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Skilling India from the Ground up: Project Case Studies

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SKILLING INDIA FROM THE GROUND UP: PROJECT CASE STUDIES

NCAER Skilling India Working Paper

NCAER Team*

Abstract: These summaries were prepared on the basis of the interviews of various stakeholders involved in skilling from education to vocational training at firms and the assessment of skills.

Keywords: Education, Vocational Education, Skills, Vocational Skills, Entrepreneurship, Skilling, Creation of Occupations, Labour Mobility, India

JEL Code: J24

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I. Central Board of Secondary Education: Vocational Schooling in India, 2016

Dr Biswajit Saha, Additional Director (Vocational Education) at CBSE, Delhi, pointed out that the Central Board of Secondary Education (CBSE) is mainly operational in Delhi and Chandigarh. The CBSE (Vocational) stream is a modified version of the German model.

Under the National Policy on Education, 1986, vocational education was introduced at the higher senior secondary school level. A Centrally Sponsored Scheme (CSS) of Vocationalisation of Secondary Education was launched in 1988.¹ The scheme was revised to include vocational education to be offered in schools from Classes 9 to 12 in the Eleventh Five Year Plan, and also to link the curriculum with the National Vocational Education Quality Framework (NVEQF). The curriculum consisted of one academic subject, one language, and three professional courses. Foundational courses such as those on entrepreneurship, computer application, and environmental courses, were part of the curriculum. The foundational course is examined internally by the institution and CBSE does not play any role in its examination process.

Students enrolled in Classes IX to XII can choose between academic and vocational streams.

As per July 4, 2017, approximately, 19,163 schools in India were affiliated to the CBSE, which is the national board in India. All college entrance examinations are based out of its syllabus and its importance in the education system cannot be over-emphasised. An estimated 70 per cent of the schools are private in nature, and Delhi is the major region where the CBSE programme is being implemented. As regards Chandigarh, on the other hand, the number of schools here functioning under this programme is low but in terms of performance, this region is the best.

The vocational education programme is operational all across India in 200 and 800 schools at the secondary and senior secondary levels, respectively. The programme worked quite well in Delhi initially, but its performance subsequently declined due to non-participation of the government and consequently loss of interest in the programme.

The performance pertaining to academic versus vocational subjects varies because of market perceptions and misconceptions. It is believed that students who are either intellectually or economically weaker than others opt for the vocational programme. Further, the grades from these courses are not accepted for University admissions and do not count towards the overall grade needed for college admissions. This is especially true if one belongs to the academic streams and has taken up the vocational course as an additional subject. Essentially, the utility of the vocational

¹ The NPE, 1986, had set a target to cover 10 per cent higher secondary students under vocational courses by 1990, and 25 per cent by 1995. The POA, 1992 reset the targets of diversification of students in vocational streams at the + 2 level to 10 per cent by 1995 and 25 per cent by 2000. As per the evaluation study carried out in 1995-96, about 4.8 per cent of the students were diverted to the vocational stream, 28 per cent of the pass-outs of the vocational stream were employed/self-employed and 38.3 per cent of them were pursuing higher studies.

http://mhrd.gov.in/sites/upload_files/mhrd/files/revised-scheme.pdf.

streams and courses is limited. There is a need to upgrade the quality of the teachers, and developing the requisite infrastructure in schools for implementing the vocational programme is also a challenge.

In view of the present conflict between conventional and vocational education, CBSE has adopted an open policy for students, to enable them to choose certain subjects from the two broad categories of academic and vocational courses. In the All India Senior School Certificate (AISSCE) examinations, that is, the class 12 Board exams, a student is free to choose a combination of such subjects. This symbolises a deliberate attempt to move away from the attempt to straitjacket students into either vocational or conventional education while increasing the options available to them for higher education. In order to make vocational education more acceptable, vocational subjects have been introduced from class 9 onwards (in Delhi only). In terms of the numbers, an estimated 1.2 lakh and 20,000 students are studying vocational subjects at the secondary (9th – 10th) and in higher secondary (11th-12th) levels, respectively.

In terms of getting aligned with the present needs of industries, CBSE has developed quite a few associations with corporates and is also open to collaborating with Industrial training Institutes (ITIs). No objection is raised if schools get free access to ITIs' infrastructure for apprenticeship.

The two core areas for imparting vocational education are manufacturing and services. The first challenge in the area of manufacturing is that of infrastructure. The infrastructure available in schools is static and cannot be increased to accommodate training or skilling in manufacturing activities. The second challenge is the lack of industry associations offering support for training or skilling the workforce as industries are not coming forward in support.

Further, some issues pertain to all the stakeholders involved. For instance, there is need to sensitise students pursuing vocational education towards industry, which is currently not being done at all. In fact, even parents of the concerned students as well as society, in general, need to be sensitised in this regard.

Another challenge concerns stakeholders i.e. private schools are not ready to offer vocational education. The focus is most generating revenue rather than incurring expenditure on introducing new course content. Hence, vocational education, which entails expenditure on infrastructure, and would therefore, add to the cost of providing education, is being ignored by private schools. Since offering skilling in schools is an expensive proposition, it raises the question: Who will pay for it? The Government is funding it in government schools, but private schools are not ready to bear this expense, and industry is not coming out in support.

Overall, three issues need to be considered for introducing skilling in schools. First, government policy is ambivalent in terms of what it seeks to achieve through skilling. While the problem of educated youth unemployment already exists, it is likely to be compounded by that unemployment of skilled educated youth. The second issue is that of ensuring quality standards in skilling and the specific structure to be adopted for implementing these standards. The third issue is that of sustainability, as every other nation has a pyramid with ITIs at the base, polytechnics at the next upper tier, and engineering institutions at the uppermost tier. However, the problem in India is the reverse order of the pyramid with the country having more engineers than ITI students. How can this issue be addressed? State Governments and the All India Council for Technical Education (AICTE) have not looked at this situation in a holistic manner, focussing more the engineering education.

Further, it must be stressed that teachers should be empowered to be able to take the responsibility of improving the present situation. In order to make vocational education more acceptable, it should be adopted as part of an Act, otherwise it will merely remain a policy measure with no concrete outcome.

Since the Indian educational system faces many challenges, no single model is likely to work. For example, it may be difficult to introduce vocational training in rural areas or in the North-eastern States where there is absolutely no industry. In such cases, CBSE can only prepare a guideline but that alone may not serve the purpose.

Another requirement is flexibility in the curriculum and language (that is, the concept of a local language or mother tongue), which should be incorporated in the main domain. The real solution lies in adopting a bottom-up approach to implement top-down policy.

March 2017 Update

Due to poor demand for vocational courses in schools following the CBSE curriculum, CBSE has issued orders for withdrawing certain courses in Classes XI and XII. In addition, the pursuit of vocational education as a sixth compulsory subject has been discontinued since the academic year 2017-18. However, the marks obtained by a student in the vocational subject may be included in the aggregate if the student fails in Mathematics or Science. Further, a student taking up a vocational subject may be exempted from taking up pre-vocational educational activities.

