

enterprise: What works and what doesn't'. Many renowned social entrepreneurs from the field of renewable energy, sustainable farming, skill training, women empowerment etc shared their experiences during the conference. On the last day of the conference, participants visited Vigyan Ashram's 'Learning-By-Doing (LBD) program' at Chinhat (Lucknow) school.

C] DIY lab participated in Rashtriya Bal Vigyanik Parishad (RBVP) Exhibition :

Team of Do-It-Yourself (DIY) lab participated in the 50th Rashtriya Bal Vaigyanik Pradarshani (RBVP), at Shree Shiv Chhatrapati Sports Complex, Balewadi, Pune during 26th to 31st December. It's a national level event organized by NCERT every year to inculcate scientific interest in children. This year more than 200 organizations participated in the exhibition with their educational projects. Team of 10 students & 2 instructors from DIY lab, showcased various learning activities & projects based on IoT, basic electronics, digital fabrication etc. Our stall was visited by more than 3500 school students & teachers.



D] Technology development [DIC and DST-SUNIL] program :

i] Development of Dryer for Red-Chilly :

Prasad & Arun visited Khargone (Madhya-Pradesh) during 27th to 30th December for conducting base-line survey of red-chilly farmers. They had visited 6 chilly farmers in 25 km vicinity of Narmadalaya (Kasarwad block) to collect data on average land holding & cultivation area, production, present drying methodology etc. Chilly farmers are generally doing traditional open-sun drying of chilly on 1000 – 1500 sq ft floor-space. They are experiencing upto 50 % loss of produce due to improper drying. The base-line data will be used for designing new-dryer for farmers. We are very thankful to Narmadalaya for providing support in conducting base-line & farmers empathy survey. Detailed base-line survey can be found on https://miro.com/app/board/uXjVN-UID6g=?share_link_id=156953466678



ii] Black-Soldier-Fly (BSF) based composting & poultry farming:

A MOU was signed with Rajgurunagar Municipal Council (RMC) for setting up BSF based composting solution. RMC will provide segregated bio-waste (up to 10 ton per day) and 4800 ft² covered space for waste processing. A BSF based composting facility will be established by Vigyan Ashram under DST project while day-to-day processing operations will be taken care by M/S Pratheen Eco Solution LLP (PES). PES is



BSF breeding chamber

waste management startup established by DIC student Mr.Mahesh Shinde for scaling up of BSF technology. During December total of 3.15 ton of waste was processed using BSF at Rajgurnagar, Aundh and Pabal setup.

- Sahil started work on establishing BSF new-breeding chamber on 123 ft² area. He is using perforated polycarbonate sheets for better insulation & climate controls with automated temperature, humidity & light intensity controls along with data logging system. The chamber will produce approximately 10 to 12 kg 5 Days Old Larvae (DOL) for waste processing.
- Ganesh conducted 2 days on-field training on back-yard poultry farming on 27th & 28th December at Phansi village in Velha block. Training was attended by 10 farmers to learn making of low-cost poultry cages using locally grown bamboo. BSF based poultry feed will be provided to selected poultry farmers in Velha & Ambegaon block of Pune districts as trial study on improving livelihood generation opportunities.



Poultry cage using bamboo

iii) Polyhouse climate control system development:

- A pest count for yellow-mite (*Capsicum annum L.*) and thrips (*Scirtothrips dorsalis Hood*) was started for studying relation of pest with climatic factors (temperature & humidity). During December, average 94.66 mite and 17.33 thrips were recorded for average temperature-relative humidity of 27.39 °C & 60.05 % respectively. Data shows that yellow-mite population has increased with increased humidity while thrips prefers hot & dry climate. Data will be useful in designing pest prediction system for protected cultivation farmers.
- On 26th December, Ranajeet & Ganesh visited Sai Rose FPO at Kamshet (Mulshi, Pune) for conducting base-line survey regarding climatic control system & pest prediction.

iv) E-Rikshaw based sugarcane juicer: Work on 1st Proof-Of-Concept (POV) of E-Rickshwa based sugarcane juicer was completed with 48 V (100 Amps) lead-acid battery (for mobility) & 24 V (240 Amps) lithium battery for juicer. Juicer has been designed for 30 kg sugar cane crushing per hour with ready-to-serve chiller. The POC was showcased at IISC, Bangalore on 14th December. Mahesh Shinde & Nitin Krishnana (MSME-CoE incubate) presented POC to expert panel. Experts appreciated POC design & technical specification and approved it for 2nd level development.



