

Aura Auro Design – learn, grow, work, teach

A technology unit that enables skilled youth to learn a living and teach at schools.

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(in collaboration with Chandresh Patel)

The context

My inner capacities are happiness and self-awareness. I wanted to share this with children and this motivated me to balance my work with working with children in and around Auroville. My hope of sharing my time is to give them a chance to develop both their mental capacities and their inner growth. Through my work in Math, Electronics, Programming I have worked with children to reignite the desire to learn, to abstract, work on mental silence and improve their meta-cognition (ability to be able to distinguish between what you know and what you need to learn).

I have frequently created unfamiliar complex problems that takes them away from the simplistic sums and into a realm of creativity, logical thinking and patient problem solving. This is demonstrated by the proficiency of 7th graders to use algebra to solve puzzles, their ability to create programs that animate stories they wrote, mathematical games reiterating concepts they learnt or in building something physically (oscillators, counters, wind chimes, speedometers, bigshot cameras).

Presently the most skilled people in our society are not involved actively in education. The situation is even more stark in the village schools in India and most skilled local people migrate to the cities. The goal of schools across the country continues to be oriented towards clerical jobs and each stage in the educational ladder only helps in getting to the next one. This makes the focus of learning as simple procedural learning or rote learning requiring no application in the fundamental grades (5th to 8th). The only motivation that teachers provide is examinations that only test these aspects. Another result of short duration examinations is that they do not assess the ability to plan, research, analyze, meta-cognition, patient problem solving and ability to work in groups; all essential qualities that need to be developed in children. The age where children can develop their ability to handle complexity is replaced by replication and simplistic procedural thinking.

The youth getting out of such an this education system have low employability. The youth that do get employed are afraid of competition and buckle up and make a living and are not in any position to question the education system. Businesses lament that finding 'good people' is difficult, but little is done to fix the problem at the root - in the delivery of education at the primary and middle school level.

A Solution Proposed

For education

Aura Auro creates an opportunity to meet the need of skilled people in schools with local youth who have graduated from electrical engineering. It aims to provide them training, a good source of employment and a chance to make an impact in their community before they start believing they can't change the world. It builds community, creates role models for children and provides youth good

mentoring.

As the trainees get trained the program will focus on creating suitable modules including projects in hardware, software, puzzles, games and activities with materials at middle school level that can help children apply what they learn. Often the children will need to create something that takes patience, perseverance and application which can provide an alternative to examinations as a method of assessment. The focus will be on Auroville outreach schools that aim towards integral education and the spirit of true learning while representing the reality of schools all over the country.

The aim would be to create model schools in 2-3 yrs where much of the curricular content in math and science is sufficiently covered through modules of games, puzzles, projects that children can build or through programming. Once these modules have been applied a few times we will try to create a kit for each module that a teacher can learn and adapt for his/her class. We will first work with interested teachers at the school and as they take initiative look to deploy such kits to teachers around Auroville e.g. the government teachers network of the Vannur where some of such work was presented was very well received, but no kit or module was available to train the teachers to use these. In time, if our work is effective, given that Auroville is a project of the HRD, it will get showcased to government officials and offer possible solutions to the current educational scenario.

For a model of business

The model of business will be one that is healthy for its employees and helps them connect with community as part of what they do everyday. Most businesses understand that the work employees is disconnected with their community and engage in CSR activity. Aura Auro will act as a model for business to understand how to meaningfully engage with schools with a curricula that can be replicated by other businesses, including Aura Semiconductor Pvt. Ltd. (the company supporting the initiative).

Adults are able to invest in their education only when it is of immediate need or it has a clearly guaranteed return. Unending education and keeping aside time to learn something new has helped me stay energized and relevant. I have also found that the most valuable employees are those who have a breath of knowledge and are multi-skilled. Aura Auro will work on keeping time aside for growth, learning and teaching and create an environment where employees are constantly looking to learn new things.

Aura Auro will be a technology unit that works 5-1/2 hrs a day earning a living and spends 3 hours learning and teaching at Auroville. It will act as a dual space and satisfy the need to work in their specialization while retaining their sense of community and serving its needs.

Phase I (training)

The initial phase for the first 6 months of so will be training for the fresh graduates. The trainees learn or re-learn with practical application some mathematical concepts (approximation, estimation, calculus, probability, errors), device physics (VLSI fabrication, working of diodes, MOSFETs), communication (Fourier series, Fourier transforms, convolution, time and frequency domain), analog circuits (design, simulation, layout, LVS/DRC), digital design (logic, digital libraries, VHDL), linux (commands and

options, good editors (vim/nedit and power tools), programming (python, shell scripting, skill). The focus in 5-1/2 hrs a day would be to get exposure to various aspects of the work and develop skills in these areas.

In the remaining 3 hrs they will start learning skills in hardware hands on with bread boarding, soldering PCBs, programming with micro-controllers, using Scratch to make programs and soon practicing these aspects with children.

During the training I will spend time with the trainees, but also rely on their self-motivation to take things we discuss further. As they learn different aspects, we will create learning modules that can help others learn these aspects. The trainees will have access to real world designs through Aura and learn aspects of good design and layout practices.

During the training period Aura Semiconductor Pvt. Ltd. will not see any direct impact in terms of projects or processes except for the hope that some engineers will be trained well and exposed to Aura. At the end of the training phase Aura will conduct an assessment of the technical skills of the trainees to be comfortable with the progress of the trainees. This starts the second phase of the initiative where the trainees are considered employees.

Phase II (Exploring Utility to Aura Semiconductor Pvt. Ltd.)

Aura Semiconductor Pvt. Ltd. is a startup and working long hours is a norm as is the case with most startups. Hence, there is a honest concern from the company that 5-1/2 hrs of technical work is too short to be effective. They cannot put them on a customer project that has sharp deadlines and a creative solution will need to be arrived at. This will include exploring support of existing design methodology like creating GUI interfaces, automation of aspects that are done manually, looking at alternatives to expensive design tools, etc. This will be a period of testing of Aura's utility for Aura. At the end of 1 yr the utility of Aura will be assessed by Aura Semiconductor Pvt. Ltd. and decision will be taken about the future.

As in the training phase, in this period too time will be kept aside to learn new things and teach at the schools.

Timings

Timings 8-5:30. Mon-Sat.

Over the course of the year I would hope that around 3 hrs of my time at Aura will be sufficient to guide the youth to be effective in work and teaching. This will allow me continue to work with children directly. However, initially the time I spend at the center may be longer and would depend on my need and the ability of the youth to work independently.

About our partner Aura Semiconductor Pvt. Ltd.

Aura Semiconductor is a fabless semiconductor company providing high performance RF & analog solutions. Aura Semiconductor was founded in 2010 with focus on developing technology leadership in the areas of RF, clocking, audio and power management.

We are leveraging our in-house game changing technology and product development expertise to evolve as a leading fabless semiconductor company from India. Aura is an ISO 9001:2008 certified company.

More information is available at: <http://www.aurasemi.com/>

Aura is support the initiative for the first year on an experimental basis.

Aura Auro is a project of SAIIER, Auroville

About SAIIER - Sri Aurobindo International Institute of Educational Research

Vision: The education of a human being should begin at birth and continue throughout his life.

SAIIER promotes and coordinates most of the educational and cultural programmes in Auroville, keeping them focused on Auroville's aims and ideals. The Institute also acts as a financial and administrative umbrella for all these programmes. It receives funding for this purpose from India's Ministry of Education, the Foundation for World Education (USA), Stichting De Zaaier (Holland), and various units and individuals from within and outside Auroville.