Key Takeaways

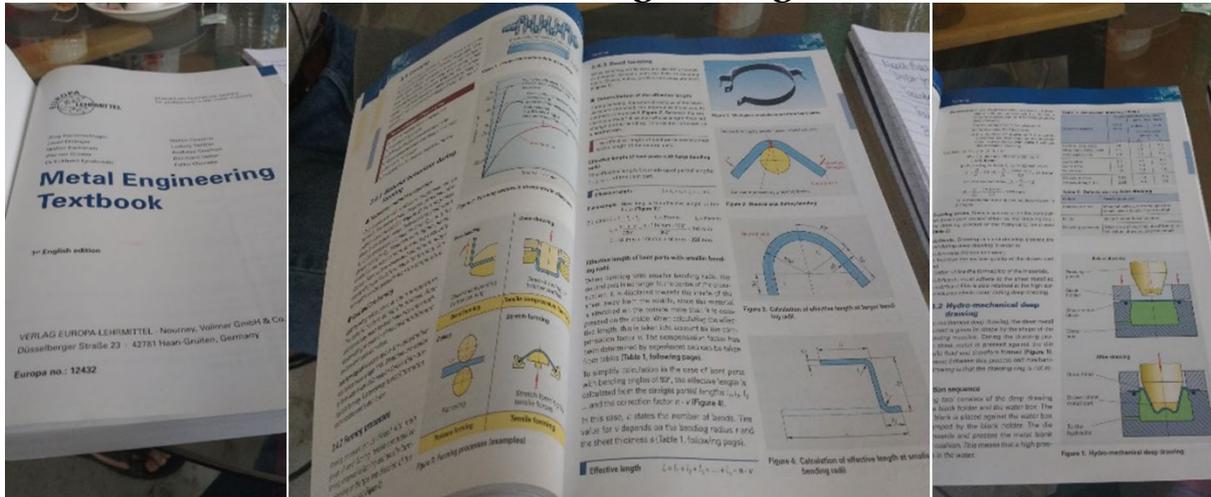
Vocational education is not aspirational at the school level, especially below Class 10. While the CBSE is the mainstream Board in the country, its clientele is the upper middle class, whose members do not find vocational education aspirational. One does not know what to do with that subject because a majority of the students studying under the CBSE curriculum are most likely to continue on to the University system, which does not follow the rigour of the vocational education programme.

The conundrum is that the CBSE is the mainstream Board in the country and sets the syllabus or is the reference point for entry to medical and engineering schools, among other higher educational institutions. Due to paucity of demand, the CBSE has dropped the vocational education as a compulsory subject in classes below X and rationalises the stream of subjects being offered to others.

On the other hand, the Ministry of Human Resource Development (MHRD) has expanded number of courses available at the school level. The example of one particular state, Maharashtra, indicates that the State boards are trying to expand technical and vocational education. The Maharashtra State Board of Educational Examination is offering vocational courses of varying durations, including six months, one year, and two years. The Maharashtra State Board of Technical Education is also offering vocational courses.

Therefore, the efforts of CBSE need to be synchronised with the State boards in terms of providing technical and vocational education at the school level and providing links to higher education. At the State level, the State boards have a larger role to play in encouraging Technical and Vocational Education and Training (TVET) at the school level.

Photograph of German Textbooks Used in German Vocational Education for Metal Engineering



Simultaneously, it is important to improve the quality of technical and vocational education. The books used in the German vocational education for people enrolled in the dual programme and apprentices are of superior quality (as shown above) than that of the textbooks used at the undergraduate engineering level.

II. ‘Going to School’: A Multi-skilled Approach Targeting Secondary School Students in Rural Bihar via Improved Pedagogy, 2017

The objective of the ‘Going to School’ programme is to impart twenty-first century skills to the poorest kids. It creates design-driven stories to teach these skills at school. ‘Going to School’ is a non-governmental organisation (NGO) that is mainly working in Bihar and Jharkhand, and is targeting 12-16 year old children. Multiple conversations with the organisation revealed that its focus area has been work in rural Bihar, wherein it is imparting entrepreneurial skills to students of Grade 9. Therefore, this case study focuses on this specific area. As per an interview held with the NGO in November 2016, its staff are teaching students in 1,400 schools in Bihar and 100 in Jharkhand. Further, the State government of Bihar has also recognised the efforts of the NGO, which is now targeting students of Grades 6 to 8 in the Kasturba Gandhi Balika Vidyalaya.

The stories taught in schools are sourced from graphic novels, games, apps, movies, digital games, and nationwide television shows. These graphic novels use an innovative approach, particularly revolving around the realities of school-going children in rural Bihar. The novels are usually in Hindi, the prevalent local language. In order to improve enrolment and reduce the dropout rates for girls in Bihar, the Government of Bihar started a programme called the “Mukhyamantri Balika Cycle Yojana” aimed at distributing free cycles to school-going girls, which had a positive impact. One particular series of graphic novels also revolves around a 14-15 year old girl called Luna, who lives in rural Bihar, and rides a bicycle to school, with the novel showcasing her adventures during her various bicycle rides and the other daily challenges she faces. The adventures revolve around growing of vegetables or fruits in her garden, designing of her handcart on which she sells her stuff, visiting the Electricity Fair, and weaving a coat from the wool of her goat. The novels then offer exercises on these stories, working on which equips students with the foundational skills of problem-solving, creative thinking, entrepreneurial skills, and changing attitudes about gender.

Further, having a female heroine in the novels inspires change in thinking about gender roles. For instance, in a story by Lisa Heyhuff, the protagonist is a girl who can repair her own bicycle, a concept that creates havoc among the male audience because the task of repairing bicycles is traditionally undertaken by men in rural Bihar. These stories thus inspire change across gender and envisage women to play more significant roles in society, thereby promoting female labour force participation. One particular example of such female empowerment is seen in a story entitled, “Luna’s Search”. The first page of this story shows boys playing football and Luna kicking the ball into the goalpost. The title line says “No, Girls Cannot Do This”. The storybook is dotted with similar examples throughout. At the end, there is a step-wise exercise to dispel notions that women can do certain things and cannot do others.

Following are various steps of the exercise in the storybook:

- *Step 1:* Ask your teachers, wardens, friends, and family whether they have done some job that is traditionally dominated by men. Have they won any awards, etc.? The children have to identify five women, what

they are doing, how they are doing it, when they did this work, how old they were when they did this work, and how other people felt about it.

- *Step 2:* Think about three instances when you were told that girls cannot do this.
- *Step 3:* Introduce a successful woman achiever to the person who told you that girls cannot do this. Do you see any change?
- *Step 4:* List the changes that you will bring about in your daily lives in order to change this conservative attitude about females.

The storybook is essentially not providing any answers or telling the students what they should or should not do. Instead it is encouraging students to find the answers themselves based on inspirations from members of their local community. These also address several gaps pertaining to problem-solving, communicating, and gender skills.

While the classes are immensely popular with the students, the challenge is that they are restricted to just one class taught on a Saturday. Scaling up means going up against teacher unions. It is possible to teach creative thinking, problem-solving, entrepreneurial skills, learning skills, and gender roles through improved relevant textbooks and pedagogy. To scale up, these techniques need to be mainstreamed in other subjects too and therein lies the challenge of skilling.

The other initiatives of the programme are described below.

- An initial investment of Rs 2-2.5 lakhs is provided to kids who are more than 18 years old and would have at least passed Grade 9. The success rate in these ventures is reportedly 90 per cent.
- Training teachers is another initiative being undertaken by the 'Going to School' organisation.
- The NGO is also working on initiatives for gender sensitisation and women's empowerment.
- They are trying to understand the kinds of skills that are needed in the job market. On that basis, they plan to include these in their books in order to enhance employment opportunities for these children.
- The programme is also being assessed through random control trials.

The organisation also had plans to expand in Delhi in 2017, so it would be interesting to examine if there was any change in stories in an urban landscape.

III. MagicBus India Foundation

The MagicBus India Foundation works on the concept that economic opportunities influence students' aspirations and their choice of investments in education, which has a larger impact on society. However, children are not able to determine whether their aspirations are attainable or not. Most aspirations form at a young age but they are realised later based on individual capability and wealth. As long as aspirations are met, the level of wealth grows; however, wealth becomes irrelevant when aspirations are no longer desirable. In this context, NGOs can play an important role by assisting poor and underprivileged children, understanding their attainable aspirations, and helping them turn their dreams into reality. The focus States of the programme are Delhi, Karnataka, Maharashtra, and Tamil Nadu. The following table depicts the outreach among children, including boys and girls separately, in these focus States.

Children Outreach of National Programme, Magic-Bus India Foundation			
State	Boys	Girls	Total
Andhra Pradesh and Telangana	1336.5	1458.5	2795
Assam	753	634	1387
Bihar	1621	1109	2730
Chhattisgarh	230	190	420
Delhi	8859	9873	18732
Goa	208	101	309
Gujarat	1155	1210	2365
Haryana	1469.5	1311.5	2781
Himachal Pradesh	696.5	583.5	1280
Jharkhand	1367	1229	2596
Karnataka	5253.25	5138	10391.25
Kerala	1698.33	1296.7	2995
Madhya Pradesh	1035	770	1805
Maharashtra	8675.71	7648.7	16324.42
Mizoram	1947	1663	3610
Odisha	2562	1719	4281
Punjab	572.5	100	672.5
Rajasthan	1294	842	2136
Tamil Nadu	3657	2738.8	6395.75
Uttar Pradesh	1598	934.5	2532.5
West Bengal	1618	1718	3336

IV. i-Saksham: Education and Learning Foundations, 2016

This case study covers several concepts, including entrepreneurship, education, skilling, creation of occupations, and labour mobility, among others.

