HOW CAN AGEM WORK WITH GOVT. TO IMPROVE K6-12 EDUCATION

A SCALABLE AND AFFORDABLE APPROACH FOR GOVERNMENT SCHOOLS

Explanatory
Note

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July 7, 2014

1 WHAT DOES AGEM WANT?

2 WHAT IS THE NEED FOR CHANGE?

3 WHY YOU SHOULD SUPPORT AGEM

4 SUMMARY

OUTLINE

- ① WHAT DOES AGEM WANT?
- ② WHAT IS THE NEED FOR CHANGE?
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GENERALLY SPEAKING

Explanatory
Note

LONG TERM OBJECTIVES

- to make government schools the preferred schools in Karnataka for 80% of the population
- to raise the 2018 PISA results for Karnataka by at least twenty ranks for participating Govt. schools compared to India's 2009 results 2009 PISA
- to increase the overall average and decrease the range of performance in all participating schools Animation

SPECIFICS - A PILOT PROJECT FOR THE FIRST PHASE

SALIENT ELEMENTS

SHORT TERM STRATEGY: commence with 100 students to form a single class.

GRADES : This class will comprise a random subset of Grades 6,7 and 8.

PERFORMANCE: Pre-tests and Post-tests in English and Mathematics along with results of term examinations prior to, and after, the project.

DURATION: 100 hours of instruction over 20 weeks or less delivered free by AGEM.

EVALUATION: Govt. conducts independent pre and post testing.

HOW DO WE PROCEED - FUTURE PHASES?

SALIENT ELEMENTS

- Extend the course to 10 schools in Bangalore with Education Department funding.
- Evaluate for 1 year and increase hours to 10 per week to include sciences and Grades 9-12
- If performance in these ten schools is satisfactory compared to remaining schools, the system can be extended to all Bangalore Govt. Schools which are English medium
- Satisfactory performance can lead to a consideration for extending the system to all Karnataka schools including Kannada medium schools.

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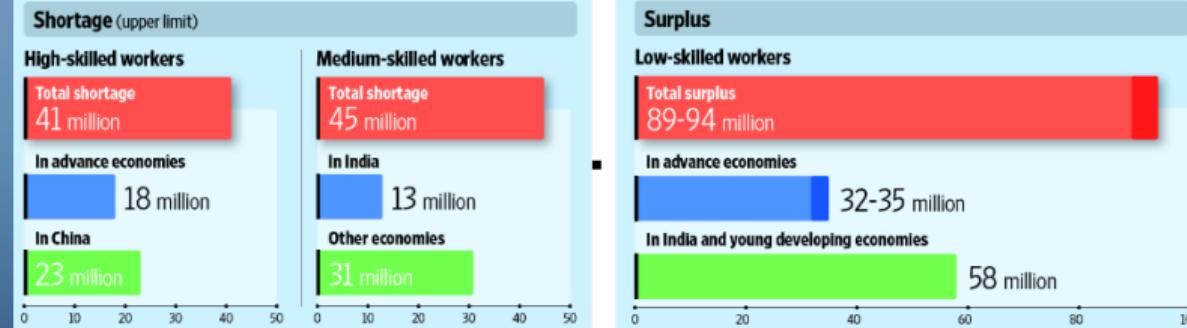
4 SUMMARY

THE MISMATCH - HIGH END AND LOW END SKILLS

GROWING MISMATCH

If the current trend in the labour market continues, then the world is likely to have too few high-skilled workers and not enough jobs for low-skilled workers.

Gap between demand and supply of workers by education attainment (by 2022)



Source:

<http://www.livemint.com/Politics/v2iTlh85LIREkkco31aAhK/Indians-can-dominate-workforce-of-future-but-may-lack-the-s.html>

