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# Site Visit Report: Vigyan Ashram

**Location: Village Pabal, Near Pune**

**AID Volunteers: Bipin Todur, Gaurav Shah**

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Vigyan Ashram is located in the outskirts Pabal Village, around 2 hours drive from Pune. Gaurav and I left around 10:30 from Pune and reached Pabal in the late afternoon. (We did a quick lunch detour to his factory and switched cars before taking the one lane “highway” to Pabal) Pabal is well known for the Jain Temple. Though people do seem to know about the Vigyan Ashram, I doubt if a lot of people know that this is one of the 5 places in the world where MIT has setup a FABLAB.

Mr Yogesh Kulkarni who is in charge of the Ashram is of a very cheerful disposition and gave us a comprehensive description of the various activities going on in the ashram.

What follows is a brief overview of the topics that he covered. I have tried to structure it as much as possible.

- **History**

Dr S S Kalbag was the founder of this ashram back in 1993. He was working with HLL and took early retirement. He made the initial contribution to start the ashram.

He was concerned with the phenomenon of school dropouts who then joined the unorganized sector. “Learning by doing” seems to be the only way in which these dropouts finally find work as carpenters/masonist/farmers etc.

90% of the students are school dropouts and end up in the unorganized sector. The main idea behind building the ashram was to bring them into the mainstream by giving them the training they needed to work in the unorganized sector.

The original choice of Pabal was made by Mr. J P Naik (one of the founders of NCERT). Pabal is a good showcase of the problems that rural areas typically face and has the advantage of being close to Pune. 12 hour power cuts, transportation problems etc. The idea was that if they could solve problems in Pabal, then they could solve them anywhere else.

Dr. Kalbag took a lot of feedback from the local community about the problems they faced and their solutions. Problems like vaccination/finding water/making wafers/removing pumpture.. etc were discussed. He realized that its not possible to train students for everything in one place. Students (dropouts..) do not have the exposure to various solutions and are not sure what to do.

- **The Diploma Course**

The solution they came up with was to start a 1 year course. Diploma in Basic Rural Technology (DBRT). This is a residential course in which students spend 3 months each in 4 departments.

- 1 Agriculture/Animal Husbandry
- 2 Home & Health
- 3 Engineering
- 4 Energy/Environment Preservation

Each student has to take every class. There are no formal classrooms. The theory taught is minimal. The emphasis is on imparting hands-on training to them. A lot of the classes involve taking on a real project and completing it as a team. So the class could have to travel to the site of the project during their sessions.

The cost of the course is Rs 4000/- and food expenses are Rs.6000 per year. There are informal loan scholarships available. (10 scholarships given this year)

(He mentioned some very poor students who had come from Melghat who did not even have the money to make a caste certificate..)

Asha-Seattle pays for part of the costs. (incl. deptt. Salaries)

This year there are 32 students. Last year 29 students completed the course. Two students dropped out. But in this case there were city kids who traditionally have had problems dealing with the rural lifestyle.

Some parents bring their wayward kids to the ashram in the hope that they could be trained to stand on their feet. (Looks like the ashram is getting the reputation of being somewhat of a boot camp!)

The whole idea of this Diploma is to integrate the efforts of rural development and education. DBRT is recognized by the National Open School.

- **After DBRT, what?**

The graduates become “all-rounders” in a year’s time because of the multi-skill training. (no optional classes!) So its easy to get an industry job.

Most of the graduates get an apprenticeship in local establishments. All students from last year have been placed. Total alumni strength is 800! A lot of them have opened small businesses.

Mr Yogesh has also been able to help students get loans in nearby areas because of his contacts/reputation. But he isn’t able to help students who come from distant parts to get loans for setting up their own businesses.

Some of the students also become instructors for the Ashram courses (including the school courses)

- **Training for School Kids:**

The other program run by the Ashram involves teaching school children as part of their curriculum. The school course program is recognized by the Pune School Board.

VA has tie-ups with the local schools wherein the students come to VA once per week and get some hands on training. Currently students from 8<sup>th</sup>,9<sup>th</sup>,10<sup>th</sup> from 7 districts and they plan to work with 5<sup>th</sup>-7<sup>th</sup> class students. (Also they have plans to work with 5 schools in Amravati from this year!)

VA hires local entrepreneurs as instructors for these school courses who teach the children while working with them on their projects. The instructors are paid Rs. 1000 pm + the earnings from the project being done. VA gets 15% of the overhead cost.

- **Multimedia CD production and Sale**

From 1999, VA has been making multimedia CDs and selling them to make revenue.

These CDs deal with various topics like

- Compute Technician Program
- MS office Tutor
- Basic English Program
- Balwadi
- Electricity. (for young scientists!)
- Basic Engineering Concepts.

CDs are available in Hindi English and Marathi.

This effort was started with a loan of Rs. 20 Lakh and they have already repaid the loan!

- **Wireless provider**

VA also makes revenue by providing wireless internet services. (using WLL technology in a 50KM radius) They have a dedicated 64kps lease line and have been providing services like internet kiosks in 34 villages. (Setup with loan of Rs. 17 lakh.. Repayment going on..)

- **Collaboration with IIT, Powai**

VA works with the school of IT. They have set up an agricultural website called aAQuA (Almost all questions answered. Link from Vigyan Ashram page). The site originally dealt with agriculture but now has info on other topics like poultry farming/animal husbandry for the rural areas.