The Story behind i-Saksham

Ravi Dhanuka and Aditya Tyagi were the Prime Minister's Rural Development Fellows (PMRDFs), working out of Bihar's Munger and Jamui districts, respectively. Both were attached to their respective the district administrations. In Munger, at the local discretion of the District Magistrate (DM), Ravi was involved in interventions for skill development, through organisation of job fairs (including 3-4 such fairs organised in 2013-2015) and placement of around 250 youths from the district. Prior to this, both Dhanuka and Tyagi provided counselling to youths at the panchayat level to help them participate in job fairs. The selected youths were further screened for personal interviews.

Simultaneously, Aditya Tyagi was working as a PMRDF in the Jamui district.² He provided educational inputs to students enrolled in Grades 10 and 12, and to those pursuing B.A., BBA, and BSc, on a casual basis. In this process, he found that both learning ability and knowledge were pretty low even among under-graduate students. Later on, he started working as a PMRDF on the issue of education and development. During his tenure as PMRDF, he realised that digital literacy can help students from the district to bridge the gap that existed between them and students from cities and towns. He started providing them tablets (self-funded) in the tribal school to push the students into a fast learning mode.

During the course of their jobs, both the former PMRDFs observed that the choice of job location (or relocation) by youths was largely determined by the availability of relatives nearby, followed by the assurance from the employer that they would get in-house accommodation and be allowed to cook their food. They observed that 80 per cent of the migrant youth returned to their villages within one year for the following reasons:

- Most of them aspired for government jobs but the present employment was nowhere close to that, thereby leading to disappointments. Approximately 50-60 per cent of the youth returned home for this reason alone.
- The second reason was family emergencies and the need for agricultural labour in farms.
- Third, some of the youths had prior job experience via job contractors wherein they were paid less and subjected to hardships from the contractor's side. The fact that their present employment was direct or a one on one engagement with the employer led to a rise in expectations that could not be met, and therefore, they returned.
- The fourth reason that took them back to their villages was low salary, as a result of which they had no financial incentive to remain away from home.

² Jamui is identified as one of India's 250 most backward districts (out of a total of 640).

Once the youth came back to the villages, most of them prepared themselves to appear for competitive examinations to procure government jobs and simultaneously earn money by giving tuitions. In this way, the i-Saksham initiative helped job aspirants not only in earning some money but also in enhancing their learning.

Most of the rural to urban migrants have to go back to their families and help them in agricultural works twice a year, that is, during the sowing and harvesting periods.

The former PMRDFs pointed out that as per their own experiences, the condition of the education system is much worse than suggested in the ASER reports both in their respective districts, in particular, and in Bihar, in general. As regards the teaching quality, only 40 per cent of the teachers could pass the Teacher's Eligibility Test (TET) and only 50 per cent could pass the class level tests.

It was in this backdrop that the two PMRDFs, along with a third friend and a former PMRDF, came together to form i-Saksham. The initial funding for the organisation came from close friends, and later on from the National Skill Development Corporation (NSDC). The major focus of I-Saksham during the early stages was to ensure that NSDC made tutorship a recognised skill.

The former PMRDFs initiated their project in 2014. In 2015, they officially registered i-Saksham as an NGO. It was conceptualised to make individual youngsters *saksham* or capable in a way that would work best for their own development as well as to aid the development of others around them.

What Does i-Saksham Do?

The NGO provides in-situ education, skill development, and information services in hitherto unreached areas through sustainable community learning centres, run by locally skilled youth with the aid of digital technology/content. It is presently operational in the Munger and Jamui districts of Bihar. i-Saksham has thus emerged as an innovative approach for developing tutorship as a skill and for making community tutorship work for the betterment of the education of poor children, especially in the areas of the country that are backward or affected by extremism. The NGO has developed a de-centralised learning model with the overall idea of arresting the crisis in primary education through community participation and through the adoption of a skill-based approach. The training methodology used by it is different from the 'brick and mortar' approach, and is designed to integrate digital technology and promote livelihood for poor youths through education of poor children.

The NGO targeted youth in the districts of Jamui and Munger, who were engaged in giving tuitions while preparing for competitive examinations. The basic idea was that they would train the youth in new teaching techniques, and would, in turn, use the trained youth to give tuitions to younger children.

The youth are trained in English, Mathematics, Science, and computers. They are given tablets which contain the teaching material in accordance with the State Education Boards. These youths then go on to teach younger children in the remotest areas, as they themselves belong to such areas. The training process includes teaching and making youths understand how to assess the needs of students as each child needs a different treatment.

There are two models of training. In the first model, a full-year programme is taught to the selected youth and all the information is provided in the tablet, including

reading materials for competitive examinations. They are charged Rs 500 for one month and every week they come to the regional centre for imbibing training. The contents for the teaching material have been developed with the help of organisations like E&Y and Pratham, among others. The estimated number of students being taught by each youth is, on an average, 20-30. The gender participation among youths was fairly equal. Even after completing the one-year programme, the youth who had enrolled in it continue to obtain support in dealing with digital problems. The second model includes a shorter course entailing three months of free training imparted by i-Saksham. The success rate of the trained youth who go on to teach further is about 70-80 per cent.

Presently, the team covers 50 villages in the Jamui and Munger districts.³ The second model is more in vogue wherein the trainers impart computer training and teacher training one day a week each for three months to local youth in community centres or public buildings in these villages. After that, those who are keen to continue the education are offered a two-year support programme.

The programme is designed to train young men and women enabling them to start coaching centres in their own villages. While promoting a cycle of continuous education, such a process also allows them to earn while they themselves study for government jobs. Even as they receive freelance training and support from the organisation throughout their endeavour, all responsibility for imparting them lessons and classes now falls on these young mentors. They generally charge a fee of Rs 50-70 per student per month—in fact, i-Saksham works only with youngsters who charge less than Rs 100 per student per month because the goal of the organisation is to serve the poor.

Key Takeaways

1. *Entrepreneurship, experience, and educational background:* Aditya had a technological background with a Masters in Computer Applications from Jawaharlal Nehru University. Along with these qualifications, it was a sense of an opportunity which led him to form this company along with his colleagues. This is the type of entrepreneurship that needs to be encouraged in India.
2. *Creation of a virtuous cycle of learning:* The organisation helps improve the learning of both the community tutors and children. It also provides children access to improved pedagogy, and digital and other materials. Overall, it helps improve learning. While it has not been tested, it would be interesting to assess whether the community tutors themselves succeed in clearing their examinations and whether their aspirations change.
3. A new skill of community tutoring has been created.
4. The programme makes a major contribution to the community.
5. *Labour mobility is a challenge:* Despite the availability of better opportunities in cities, the youth are not willing to move there and even if they do, they often return home for a variety of reasons. This trend is picked up repeatedly in quantitative terms and anecdotally, indicating that people in India are relatively less mobile between rural and urban areas. Therefore, offering them skilling programmes, which lead them to jobs outside their comfort

³ This paragraph is from here. <https://yourstory.com/2017/05/i-saksham/>.

zones/homes may not always appeal to them. This also makes it imperative to change the local returns to education and to create jobs within their comfort zones.

6. The awareness about aspirational changes about government jobs also needs to change.

Key Challenges

1. *Scaling up*: Can this model be scaled up?
2. *Financing*: Since the shorter model of teaching is free and tablets are handed out for free, the NGO is heavily dependent on grants and support. The major challenges are as follows: Can it be fiscally sustainable? Will the model change or will it be successful if i-Saksham starts charging a modest fee from the community tutors for training them?