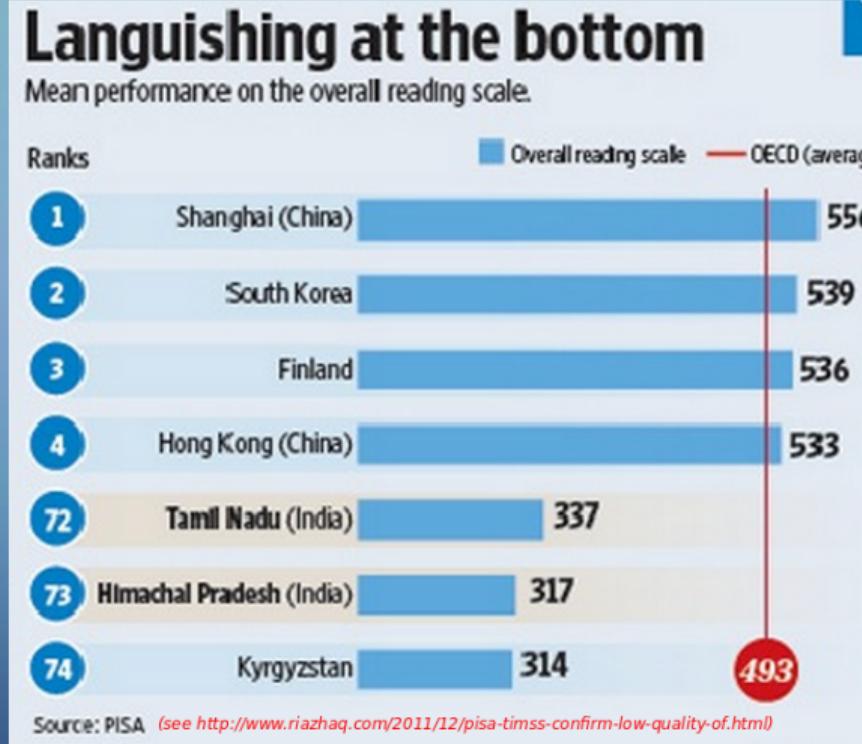
THE DEMOGRAPHIC DIVIDEND - OR DISASTER

India currently has a pool of some 469 million workers and is adding at least **12 million new workers every year** to the labour pool, according to official data.

Source:

<http://www.livemint.com/Politics/v2iTlh85LIREkkco31aAhK/Indians-can-dominate-workforce-of-future-but-may-lack-the-s.html>