E-Riksha based Sugar cane juicer with evaluators

v] Life-science lab update :

- In tissue culture lab, Mrs.Avanti Kulkurni (Tissue Culture Expert) & Ashwini successfully achieved shoot-initiation for Moringa (*Moringa oleifera*) but failed in rooting after sub-culturing. They are conducting trials with modified rooting media.
- Akshda & Ashwini had conducted 1 day training for agricultural college students on 23rd December. Training was attended by 9 students to learn basic chemistry application in soil-analysis and soap making.

vi] Fab-Lab updates:

- EPFL-Switzerland student intern Mael Mouhoub completed 2 months internship program on 8th December. He worked on PCB design for LoRa-Module based data-logger, laser based de-weeder and BSF data-logger interface. His project details available on

<https://vadic.vigyanashram.blog/author/mael-mouhoub/>

- Suhas had completed first prototype of 'Nasal temperature sensor' for Pune based researcher. The nasal sensor capable on sensing temperature difference between nostrils. We are doing further modifications based on customer's feedback.
- Omkar Wavhal (Msc-Microbiology) joined DIC fellowship program from 18th December. He will be working in soil-microbiology & plant-tissue-culture laboratory.



Mael from Switzerland completed his internship

E] DBRT activities:

During December month, DBRT students were busy in regular skill training activities, project work & community service activities. As a part of study tour students visited KISAN-Agriculture exhibition (Pune) on 15th December. Following are some of the important learning activities of students as -



Energy & Environment:

Students in Energy & Environment repaired mixer-grinder, iron-press and LED street-lamps from local shops in Pabal. Students also learnt motor-rewinding skills while repairing a 1hp water-pump for agriculture section. They also installed new step-type bus-bar chamber & other electrical fitting for new powder-coating machine in the workshop section. Total value of community service offered by student was Rs.35160.00 during December.

Home & Health section: In food processing section, student prepared healthy ladoo's (17.16 kg), bread (54 kg wheat flour), Tamarind sauce (17.70 kg), spice powders (3.0 kg) for sale & campus distribution. Total value of community service provided by students was Rs.12702.00 during month.

Agriculture & Animal husbandry section: Student celebrated 5th December ‘World Soil Health Day’ while preparing compost beds & soil analysis activity in section. Students also planted 6 kg jawar seed for fodder & 400 gm beet-root and 25 stumps of new variety of Napier grass while learning basic farming practices. In Animal Husbandry section, students got 35 new poultry birds from 70 egg while using egg incubator machine. Students learnt use of egg incubator and poultry raring practices like brooding, feeding, vaccination of chicks etc.

Workshop section: Students learnt skills in basic masonry & carpentry work in workshop section. Team of Siddharth, Krupa and others constructed retaining wall to new painting-booth of 400 ft² wall of new extension of tissue-culture lab. Total value of community service provided by students was Rs.28204.00 including Rs.8350.00 labor charges. Students also started fabrication of 4 units of office tables.



Retaining wall construction

FJ IBT Maharashtra & Uttar-Pradesh updates:

IBT Maharashtra updates: This year, we are encouraging maximum IBT schools to participate in ATL Marathon. Six IBT schools are participating in ‘Seed the Future Entrepreneur’ competition. Schools are also preparing for IBT school project exhibition ‘Technovation’. Following are some of the highlights -

- i) Video shoot of innovative projects: Schaeffler India -CSR team carried out video shooting of innovative projects at 4 IBT schools in Talegaon region during 19th to 21st December. They recorded project of coconut breaking & water collecting device fabricated for local temple by Navlakh Umbre school, earthing-pit testing by Vahangaon school, composting bed by Nigade school during the shoot (stars).
- ii) Basic 3D printer & electronics training: Instructor training on basics of 3D printing & electronics was conducted during 26th to 28th December at Pabal. Instructors from Gulani (Pune) and Waghere (Nasik) schools participated in the training. (stars)

Students learning activities:

- Class 9th students from Padsare (Raigad) IBT school fabricated a mike-stand.
- Students in Nigade painted a community bench in village.



Before painting



After painting

- Agriculture section students in Nigade and Kohinde school demonstrated scientific composting methods using microbial culture at farmers’ field.

- Energy & environment section students at Vahangaon & Tung school conducted an electrical earthing-pit testing drive in village. Students visited 20 to 25 households in village to create awareness need of proper earthing-pit and also installed two new earthing pits on the request from individual household.



Doing composting @ farmers field



Testing earthing in a village

Learning by doing (LBD) @ Uttar-Pradesh updates (STARs):

- Ranajeet visited three schools at Gaziabad on 4th December for review of project activities. He met school administration & students to discuss on project implementation, students learning and impact. Students showed their learning activities enthusiastically during the visit.
- Yogesh Kulkarni & Prashant met Mr.Ravi (Unicef), Mr.Ranjit Singh on 6th December at Samgra-Shiksha Vibhag, Lucknow. They discussed project implementation status & future plan for scaling-up of program activities in 1700 schools in the state.
- On 13th December, Mr. Shivendra Nath Pandey (Program Manager, UNICEF, Patna office) visited UPS Madiyaon school (Lucknow).