V. Construction Sector Skill Council of India, 2016

The prime focus of the Construction Skill Development Council of India (CSDCI), which is located in Delhi, is capacity building and development of training providers and assessment bodies for taking up future job roles.

The construction sector is one of the major job providers for unskilled and semi-skilled workers in India. Following are a few compelling facts about the construction sector in India that emerged from discussions with the promoters of CSDCI:

- A workforce of 45 million is engaged in the construction sector (with 6 million workers added every year), of which 80 per cent belong to Level 1 (helpers) and Level 2 (semi-skilled workers).
- The National Skills Development Corporation estimates that it would be employing 76 million people by 2022.
- The life-cycle of work in the construction sector is different and the nature of work differs.
- Construction workers are not included in the permanent payroll and it is a service in which there is no ownership.
- In every construction work, 1 per cent of the building contract goes to a fund named the Building and Other Construction Workers Welfare Board of the Government. However, this fund has largely remained unutilised.
- The compensation in terms of wages in the construction sector depends on work experience and not on skills.
- The analysis of skill gaps in the construction sector has not been carried out in a systematic manner.
- The exact workforce requirement for construction works for implementing the plan of building 100 smart cities and highways, among other such projects, is not known.
- It is also not clear how the 45 million workforce is distributed in different segments of the construction industry.
- In the rural sector, the workforce is driven by multiple skills, whereas in urban areas, it depends more on construction techniques.
- The initiative to construct 30 million houses in the rural sector entails a huge requirement for a multi-skilled workforce.
- Almost 90% of the workforce engaged in construction is in the unorganised sector
- The supply of labour for this sector mainly emanates from the States of Bihar, Chhattisgarh, Jharkhand, Odisha, and West Bengal, with the major demand for these workers coming from the States of Tamil Nadu, Karnataka, Maharashtra, and Kerala.
- Another concept in the construction sector that needs to be analysed in terms of the aspirational framework is that of mobility and flexibility of jobs.
- Apprenticeship covers mostly jobs above Level 2, say the job of an electrician, wherein the worker acquires a Level 3 status and becomes a certified worker after three years.
- Workers can easily find Level 3, Level 4, and Level 5 by simply walking to the construction site

- The government is considering provision of PF and ESI facilities to workers of the construction sector, so that they can be brought into the fold of the organised sector from the unorganised one.
- The Confederation of Real Estate Developer's Association in India (CREDAI) launched the Kushal programme in partnership with the National Skill Development Corporation (NSDC) in 2011 to conduct skill upgradation programmes for onsite construction workers in Pune.
- Parallel programmes are now being launched by CREDAI all over India. These are being executed in partnership with the NSDC, under the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) or the Prime Minister's Skill Development Mission.
- In all these programmes, CREDAI proposes to follow the National Open School (NOS) in collaboration with CSDCI, keeping in view its specific requirements, and to impart training to construction workers through professional training agencies in the construction sector.

Key Challenges

- There is a shortage of funds needed to impart training.
- There is a corpus of Rs. 27,000 crore of idle funds lying with the Government, which is meant for the welfare of the construction workers, and it is not utilising it to upgrade skill
- At the individual level, the person who wants skill, does not want to pay for it
- The contractor and petty contractor have no incentive to enhance the skills of workers and are only concerned with completing the project.
- No one owns the workers, even the Central Public Works Department (CPWD) depends on contractors.
- Workers are mostly migrants and are so poor that even a minor issue demotivates them. For instance, if somebody pays a worker Rs 50 extra (less than a USD), he worker will leave the existing job.
- ACC Cement set up a Training Institute at Geeta Colony, Delhi, to impart skills to construction workers. However, out of the 150 workers enrolled in it, only 15 completed training and only 9 got jobs.
- Around 30 per cent of the workforce are women, but they work even below Level 1.
- The movement of different assortments of the workforce takes a long time.
- The low intake of engineers and supervisors affects the quality of construction.
- Even a company with a turnover of Rs 400 crore engages only 400 to 500 engineers, with the rest being low-skilled workers.
- Neither the worker nor the contractor is interested in skilling of labourers. Although Confederation of Real Estate Developers' Associations of India (CREDAI) has organised several training programmes, even on-site ones, interestingly, its website notes that the total number of people who were imparted skills came down from 7,203 in 2014-15 to 3,819 in 2015-16. This shows that training construction on-site labourers remains a significant challenge.
- The role of labour contractors in construction is very important and they are not incentivised to participate in the skill training process.

- The NSDC reports the following skills gaps across job roles:
 - Project Managers:
 - Lack of leadership, managerial, supervisory and project management skills;
 - A linear thought process among some experienced people;
 - Greater need to inculcate a positive attitude among the workforce; and
 - Need to groom second rung leaders on a continual basis.
 - Site/Project Engineers
 - Lack of desired technical knowledge;
 - Lack of basic understanding of engineering;
 - Huge mismatch between the knowledge imparted and industry needs;
 - Lack of specialisation in areas such as planning, execution, quality, CAD and process control;
 - Lack of industry knowledge as also of broader economic trends;
 - Poor employable skills among graduates; and
 - Low level of communication and writing skills.
 - Supervisors:
 - The skill of communicating with and managing workers to ensure maximum productivity is not easily available among supervisors, as a result of which skilled supervisors are much sought after.
 - Lack of formal training in technical skills.
 - Bar-Bender, Mason, Plumber, Painter, Welder, Equipment Operator:
 - Sub-optimal equipment utilisation due to lack of knowledge of on machine operation;
 - Understanding of the quality control process;
 - Ability to manage productivity;
 - Equipment maintenance; and
 - Financial management and safety procedures.

Way Forward

- The construction sector is booming with several national level projects, with the prominent ones being:
 1. AMRUT (Atal Mission for Rejuvenation and Urban Transformation);
 2. 100 Smart Cities;
 3. Bharatmala (connecting road networks);
 4. Sagarmala (connecting shipping networks);
 5. Railway Freight Corridor; and
 6. Infrastructure Corridor.
- There is a huge requirement of skilled workers in all these projects. The existing deficit of skill levels necessitates long-term planning and a focused effort to reduce this gap.
- Employment opportunities necessitate highly specialised skills. Additionally, the technical progress witnessed in the last decade due to sustained growth in various sectors has increased the challenges in this arena.

- Developers, construction firms, and architects are now trying to incentivise their employees to take up courses to develop, update, and modernise their skill sets.
- Recognition of Prior Learning has been increasingly adopted by the Government, and it is especially applicable to the Construction sector.

VI. NASSCOM IT/ITeS Sector Skill Council of India, 2016

Unlike other sectors, the information Technology (IT)/Information Technology-enabled (ITeS) sector is a completely formal sector in India. The 2016 report of the National Association of Software and Service Companies (NASSCOM) points out that “while the “industry-ready” supply is higher than the projected demand for technical and non-technical streams, the “job-ready” supply accounts for only about 4.5 per cent of the “industry-ready” supply, thereby creating a huge deficit.

About 30 per cent of the “industry-ready” supply pool needs to be skilled and certified on Quadratic Programming (QP)-based training to meet the industry demand of 0.2 million people every year. There is thus a need to increase the number of QP-certified workers to six times the current levels in order to meet the industry demand of a “job-ready” workforce.” (<http://www.sscnasscom.com/ssc-article/market-indicators/market-indicators-2016/analysis-skill-gap/>).

Further, SSC NASSCOM needs to prepare for additional skilling of a workforce of 3.1 million outside the IT-BPM industry on IT skills as well as the re-skilling of an existing IT-BPM workforce of 1 million on account of disruptions expected.

As per the report, five States, including Maharashtra, Uttar Pradesh, West Bengal, Tamil Nadu, and Karnataka, contribute more than 50 per cent of the total potential supply.

The interview with the IT/ITeS Sector Skill Council in September 2016 revealed that all forms of business in the sector are influenced by technological changes. There is need for enhancing skills in 70 per cent of the jobs.

Substantial re-training is needed after on-campus hiring. The specific skills found to be missing among the staff are oral and written communication skills, critical thinking, team work, ability to synthesise, working in the context of any organisation.