OVERTURN THE SHAME OF PISA 2009



SOME OTHER GOOD REASONS

Explanatory Note



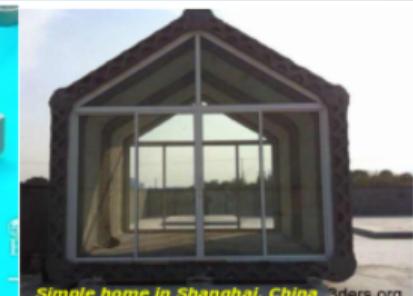
Sugar Candy

<http://www.vic.gov.au/budget2009/www/2009-2010/budget.html>



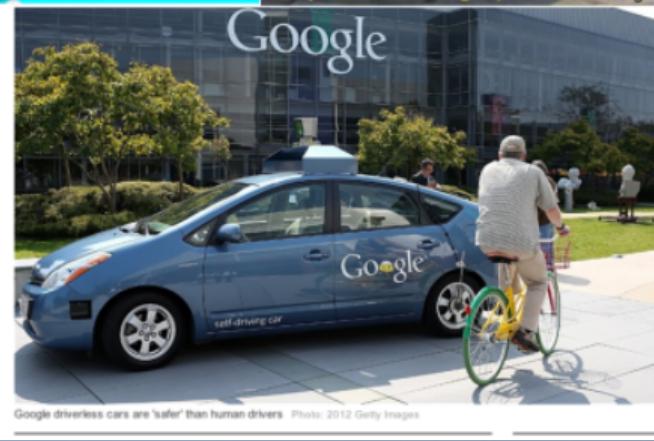
Jet Engine Part

<https://www.youtube.com/watch?v=ITRT3PInR>



Simple home in Shanghai, China 3ders.org

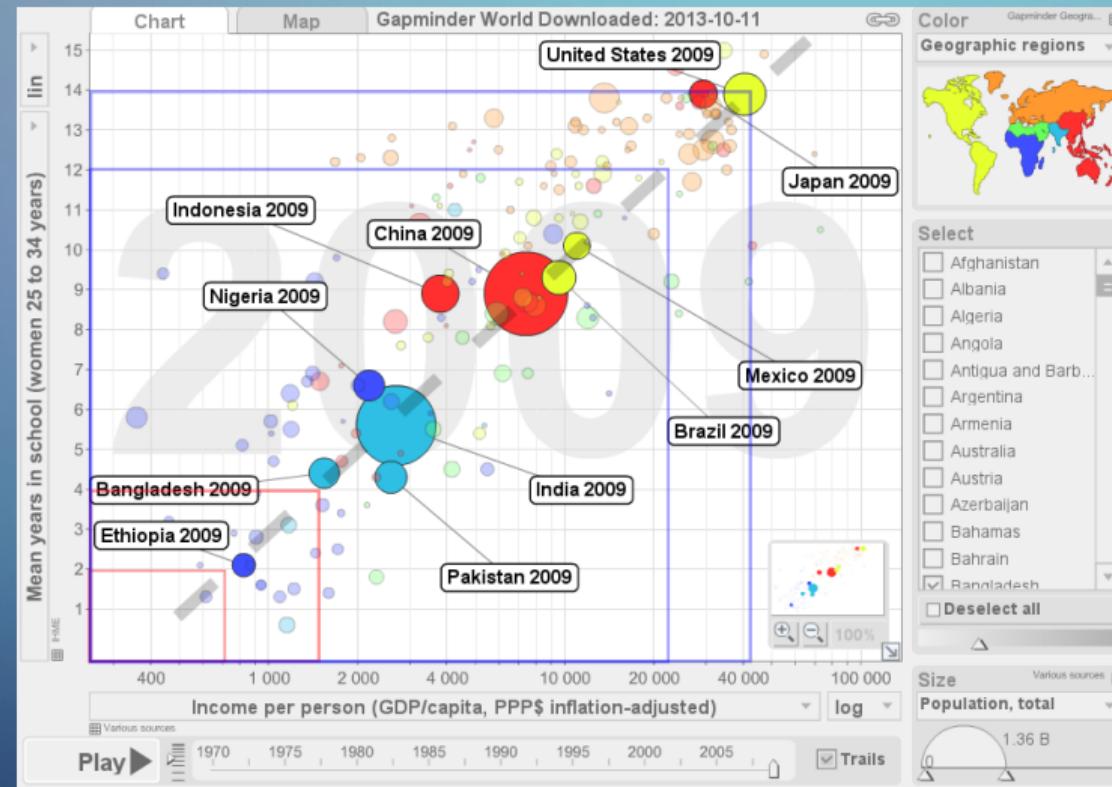
A word cloud centered around the acronym MOOC, with words like course, students, university, online, open, and learning prominently displayed. Other visible words include: evolved, interaction, large, National, also, free, educational exams, launched, approaches, resources, institutions, Downes, emerged, leveraging, Coursera, scale, feedback, initiative, College, Crowd-sourced, content, rely, port, Stanford, Connectivism, designed, development, education, universities, college, management, school, used, first, edX, design, large-scale, projects, massive, public, term, Andrej, enrolments, offer number, faculty, structure, credit, learners, access, network, two, participants, general, Research.