- **Patents**

VA has filed patents but not really for income generation. All manuals are made available for free. (VA is ok with individual use but will charge for commercial use)

- **FABLAB**

Originally, around 2002, MIT had a working relationship with the then central Govt. MIT provided some machines and Govt provided engineers. This ran for 6 months. When Pramod Mahajan left, the agreement closed down and the new Indian Govt backed out. Apparently, links are being re-established with the current Govt.

Mr Yogesh had discussed the various problems that people face in the rural areas and the solutions that these would entail with the people from Centre for Bits and Atoms (CBA), MIT. MIT had a course called “how to make almost everything”. However, there were numerous problems with getting the solutions from MIT. (For eg, the solution may be used locally but could not be mass produced easily etc.) The best way of dealing with this was if MIT give them the tools and let them find the solutions to their problems. The FABLAB initiative is based on this concept. There are 5 such labs around the world.

Under this scheme, FABLAB has provided equipment worth \$200,000 in 2005.

- **Problems with FABLAB**

All the other FABLABs have been setup with Govt. support. This lab in Pune is the only one that does not have any such support. Other labs have video conferencing facilities that help them work with MIT engineers faster. They are trying to setup this now..

The lab does not have dedicated trained people and so the progress is slow. (There is one electronics engineer, Parag Mulay that they hired recently)

VA has written to Department of Science and Tech. (DST) but the problem there is that this kind of Govt support does not fit into the project based funding provided by DST. They want a fixed product project etc.

This is the reason that VA is asking for funding of engineers to this FABLAB so that the tools present there can be used (in one case the tool needs to be setup) for solving local problems.

- **Tour of the Lab**

After that we got a tour of VA including the FABLAB. Some of the things shown were:

**FABLAB:**

The lab is one room that contains the equipment donated by MIT. (One metal cutting machine is kept in another room) The first machine was a PCB cutter. The unix machine and software to program the design was provided. They have been given the circuit diagram of a basic sensor. (measures capacitance). They have been trying to calibrate it for testing milk fat content and also for testing if the milk is gone bad. Parag Mulay, the engineer who has been recently hired there, showed a demo of the PCB cutting as also the graphs that they got from the calibration testing. They are still working on the calibration and I suspect some theoretical inputs would be helpful there.

The other machines included a milling machine and a vinyl cutting machine. Again the software+drivers were available. There was also some basic electronic lab equipment. (oscilloscopes/soldering iron etc.)

The laser metal cutting machine is not working right now. One of the laser parts was broken in transit when the machine was shipped, so the MIT engineer who came to

set it up couldn't do so. The new part has been shipped again, but they don't have the knowhow (and the confidence) to fix it themselves. Its in cases like these that qualified engineers would really help.

There were some interesting products that the students have manufactured using the lab equipment. I remember a small windmill design that was downloaded from a website. There was a model water valve controller. (they are trying to make a low cost version of a valve that is currently imported from Israel.)

Parag mentioned that some open source PSpice like software for circuit simulation on unix would be helpful for him. I have been able to find something like this. Also he needed some help with AVRStudio which he is trying to use with a programmer kit.

**Bio Gas generator.** The input is the "moha" cakes. (local farm input) The output is 2KW. The cost is around Rs. 8 per unit. With diesel, the comparative cost is around Rs. 10-12 per unit. The output from the Bio Gas generation can be sold as fertilizer. VA hasn't done this yet and this will help in the increasing the efficiency of the Bio Gas unit. This project was setup with AID support.

Around the ashram, there are numerous dome structures. (used as houses/labs etc..) VA seems to have considerable expertise in making the dome. There are various materials being used to cover the metal frame of the dome. Also saw various design changes in the domes. (including a ventilator on top).

VA also takes up the "contract" to do the farming for tracts of land around it. (This is part of the training that they provide there). They rotate between plots of land and crops.

There was a sample of the "mech Bull" , tractor that was developed in VA. One of the ex-students has taken this design into mass production and around 32 of these have been sold! (at Rs. 96,000 each)

The pathology lab is housed in one dome. (again part of the training programme) They do the test in nominal rates for outsiders. (The cost of the lab and running have been recovered from this business. But this is mainly for training students) They also have HIV testing there.

There is also the room where they support the wireless internet access effort. The equipment was made by IIT Chennai and they have a 64kbps dedicated lease line for this.

The hostels for the students and the animal sheds are also on campus.

- **VA Budget**

VA is around 60% self-financed. The rest of the amount comes from Asha Seattle/IIT/AID etc. (For e.g, currently there are 3 RAs with IIT) Annual costs are

around Rs. 16 lakhs (they raised Rs 9 lakhs last year). Income sources are community service + CD sales. Currently there are 3 coordinators who are paid by Asha, Govt of Maharashtra and Lend-A-Hand respectively.

The consumables part of the proposed budget was for running supplies for the machines. The Misc part contains the Internet charges, generator running charges etc. (For accounting purposes, any facility used by FABLAB is charged explicitly)

- **General Impression**

Based on the output of the students, the DBRT run by VA looks like a successful concept. At this point, VA is unable to make full use of the FABLAB facilities. (the metal cutting machine is not working). Adding a bunch of qualified engineers to this setup is a basic requirement.

Even though the project proposal may not look sustainable, I think we should look at it from the point of view that if there are more products produced at the lab, the revenue would also increase. To that extent, Mr Yogesh is concerned about adding revenues from patents etc. This would be an exciting project for engineer volunteers, since there is a good stable email access in VA and we should be able to work closely with them for basic problems. (They mentioned that they had no contact in the Electrical dept of IIT and I am trying to work on this). They seem to have given a good thought towards productisation and dealing with attrition. I have no doubt that, with our support (monetary and otherwise), this would be a successful project.