There are four sub-sectors within the IT sector—IT Services, Business Process Management, Engineering Research and Development, and Software Products. Job roles start from that of data entry operator, IT Helpdesk, for which the minimum academic qualifications are Classes 10 and 12 pass.

The interview revealed the need to create awareness about IT/ITeS SSC. Further, a large number of people are not digitally literate and lack access to the Internet. Bandwidth and network are significant challenges. There is also lack of awareness on how to use the phone for digital purposes.

While conducting assessment, Often, there are power cuts during the online assessment for the IT sectors, as a result of which the assessment has to be done on exam sheets. The tribal areas and rural schools are especially challenged.

Key Takeaways

- The IT sector highlights the digital divide between rural and urban areas in terms of infrastructure and readiness and ability to use digital skills. One of the papers in this study shows that IT skills in technical education and higher education have a positive impact on firm level productivity. Clearly, IT skills are

needed not only for development in the IT sector but also for improving productivity in other sectors.

- There is need to enhance the skills of the existent workforce as well as to re-skill it to enable it to meet the rapid technological changes occurring in the country.
- Simultaneously, skill readiness in terms of digital literacy and functional use for rural areas needs to be improved across the country.
- Analysis shows that though the supply of industry-ready people is ostensibly sufficient to meet the concomitant demand in the IT industry, these people are not job-ready. Hence, it is recommended that IT SSC implement the QP programme.
- Further, the NCAER study shows that while a significant number of people have degrees in higher education but are not necessarily employable. Vocational skilling thus seems to be the most appropriate way to address the skill gaps.

VII. Skill Council for Persons with Disability (SCPwD), 2016

Following are some key findings related to skills among the physically challenged workforce in the country:

- In India, around 20 million people suffer from physical disabilities, and the number is rising, as per the Census 2011. This underscores the priority for addressing the issue of training and enhancing employability of Persons with Disability (PwDs), in both urban and rural areas.
- A large number of PwDs have expressed the desire to become financially independent through gainful employment or self-employment. There is also a strong socio-economic imperative to assist these people in securing productive employment for sustaining livelihoods.
- Skill development plays a critical role in enhancing productivity and self-esteem among PwDs.
- The Skill Council for Persons with Disability (SCPwD) has, since its inception in October 2015, been working on mobilising training partners for fulfilling the skills initiative of PwDs under the Prime Minister's Kaushal Vikas Programme (PMKVY). Hitherto, 1300 PwDs have been trained out of the 2600 enrolled in the programme.
- The SCPwD is a horizontal Skill Council (SC) that selects suitable job roles or Qualification Packs (QPs).
- The SCPwD has an Expository, which is an addition to the QP of the domain sector, detailing information about the diverse training needs and methodologies to be adopted for training PwDs. Training providers use this Expository to develop a curriculum for such training and align it with the respective QP in terms of the peculiar type of disability and validation from that vertical.
- The mode of training is oriented both for promoting skills among the learners as well as for enhancing the trainers' competence in imparting these skills.
- The major focus of the training programme is on enhancing employability and ensuring that at least 20 per cent of the trained workforce is employed. The SCPwD primarily maps job roles with specific disabilities in such a way that the disability does not become a restraining factor for the concerned person in getting a suitable job.
- After receiving training, a person with a speech and hearing disability can execute the functions of a food and beverage service steward as efficiently as any able person but a person with visual disability may not be able to do so. Similarly, a person with visual disability may be able to execute the function of a customer care executive, who specialises in vocal communication, but not that of a sewing machine operator, which needs visual expertise.
- The outcome of the engagement of a PwD in a spinning mill is relatively better than in other works as it is observed a person with a visual disability can blend the combination of cotton and polyesters better than even a person without this disability.
- The training imparted should ensure employability of the PwDs by empowering them with new knowledge and skills that provide both livelihood and social security.

Key Challenges

- There is a shortage of specialised training centres for PwDs.
- Some unique needs of PwDs could pose challenges in implementing skill development programmes.
- Limited mobility and other such challenges may prevent PwDs from migrating for jobs or even for undergoing training.
- The lack of adequate equipment and tools for training PwDs and high costs of procuring them are major challenges.
- It is important to create awareness among both the urban and rural PwD population regarding the impending benefits of acquiring skills for executing specific job roles.
- The challenge of limited mobility among PwDs and their inability to migrate for jobs could be met by approaching sections of the industry that may have units in the areas where such PwDs reside.
- Industry partners need to be urged to provide hostel facilities for the PwD trainees and employees.
- It is imperative to identify avenues of self-employment and entrepreneurship locally, and to encourage PwDs to acquire skills in such jobs depending upon their aptitude and inclination.

Awareness and Mobilisation Programme

- Career opportunities need to be promoted by organising job fairs, skill missions, and workshops in rural areas directly or through training partners and the media.
- There is need to establish linkages among link industry partners of different sector skill councils.
- Long-term employability of PwDs can be ensured with the help of the experts in local NGOs that support and guide the employers by offering behavioural and psychological workplace solutions and accessibility.
- There is need for frequent counselling of employed PwDs and their peers.
- The SCPwD has adopted a demand-based model of training and curriculum development. In addition, a skill gap analysis is also being carried out.
- There is also a plan to develop a Labour Market Information System (LMIS) to support the planning and acquisition of skilled manpower for serving industry by implementing effective skilling strategies.
- A holistic training curriculum needs to be developed in concurrence with industry partners in various SSCs.
- The SCPwD has set up counselling centres at the village level with the help of local NGOs to encourage the parents of disabled children to send the latter to training centres.
- An important endeavour of the SCPwD has been to identify various areas wherein PwDs can be employed or self-employed.
- Creating a conducive environment, or one that promotes trust and self-respect among PwDs is a crucial requirement for enabling disabled people to overcome the status of being a 'dependent' and ensuring a dignified and productive life for themselves.

Maruti Training Academy at Gurgaon, 2016

Maruti Suzuki occupies more than 50 per cent of the market share of passenger vehicle sales in India, as per the monthly data for April–May, 2016–17 (Modi, 2017). Its passenger vehicles sales went up at a compound annual rate of 7.5 per cent between 2011–12 and 2016–17. The automotive supply chain includes dealerships, service stations, original equipment manufacturers, tier 1 suppliers who are supplying to OEMs directly, and tier 2 suppliers who are supplying to tier 1 suppliers. The latter may also include Micro, Small and Medium Enterprises (MSMEs). The key challenge for Maruti is to train people at all critical points of the supply chain along with its own employees. Further, Maruti also imparts driver training as part of its Corporate Social Responsibility (CSR). This is especially important given that India has one of the highest rates of road accidents in the world, and it is often the car that is blamed for causing the accident!⁴

The National Skills Development Corporation (NSDC) estimates that the figure for direct employment in the auto and auto components sector would be around 15 million in 2022. Further, the NSDC report shows that the skills gap in the auto components sub-sector also stems from an inadequate understanding of advanced engineering drawings and systems design, as well as low levels of skills among entry-level operators and inadequate training facilities at units of auto component manufacturers. The skills gaps in the dealership sub-sector include the inability to assess completeness of documents submitted by customers, leading to delays in processing, inadequate product knowledge for effectively addressing customer queries, insufficient technical knowledge for providing vehicle services, and limited IT and MIS reporting skills.

In an interview, Mr R.C. Bhargava, Chairman, Maruti Suzuki, highlighted the shortage of skilled labour in Maruti's automotive supply chain. Mr Bhargava revealed that the potential employees are not industry-ready and also lack basic foundational skills. In addition, they lack the basic acumen to work for eight hours in a day, listen to instructions, and follow discipline on the work floor.