Google driverless cars are 'safer' than human drivers Photo: 2012 Getty Images

- AND ANOTHER VERY GOOD REASON

Explanatory Note

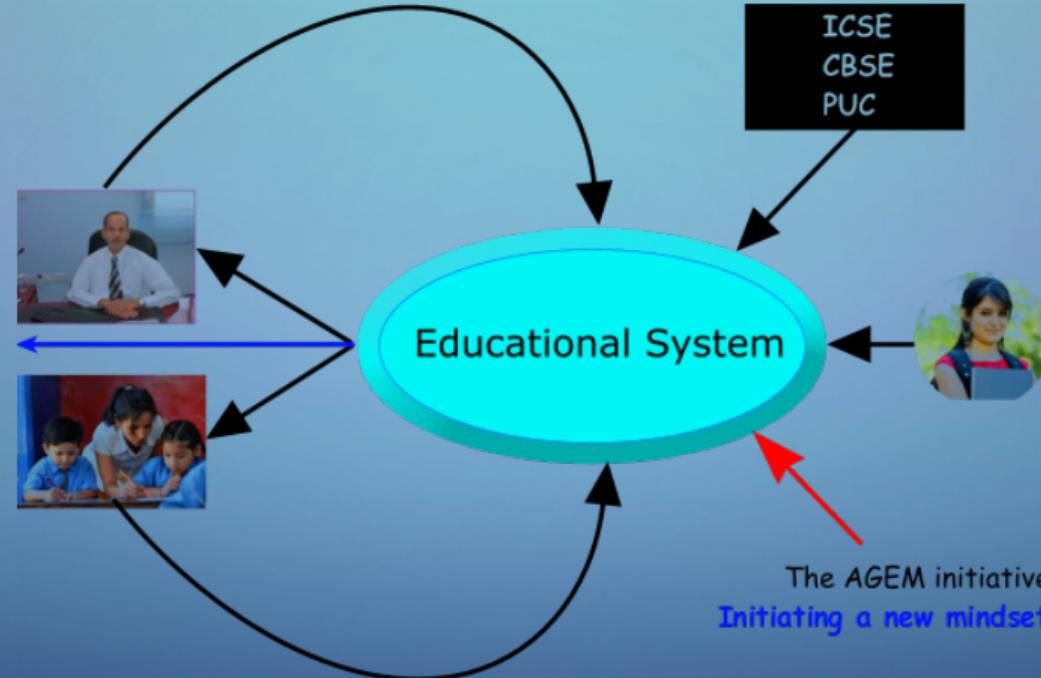


The IPP scale is logarithmic. This means that for a 2 year increase - from 2 to 4 mean years in school - IPP increases by about \$800 (Red lines). However, a 2 year increase from 12 to 14 years of schooling increases IPP from about \$20,000 to about \$40,000 - difference of about \$20,000 (Blue lines). There are other factors that impact IPP but the education of women is important.

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AGEM MAY BE THE ONLY VIABLE SOLUTION



OUR SOLUTION IS BASED ON EXPERIENCE IN THE FIELD

EXPERIENCE

- ① 25 years experience in polytechnic and university education
- ② Set up two schools - Vidyashilp Academy and Trio World School
- ③ Audited international schools in India for 3 years for CIE
- ④ Worked with Plan India, Plan International, Plan Vietnam, Foreign and Commonwealth Office, Singapore Polytechnic and Janaagraha for education projects in 8 states of India, Vietnam, Singapore and Maldives in last 15 years.

SOME PICTURES OF OUR WORK

Explanatory Note

The deployment of AGEM technology (1999-2008)



To the left we see the first generation technology deployed in a school in Bangalore in 1999. This used infra-red transmission,

To the immediate right is a child being introduced to the manner in which the feedback devices are to be used



To the left are students using the 2nd gen technology - RF txrx



To the right is an illustration of the 3rd gen equipment. This used wired USB keyboards to provide the parallel input we needed.

Deployment of AGEM technology (4th Gen, 2010)



To the left is one instance of a small number of the remedial class at Maria Niketan answering a question on a day when the class was only conducted as the few children present requested it. 4th Gen technology used RF txrx with full keyboards



To the right is a normal class being conducted at Maria Niketan in Bangalore



To the right is AGEM technology being used with an MBA Class at the VELS college in Chennai in a class on Decision Making.



A CLASS IN DANDELLI - KEY TO HOPE IS K6-12



These are children from 3 aided schools in Danddelli on 02 Sept., 2013. This session began at 09:15 and ended about 15:00. The children had some short breaks for going to the toilet and were served tea and biscuits at the desk instead of lunch. The persistence and motivation of children like these is our inspiration.

THE AGEM METHOD

CHARACTERISTICS

- Carefully prepared topic plans projected on a screen/wall.
- Topic plans contain embedded questions answered in parallel by all students
- Projected graphics showing analysis of student responses after each question
- Medium and long term analysis of responses to improve delivery and measure performance of each student
- Constant revision of materials, methods of delivery, topic plan structures to optimise student performance



THE AGEM ADVANTAGE

PRINCIPAL FEATURES

- Methods can be scaled to hundreds of schools
- Existing system remains unchanged but provides 1 hr/day for AGEM learning
- Cost effective
- Impacts subjects taught - as well as general achievement
- No student indiscipline observed over many years
- Large classes are an advantage, and very small classes are not tenable.
 - Feedback
 - 65 Students

AGEM OUTCOMES - PROFILE

AGEM system performance - resource challenged classrooms

The Maria Niketan pilot study

THE STUDY PROFILE - MARIA NIKETAN SCHOOL

PROFILE OF THE STUDENT GROUP

COMPOSITION: 13 boys and 9 girls

TEACHER ESTIMATE OF STUDENT ABILITY IN MATHS ON 1 TO 5 SCALE

- Level 2: 7 students
- Level 3: 9 students
- Level 4: 5 students
- Level 5: 1 student