Visit of Stars forum conference delegates to chinhat school

G] Entrepreneurship Development Program (EDP) update (VATF):

i) Ms Bhagyashree Adkar (Team CSR Praj Industries) visited EDP program mentee Mr. Vaibhav Rahane (Sliding Window fabrication), Mrs.Sapna Hulawle (Milk processing unit), Praveen Taverre (Electrical service), Akshay Khalkar (Electrical services) on 14th December.

Following are some of the highlight's of activities during December -

Training program:

- Solar PV installation enterprise: A 2 days hands-on training workshop of solar PV installation & maintenance enterprises was conducted on 16th



& 17th December at Pabal. Training was attended by 10 participants to learn solar PV System components, system design, battery types & selection criteria, electrical connections etc through hands-on activities. Participants worked in groups to design & install solar PV system under guidance of expert-trainers. Mr. Suyog Warghade. Mr. Raghav Rajput, and Mr. Yogesh Onkar guided participants in technical & financial aspects of enterprise development.

- ii) Chikki making enterprise: On-field training workshop on 'Chikki-making enterprise' was conducted for Women Self Help Group (WSHG) members on 16th December at Kharshinde village. Training was attended by 5 WSHG members to learn recipes of Moringa, Sesame, Peanut etc Chikki. Mr. Pranay Yadav & Ganesh Pingale from conducted training session. WSHG will get necessary hand-holding & incubation support by EDP team and Krishi Vikas Gramin Vikas Sanstha.



Chikki training on field

Webinar: EDP section conducted following webinars in December to create awareness on new enterprise opportunities :

- 1) On 20th December, webinar on 'Khadi-Gram Udyog initiatives' for rural enterprises was conducted. Webinar attended by 41 participants and Mr. Satish Kharat (District Gramodyog Adhikari Pune, Director-Hatakagad Sanstha Pune) was the resource person.
<https://www.youtube.com/watch?v=tZzVnzP-nCQ>
- 2) On 28th December, webinar on "Business Opportunities in the Electrical Vehicle Sector" was conducted. Mr. Sahebrao Satpute (EV retro-fit expert) guided 32 online participants in various aspects of electrical vehicles like retrofitting, servicing, dealership etc opportunities. Video recording link -
<https://youtu.be/xBpUjYMjYes?si=sILn9JlbgwmfrKr>

Field visits & mentoring support:

- On 2nd December, Ganesh visited Somnath Gorde newly started electrical service enterprise. Santosh is our short-term training beneficiary & he is getting incubation support through EDP.
- On 26th & 27th December, Vishal visited Shetphal & Tulshi village in Solapur district to meet MKCL supported Sanjivak-Swavlambi-Sheti fellows.
- An enterprise registration & licencing support provided to 4 new entrepreneurs (Udyam certification-3, FSSAI- 1)



Visit to EDP trainee's by Praj CSR officials

Hero of the month:

Mr.Satish Payer started new metal-fabrication workshop with the name of "Shree Jakmata welding workshop" at Mangaon (Dist-Raigad). Satish is DBRT (Batch 2017) students and also getting social media promotion & marketing support in EDP. He has made an investment of Rs.1,10,000/-.

HJ Atal-Tinkering-Lab (ATL) & DIY lab update :

ATL Andra-Pradesh:

i) **Make-a-thon @ Koduru & Palasa ATL school:** A 3-day make-a-thon for ATL students was conducted at Palasa (Dist- Srikakulam) and Koduru (Dist- Anakapalle) in Andra-Pradesh during 21st to 23rd December. At Palasa 32 students & 5 teachers from 5 different school participated in the make-a-thon, while at Koduru 42 students & 6 teachers from 6 nearby schools took part in the make-a-thon.



Make-a-thon @ ZHPS Koduru

ii) **Online session:** Two online training sessions were conducted for Andra-Pradesh ATL labs in December on 'How to Make 3D Christmas Tree' (<https://www.youtube.com/live/470qllcsASE?si=F-7knezPF2ycxgk2>) and Make a cup using Tinker cad -3D (<https://www.youtube.com/live/74ibNu3Y53s?si=4N7aa7GAUHysopSm>)

ATL Telangana:

i) **ATL Head Masters (HM) & Teacher's training workshop:** A Telangana hub ATL in-charge teacher's training was conducted during 19th to 22nd December 2023 at ATL training centre at ZPHS Karmanghat, Hyderabad. On 19th Dec, meeting of Head-Masters from 32 schools was conducted to plan for effective implementation of ATLs. During 20th to 22nd December, hands on training of 32 ATL teachers was conducted.