The Maruti Suzuki Training Academy (MSTA) was started in December 2012 in order to overcome these gaps. Mr Bhargava stated, "The objective was to establish an academy of excellence to meet specific business needs and capability development among all employees of Maruti Suzuki, Suzuki group of companies, dealers and suppliers. Using Virtual Classroom Technology, technical training is imparted to various regional offices, regional training centres, and area offices throughout India via a two-way satellite communication. Technical and behavioural training are imparted across Maruti Suzuki operations in India from this Academy" (Maruti Suzuki, 2012-13). The Academy also has a robotics training facility. Further, a Design Centre has been set up at Rohtak in Haryana, India to impart modernised

⁴ The total number of road accidents increased by 2.5 per cent, from 4,89,400 in 2014 to 5,01,423, in 2015. The total number of persons killed in road accidents increased by 4.6 per cent, from 1,39,671 in 2014 to 1,46,133, in 2015. The proportion of road accident injuries have also increased by 1.4 per cent, from 4,93,474 in 2014 to 5,00,279 in 2015. The severity of road accidents, measured in terms of the number of persons killed per 100 accidents increased from 28.5 in 2014 to 29.1 in 2015 (MoRTH, 2016. Road Accidents in India 2015. <http://morth.nic.in/showfile.asp?lid=2143>).

training. The Centre focuses on promoting training and development in the following areas:

- R &D;
- Basic engineering;
- Multi-skilling;
- Personality/emotional/yoga training;
- Innovation; and
- Design.

The MSTA is an integrated training facility under one umbrella, wherein about 1,00,000 people have already been trained. The goal is to double this figure over the next five years. The MSTA has advanced facilities that take into account the actual realities of the OEMs. The course package also entails teaching the Japanese language to trainees because the company is a joint venture between an Indian and a Japanese firm.

Although the MSTA is registered with the Centre as a Vocational Training Provider, it is also developing partnerships with the States. At the time of the visit to the MSTA, it was in the process of obtaining a registration as a Pradhan Mantri Kaushal Vikas Yojana (PMKVY) Skill Training Provider. The MSTA is involved in training people at various levels ranging from school drop-outs to designers. Essentially, it is a forum for enhancing skills as well as re-skilling the workforce. Significantly, the teachers are workers who have worked in Maruti themselves and therefore have work experience and are aware of its institutional history. All the assessments are done online. Following are the various areas in which the MSTA imparts training:

- There is a programme targeted towards training school dropouts as workmen, which mirrors the objectives of the PMKVY. The programme uses simulated learning techniques and imparts on-the-job training. The certification program offered through the PMKVY includes courses on automobile service and repair, automobile manufacturing, and automobile body repair and body paint. A majority of the targeted students have studied up to the 10th or 12th standard. They have to undergo a rigorous process of initial induction test, physical test, and psychometric test to get themselves enrolled in the training programme. The Below the Poverty Line (BPL) students at whom the Maruti programme is primarily targeted belong to the States of Sikkim, Chhattisgarh, Jharkhand, Madhya Pradesh, and Uttarakhand. The attrition rate among these students is 8 to 10 per cent. The programme does not attract students from the National Capital Region (NCR) partly because of the prevalence of other opportunities here.
- Through the Council for Vocational Training, the MSTA offers a two-year certificate programme, which is equivalent to a diploma. In the first year, the theory and practical aspects of the programme account for 30 per cent and 70 per cent of the curriculum, whereas during the second year, this ratio is 20 per cent and 80 per cent. The final test is conducted by the Government of India. Students get a stipend of Rs 6,000-7,000. Due to a shortage of skilled workforce, there is 100 per cent job placement for these students after completion of their training. The eligible age for participation in the programme is 18-23 years and passing examinations for 10th or 12th class.

- In order to promote higher education, the MSTA has tied up with the Haryana Government to run a three-year diploma programme for associates and polytechnics for the position of a supervisor. Additionally, the MSTA has tied up with BITS Pilani to train people in various roles ranging from supervisors to engineers.
- Maruti Suzuki hires civil, electrical, and mechanical engineers. It has also tied up with schools offering MBA. It conducts its own online tests and hires across 30 campuses around the country based in cut-off score on the online test.
- At the supervisor level, there are dedicated multi-skilling programmes to re-skill and enhance the skills of the potential employees.
- The MSTA has tied up with almost 101 Industrial Training Institutes (ITIs) around the country, managed by the Directorate of Employment and Training of the different State governments. As per this initiative, the Maruti Suzuki India Limited (MSIL) renders support for providing overall skill development of trainees and trainers of ITIs over the next five years. These ITIs impart advanced training and apprenticeship training in machine-equipment repairing and other skills as per the industry needs. Besides, the trainees of these ITIs are provided on-the-job training facilities in local centres and the meritorious students of these ITIs get placement assistance from the company. There is special tie-up to upgrade the skills among ITI students to bring them on par with requisite technological advancements and industry needs. The number of tie-ups for different modules of training stands at 101, covering 27 States and 5950 students in the automobiles study. The major emphasis of this tie-up is on promoting:
 - Faculty development;
 - Student development;
 - Infrastructure; and
 - Industry connections
- At the ITI level, the targeted students are meant to become proficient workmen. A three-year diploma makes them eligible for supervisory jobs. However, a skill programme launched in July 2016 is designed to upgrade students from the supervisory level to the level of engineers. There is also programme for re-training of semi-skilled workers.
- Selected candidates from these ITIs are provided free residential training (along with stipends) in courses pertaining to the automobile sector at the MSTA in Gurugram, Haryana, India. The State Government is supposed to provide the land and infrastructure for setting up the institute while MSIL manages and operates the facility besides providing the necessary training vehicles and simulators, and overseeing the appointment of the trainers.
- Employers, vendors, and dealers constitute a critical part of the value chain, and in order to assess the training needs, a Competency Gap Analysis is carried out during the training period through case studies, simulation, and psychometric tests. The learning process comprises classroom training (behavioural), simulated training (acquisition), and finishing of training (assembly), and also provides driver training.

The MSTA started conducting residential programmes with 60 students in 2013, with the number going up to 1,200 in 2016–17 and 2,000 in the next fiscal year. Each batch contains 30 students. The plan for conducting –a 3-5 year integrated training programme started with the 2017-18 batch. The MSTA has also set up a 24×7 Help Desk to support the students. The residential programme is monitored by Mr Mukesh Gupta, the Vice-President of MSTA, who oversees the facilities provided for students and deals with the challenges they face.

Key Takeaways

- Skilling and HR practices complement each other. There are avenues for up-skilling and promotion in Maruti.
- From the skilling perspective, the MSTA has designed a comprehensive curriculum as per the needs of the organisation, covering behavioural, technical and functional aspects. The Academy provides on-the-job training and its curriculum ensures a balance between theoretical and practical teaching.
- Language i.e. knowledge of working knowledge of Japanese is firm-specific need in this case and is provided by the MSTA.
- The MSTA is involved at all levels of the training, ranging from hiring for its supply chain to training workmen to become managers.
- The infrastructure for imparting skills and training is constantly updated at MSTA.
- It is important to impart foundational skills up to Classes 10 or 12 to enable students to learn and augment their productivity.
- The question of ways for scaling up the programme needs serious consideration.
- Another open-ended question posed to the MSTA was whether the short-term trainees would be certified by the NSDC programme. The response to this question was that certification would be an important criterion for enabling employees to become mobile and ascend the growth ladder.

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VIII. Assessment of Vocational Skills: A Meeting with NABET, 2016

Meeting with Mr Jagmohan S. Bhogal, Mr C.K. Sharma, and Mr Nikhil Relia.

NABET: An Introduction⁵

The National Accreditation Board for Education and Training (NABET) is a constituent Board of the Quality Council of India.⁶ It has established a mechanism for the accreditation of vocational training organisations and for skill assessment bodies. It offers accreditation to consulting organisations in various conformity assessment areas. In 2012, the Ministry of Labour and Employment decided to make NABET accreditation mandatory for Industrial Training Institutes (ITIs) seeking national affiliation. Five distinct verticals have been formulated to provide accreditation and focused strategic direction to the activities of the Board in the following areas:

- **FEED**
 - Accreditation of schools;
 - Organisation of a three-day training course for preparing schools for accreditation.
- **Skills Training**
 - Accreditation of Vocational Training Providers;
 - Directorate General of Training Field Institutes imparting training in various activities.
- **Skill Certification**
 - Personnel certification bodies;
 - Skill assessing bodies under the Directorate General of Training.
- **Environment**
 - Accreditation of environmental impact;
 - Assessment of consultant organisations;
 - Accreditation in the social sphere.
- **MSMEs**
 - ZED (Zero Defect, Zero Effect);

⁵ The reference for this section is the NABET website.

http://nabet.qci.org.in/introduction_NABET.asp/

⁶ The Quality Council of India (QCI) is a non-profit, autonomous body set up jointly by the Government of India and the Indian industry represented by three premier industry associations, viz., Associated Chambers of Commerce and Industry of India (ASSOCHAM), Confederation of Indian Industry (CII), and Federation of Indian Chambers of Commerce and Industry (FICCI), to establish and operate a national accreditation structure and promote quality through a National Quality Campaign; with support from the Office of the Development Commissioner, MSME, Ministry of MSME, Government of India and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The GmbH-implemented MSME project has developed the Accreditation Standard for Business Membership Organizations (BMOs) in India. The Council is playing a pivotal role at the national level in the propagation and adoption of, and adherence to quality standards for all important activities.