AVERAGE AGE

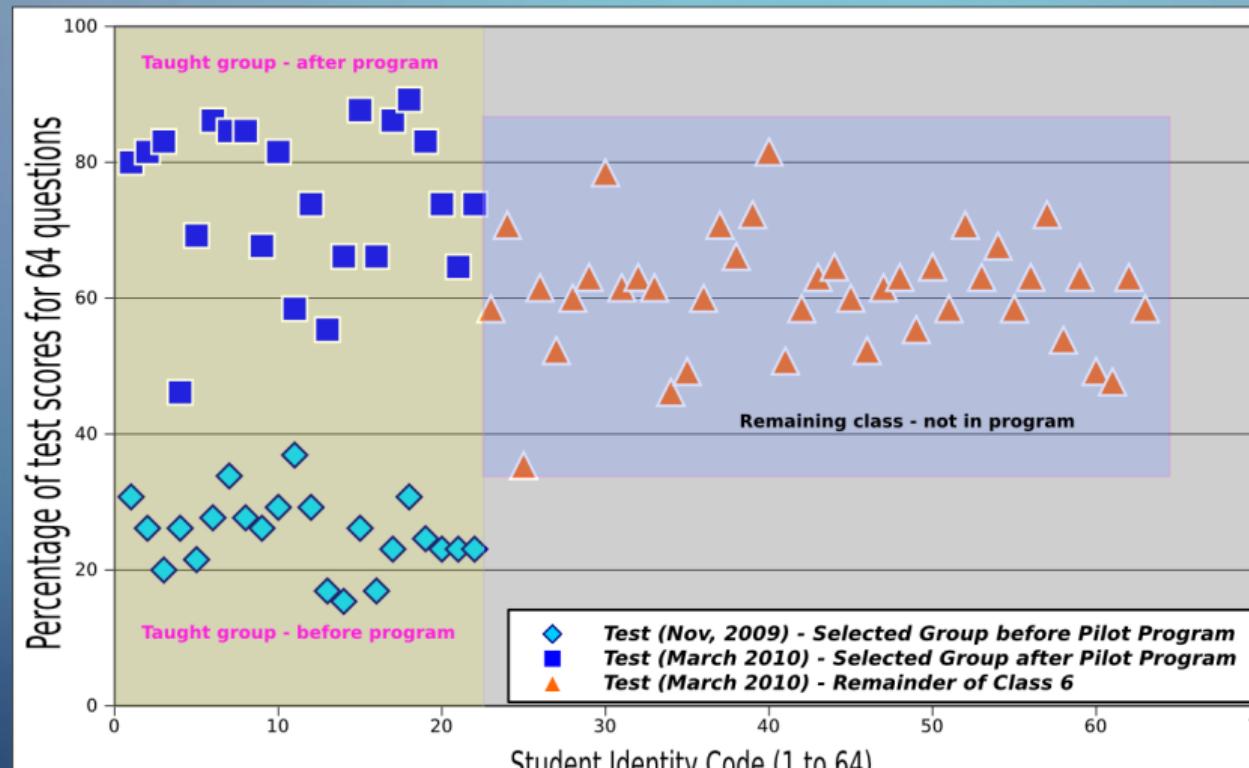
11.8 years on 1 January 2010

THE TIME DISTRIBUTION

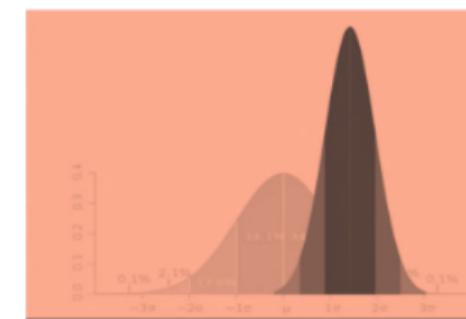
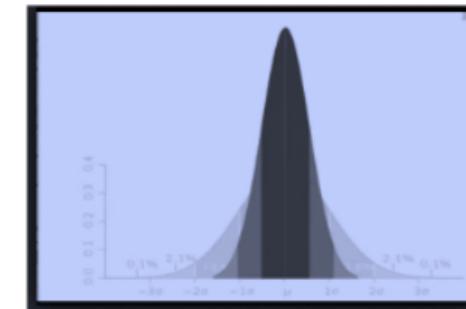
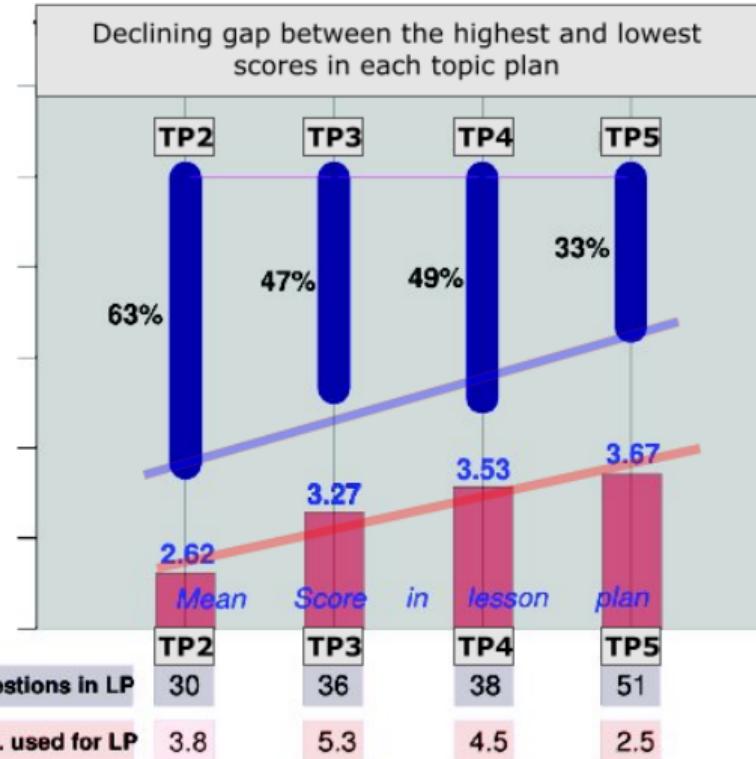
| Time in hours | Topic |
|---------------|----------------------------------|
| 3.75 | Pre-test with experimental group |
| 18.75 | Topic Plans 1 to 5 |
| 11.25 | Other activities |
| 2.1 | Post test for full group |
| 35.85 | Total Program |

PERFORMANCE - EXPERIMENTAL AND CONTROL GROUPS

Comparison of Test Scores in Nov 2009 and March 2010



DECREASING THE GAP AND IMPROVING PERFORMANCE



TERM EXAMS - CONDUCTED BY SCHOOL

The Maria Niketan pilot study

TERM EXAMS - DIRECT AND PERIPHERAL IMPACT

BASED ON EXAMS CONDUCTED BY SCHOOL INDEPENDENTLY

Scores of children who improved : Term 2 - Term 1

| Group Assessed - on basis of school conducted end of term examinations | No. Of Students | DIRECT EFFECT | | SPILLOVER EFFECT | |
|--|-----------------|----------------|---------|------------------|--|
| | | Taught by AGEM | | Taught by School | |
| | | Maths | Science | English | |
| Experimental Group - Average % change | 22 | 7.5% | 13.8% | 9.9% | |
| Control Group - Average % change | 53 | 2.7% | 10.3% | 9.4% | |
| % of Experimental Group that Improved | 22 | 77% | 81% | 77% | |
| % of Control Group that Improved | 53 | 51% | 70% | 64% | |

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WHAT DO WE WANT TO ACHIEVE?

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DESIRED OUTCOMES OF OUR EDUCATION SYSTEM

Every graduate should be able to achieve one of the following:

- enter higher education whether at University or at a technical training institution
- get a job
- create a job i.e. become an entrepreneur

HOW DO WE PROCEED - A PILOT PROJECT FOR THE FIRST PHASE?

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- If performance in these ten schools is satisfactory compared to remaining schools, the system can be extended to all Bangalore Govt. Schools which are English medium
- Satisfactory performance can lead to a consideration for extending the system to all Karnataka schools including Kannada medium schools.

THANK YOU

THANK YOU FOR YOUR TIME

We merely need from you:

- 100 students in Grades 6,7 and 8 for 5 hours a week for 100 sessions over 20 weeks in an appropriate English Medium Govt. school for a demonstration of what we can achieve together.
- Preferred school: Dollars Colony Opp. Pebble Bay Apartments