ATL teachers training

ii) **Online session:** Session on Introduction to ATL documentations: AIM portals, Equipment manuals, basic mechanical engineering tools was conducted on 27th December (https://youtu.be/q-3TtS7ggXU?si=ijcwPVxu_k-DPN_x)

ATL Karnataka:

Make-a-thon @ Puttur: A 4-days make-a-thons was conducted at GPU College Kombettu, Puttur (Dist- Dakshin Kannada) during 11th to 14th December. Total 25 students and 5 teachers from 5 schools participated in the make-a-thon. They learnt project design & application of digital fabrication methodology through hands-on activities. Students also learn use of designing softwares like TinkerCAD, X-Design, Canva etc.



Make-a-thon @ Puttur

Online session: Online training session was conducted on 1st, 15th and 22nd December :

i) Drawing Machine using cardboard : <https://youtu.be/e6W3zfcSxWI?si=0Wz2qB-bvwllhZ1r>

ii) Making Loom For weaving friendship bands (<https://youtu.be/VZyFZlwhqYE?si=gxGU66pvKstWJF79>)

iii) Heat to watt- Energy Conversion using Peltier effect. <https://youtu.be/XYPc7bdp-to?si=j64tWXLgmelQyEGX>

Do-It-Yourself (DIY):

DIY lab conducted 'tinkering classes' for 9th class students in 4 Pune Municipal Corporation (PMC) schools during December. Total 187 students did DIY projects during the session. List of schools & students given in the table attached.

DIY team participated in Maker Fair @ Hydrabad on 17th and 18th Dec. They had conducted workshop on 3D magic and origami and Paper electronics.

| SN | School name | Date | Students |
|----|--|-----------------|----------|
| 1 | HBSV SHIVAJI NAGAR | 11th & 12th Dec | 53 |
| 2 | GANPATRAO GOLE PMC SECONDARY SCH | 13th & 14th Dec | 30 |
| 3 | PMC VEER KHASHABA JADHAV MADHYAMIK KRIDA NIKETAN | 18th & 19th Dec | 52 |
| 4 | PMC'S MADHYAMIK VIDYALAYA | 20th & 21st Dec | 52 |

I] CNC machine installed @ Workshop :

Under MAHALE Engineering Services-CSR supported modernization of engineering & electrical section project a refurbished turning CNC machine is purchased & installed in workshop department. It's a Danford make machine with turning diameter - 125 mm (Maximum turning length - 210 mm, Maximum turning diameter - 125 mm, Spindle bore - 26 mm). It will be used for CNC turning training.

An electrical-oven for power-coating facility also received at Pabal campus.



Powder coating and CNC machine

J] Other tit-bits:

i. Management Committee Meeting of Vigyan Ashram was held on 17th Dec at Pabal. Various administrative and financial decisions were taken.

ii. **Creativity adda camp** : Seven Students from Creativity adda makerspace, Delhi participated in the 5 days workshop on digital fabrication in between 11th to 15th December. They made 5 different sensor base project and learned basics of 2D /3D design and digital tools -3D printer, Laser cutter , vinyl cutter.

iii. Suhas attended 'Trade-India Education Supply

and Franchise Exhibition-2023' @ BKC Mumbai

on 4th December. He met many startups & educational institutes working in digital fabrication, robotics etc.

iv. Ranajeet visited Dr. Anuradha Pughat (Scientist-D, SEED Division, DST) and Development Alternative (DA) office at New Delhi on 4th Dec to discuss SUNIL & TAP-RISE project implementation plan.

v. Four students of Post Graduate Program in Management (PGPM), SPJIMR, Mumbai completed their 10 days on-field internship at Pabal. They worked on development of business plan for EDP students.



Creative Adda Camp

- vi. 36 Students of V.G.Gokhale Agriculture Polytechnic visited Pabal campus 15th December to explore advanced farming technologies.
- vii. Weather record – Rainfall of the month – 0 mm (Total: 465.41 mm), Max temp-34.00° C, Min Temp – 12.00° C, Humidity –83%, Water height in well– 3.20 M.
- viii. Energy consumption record- Electricity unit – III Phase-661 units, I Phase import-152 units, Solar generation-775 units. DG used – 2:00 Hrs.
- ix. Animal Husbandry section update – Milk production – 820 Kg (Gross profit Rs: 5123.00)
- x. Online visitors: www.dsttara.org – 926(Organic search-728, Direct search-198), www.vigyanashram.com – 1667 (Organic search-1198, Direct search-479). Campus tour visitors –310+.

KJ Data Report: <https://tinyurl.com/4vp82tcv>

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Chilly drying trails



Maker Fair @ Hyderabad



STARs forum conference @ Lucknow

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