- Lean: Lean manufacturing or lean production, often simply "lean", is a systematic method for waste minimisation within a manufacturing system without sacrificing productivity.
- Business Member Organisation (BMO).
- Training Institutes Management Systems Consultant Organisation
 - Accreditation of courses in conformity assessment areas
 - Quality Management System (QMS);
 - Environmental Management System (EMS);
 - Information Security Management System (ISMS);
 - Food Safety Management System (FSMS);
 - Occupational Health and Safety Management System (OHSMS).
 - Accreditation of consultant organisations
 - QMS consultant organisation;
 - Hospital and healthcare consultant organisations;
 - Food Safety Management System (FSMS)
 - Environment Health and Safety (EHS).
 - Accreditation of training institutes/training courses
 - Training the trainer;
 - Mathematical Ability Enhancement through ABAWS.

Accreditation of Training Providers

Vocational Education and Training (VET) includes affiliated Industrial Training Institutes (ITIs), Industrial Training Centres (ITCs) and Vocational Training Providers (VTPs). Primarily there are primarily two kinds of vocational training institutions that seek NABET accreditation: (i) ITIs seeking affiliation with the National Council of Vocational Training (NCVT), and (ii) VTPs not seeking NCVT affiliation but needing only accreditation from NABET. Accreditation is a process of establishing the competence of VET in delivering the requisite elements of vocational training and its ability to professionally evaluate the competence acquired by students. Accreditation focuses on learning and self-development, and encourages VET to constantly pursue excellence. Accreditation helps in assessing VET and professional programmes affiliated with these institutions for performance, integrity, and quality, which entitle them to win the confidence of stakeholders and members of the community they serve. The following table provides a comparison between ITIs and VTPs based on various criteria for judging their functioning.

S. No.	Industrial Training Institutes	Vocational Training Providers
1.	Total 13,353 in India offering 88 trades; Uttar Pradesh, followed by Rajasthan and Karnataka, have the most ITIs (website)	Approximately 20,000 in India as per the July 2016 interview
2.	Course curriculum designed by NCVT	Own course curriculum
3.	Run by the State government and private parties;	Private

	regional difference would be that ITIs in the North are mainly run by the Central Government whereas in the South, they are accredited by the State/regional government.	
4.	Formal education and formal criteria, including infrastructure, process, and frequent on-site assessment; An ITI is a government-mandated institution wherein the guidelines are laid down by the Directorate General of Training (DGT) with considerations with the stakeholders according to national and international best practices. There is a need for prior educational attainment like primary or secondary education. Thus ITIs are more credible.	Flexible criteria; VTIs are independent in this sense that people apply for the course, acquire training for six months, and get a certificate. There is flexibility in terms of initial qualifications and education.
5.	It is a must for all the new ITIs to get QCI affiliation. A few years ago, there was no such mandate. QCI affiliation is granted on the grounds of assessment of the institute, its infrastructure, competence of its staff, and quality of training. The only factor on which it is not evaluated on is its placements.	

Source: Interview.

The interview revealed that visiting only the Delhi-based ITIs may not provide a realistic picture of the state of affairs about their competence and infrastructure, as the ITIs located in Delhi exhibit relatively better performance and facilities than their counterparts located outside Delhi. Hence, the challenge starts when one visits ITIs in places other than Delhi, and finds that the quality of the ITIs tends to fall with a decline in infrastructure and the limited availability of training providers.

The States of Chhattisgarh, Kerala, and West Bengal are endeavouring to enter into PPPs such that the government gives grants but the management is private.

Accreditation of Skilled Personnel as per International Norms

India lacks skilled manpower as per global norms. There is good quality assurance but no formal independent system to assess/certify such skills. In February 2016, the “Certification of Persons” Scheme was launched based on standards ISO17024 (an international norm that is very popular in US/Europe). The scheme focuses on the assessment and certification of skilled people on the basis of both theoretical as well as practical knowledge. The cost of accreditation is Rs 30,000, and is determined by the size and nature of the local accreditation body.

Accreditation of Assessing Bodies

NABET also gives accreditation to assessing bodies like the Indian Institute of Welding, Kolkata.⁷ The accreditation is a three-stage process. The first stage entails assessment of the documents of the concerned body and conduction of a background check. The second stage involves an audit of the central office of the organisation, including verification and checking of its functioning. In the third and final stage, the process of assessment of the institution is verified after personal witnessing of its tests and practices. If the concerned body passes the assessment in all the three stages, it is accredited for three years, with an annual surveillance of activities. After three years, the organisation has to apply for re-certification. How these bodies certify the candidates is a different story. It depends on the nature and level of trade for which the skill is required. Currently, these certificates are issued for a lifetime but efforts are being made to restrict the certifications to a specified period so that with an upgradation in the nature of the skill and technology, people also have to upgrade their certification. Since the vocational training may not be intended for immediate employment, the certification differs accordingly. Making certification mandatory for ensuring quality completely depends on the government and no such mandate has been issued yet.

A certificate is proof of knowledge and competence in the pursuit of practices.

NABET is a part of the Pacific Asia Corporation. Thus the concerned institutes and bodies are accredited and their certification is valid and acceptable not only in India but in the whole of the Asia-Pacific region. NABET has also applied for a place in the International Accreditation Forum, and if it is granted this position, its credibility will be global.

Conversion of Polytechnics into ITIs: They had received 4,400 applications between April and July 2016.

MSME: Conflicts between locals and outsiders may occur due to migration.

Challenges Faced by the ITIs:

- Staff shortages;
- Lack of power supply;
- *Corruption in the Sector Skill Councils (SSCs):* The SSCs are based on a German model which is very sound theoretically. It is supposed to be a representation of industries, trainers, assessors, and consultants. If implemented properly, sounds good enough but the model is severely infected with corruption. Once it went into the hands of the consultants it became a business model whose only purpose was to churn out numbers. The money allocated was very judiciously divided among everybody and forged

⁷ The Indian Institute of Welding (IIW-India) was incorporated on the 22nd April, 1966 at Calcutta to foster the development of welding science, technology and engineering in India. http://www.iiwindia.com/the_institute/the_institute.php.

certificates were issued all across. What seems is that as soon as the target is quantified as numbers there is a downright compromise on quality.

- PMKVY Scheme – ITI better structure for hard skills versus the PMKVY Program. One cannot even hold the welder properly in three months.
- Continued Educational Program is important
- Independent technical skills need to be developed.
- Quality issues – one should ask the Sector Skill Council that how many have been employed within the Council?
- Psychometric tests need to be conducted.
- Skill development programs are reactive and after five years, technology is obsolete

Policy Recommendations

- 8th Class- Science, Arts, Commerce and Vocational – An ideal situation will be imparting skills from the school level designing a separate stream of vocational training in school curriculum along with mainstream subjects. The kind of discipline and monitoring that can happen in schools is not possible in such training institutes. It is easier for a child to learn these skills in these formative years. What happens in a real time situation is that setting up of an institute takes around an year (being very optimistic). The gestation period is long and then the student trains for a half year maybe a full year. Technology in the market changes every six months. By the time the student trains and comes in the market the technology he/she trained for becomes obsolete. Thus imparting these skills in school makes more sense complimenting this process with CEP.
- CEP (Continued Education Program) is a university level program designed for up gradation of skills as technology improves. A person with basic knowledge and skills can easily update his/her knowledge in such a program. This might also solve the problem of dropout rates in school. Most of the vocational training starts after the 8th standard when children drop out to seek a job. Training them might keep them in school with a view of preparing them for a job. Eg: Vocational Training after 8th standard in Punjab Government schools in the 80s which gave an ITI equivalent certificate. In Punjab in the 1980s, one used to offer vocational schooling in Punjab but that is gone partly because of salaries. The person who taught vocational skilling in school was a junior engineer with higher salaries than a teacher.

Key Takeaways from the Meeting

1. Quality of vocational skilling programs matter.
2. Short-term skilling programs of limited use because of training in technology and quality. There is need for more long-term programs.
3. Implementation of skilling programs and roping in private partners
 - a. Shoddy infrastructure

- b. Shortage of teachers, assesses in vocational training programs.
 - c. No real benefit to students or the economy
4. While the application process for accreditation is online, people are not ICT ready and do not have emails even.
 5. Both supply side and demand side policies matter.
 6. Accreditation of vocational skilling programs at the school level will also help increase the returns to vocational skilling.
 7. Potential synergies with other policies like the efforts to accredit Business Member Organisations. The German company, iMove is also starting to endeavour on the particular task of upgrading the capacity of business organisations to spread skilling. If these two efforts can be synchronised and matched, demand-side vocational skilling programs will benefit.

A summary of the literature shows that the quality of the ITIs was found to be wanting despite interventions from the government (Tara, Kumar and Pilz, 2016). The poor quality of the ITIs is compounded by the poor infrastructure, lack of teachers, poorly trained and de-motivated teachers, poor demand for the courses, lack of foundational skills, and a mismatch between training and the actual labour demand (Tara, Kumar and Pilz, 2016).

References

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IX. **Bamboo: A Story of Incense and Innovation in the Northeast of India, 2016**⁸

⁸ A version of this case study was also published by the research investigator, Bornali Bhandari, in *Ideas for India* in 2018.
<https://www.ideasforindia.in/topics/productivity-innovation/tripura-s-bamboo-sector-potential-and-challenges.html>

The Tripura Bamboo Mission

The IL&FS Clusters is working on a public–private partnership (PPP) mode with various arms of the Government specifically on clusters in the manufacturing sector with small and medium enterprises. NCAER visited one such cluster in the State of Tripura in nOrth-east India. The State has more than 3,000 square kilometres of bamboo plantations. The IL&FS has entered into a PPP with the Government of Tripura to initiate the Tripura Bamboo Mission (TBM). TBM is involved in all stages of bamboo production and value addition, from growing bamboo in plantations to mobilisation, technological interventions, building institutions, marketing and financial interventions, developing infrastructure and production clusters, and building skills and capacity. There are 16 clusters for incense sticks, 24 for handicrafts and furniture, and 7 for bamboo plantations.



The villagers have formed self-help groups (SHGs) for producing incense sticks, handicrafts, furniture, and plantation clusters. The NCAER team visited the Gandhigram-Narsingharh Handicraft Cluster in West Tripura. Although there are about 100 artisans in that cluster, during the time of the NCAER visit in November 2016, only 19 were employed. The women working there were in the age group of 25 to 48 years, and all of them had job cards.



The women were clearly skilled in the production of bamboo handicrafts, with the production taking place in assembly shop mode, and certification was also being given. However, the challenge is that of scaling up and reaching the markets. The main challenges are the lack of sustained and continuous orders and inability to deliver the products to customers on time. The receipt of continuous orders could fetch a steady income of Rs 4,000–5,000 in a month.

If we consider the example of incense sticks, India is the world’s largest producer, consumer, and exporter of finished incense sticks. The sector is growing at a rate of 14–17 per cent every year, but the preceding three years have seen a rapid transition from handmade to semi-mechanised products. Tripura used to be the leading supplier of basic raw materials for incense sticks in India, but due to the shift from hand-made to semi-mechanised round sticks and the consequent drastic decline in the demand for hand-made incense sticks, Tripura has lost its lead position in this sphere. Due to a shift to round bamboo sticks and a reduction in import duty from 30 per cent to 10 per cent, India had started importing incense sticks from China and Vietnam, and the demand for Tripura’s sticks had fallen to one-fifth of the original capacity (TBM, 2017).

The TBM has adopted a cluster skilling approach. In 2016–17, it organised 24 skill development training programmes, wherein 710 artisans were trained. In addition, there were two programmes on imparting capacity building training on bamboo furniture, in which 40 artisans were trained; five programmes for training 25 trainers; two programmes on soft skill training; and four skill exchange programmes for 82 artisans (TBM, 2017).

Bamboo Entrepreneurs in Tripura

However, the training in the local Industrial Training Institute (ITI) in Tripura is not up to the mark, as assessed by an innovative enterprise working in bamboo. Mutha Industries (not a part of the TBM), which is located in a bamboo park in Tripura's capital, Agartala, opened a bamboo wood manufacturing unit and started commercial production in 2014. Its semi-automated facility, employing 100 people, is manufacturing a range of bamboo wood products, including furniture, flooring, panels, and outdoor decking. These products are new to India.

The company hires workers after Classes VIII, X, and XII (95 per cent of its employees have studied up to Class VII) and then trains them in both hard and soft skills for 7–8 months. It is also important to ensure multi-skilling along with specialisation. In order to retain fresh hires, the firm retains a portion of their salaries for the first three months and thereafter releases them if the workers remain with the company.

The staff at Mutha believe that ITIs need to evolve further to foster academia–industry collaboration. They also feel that there is a vast gap between the skill levels of Tripura and those of the rest of India. The lure of permanent government jobs acts as a disincentive in Tripura for educated people to work in private industry.

Bamboo has a lot of potential, especially because it is a renewable source, and can become a game changer for the State if the industry is encouraged to make innovative products that are in demand in the international market. Since bamboo is a renewable source, it also helps safeguard the environment. Further, improved skills can help make the required shift from traditional production to more modern goods.

References:

Tripura Bamboo Mission. www.tripurabamboo.com

Tripura Bamboo Mission (TBM). 2017. "Quarterly Progress Report: January-March 2017, tripurabamboo.com. Agartala, India.

Author's interview with Mutha Industries and TBM Mission.

X. Indo-German Initiatives on Vocational Skilling in India

The German vocational skilling model is one of the most advanced in the world, developed from the days of merchant guilds in the Middle Ages. The Germans are working closely with several Indian organisations through the entire chain of vocational skilling in India, which includes dual vocational skilling, and developing skilling in clusters, among other initiatives.

In August 2016, the Ministry of Skill Development and Entrepreneurship (MSDE) entered into partnership with German International Cooperation (GIZ) to implement elements of German dual training system in automobiles, electronics, and construction clusters in India. This also includes the adoption of gender-responsive approaches for facilitating a more inclusive skilling framework. The project was salted to run for three years to improve vocational training in India's industrial clusters, including the automobile component cluster in Aurangabad, Maharashtra; the electronics cluster in Bengaluru, Karnataka, and the construction cluster in Bhiwadi, Rajasthan. Implementation of the cluster-based VET programme would involve co-ordinating with multiple stakeholders at the Central, State, and local levels, including the National Skill Development Corporation, the National Skill Development Agency, Sector Skill Councils, State Skill Development Missions, as well as regional and local Business Membership Organisations (BMOs). The project also aimed to incorporate gender-responsive approaches for promoting a more inclusive skilling framework.⁹

iMove: This is involved in the creation of an environment for unfolding of the “principle of duality“ in VET, and integration of VET processes in industry (through the Cluster Approach). They are working with several stakeholders.

BMOs: It is proposed that the BMOs set up their own common technology centres which provide the following:

- Basic and technology-oriented theoretical and academic knowledge, including communication skills, natural science, and life skills through academia and industry linkages.
- First industry-oriented practical skill training and support to small and medium enterprises (SMEs) to organise in-house training sessions “on the job”, covering curricula, training of trainers, and recruitment, among other things; and
- Access to new technologies.

The National Accreditation Board for Education and Training (NABET) has been providing accreditation to BMOs since 2014. This helps in the promotion of micro, small, and medium enterprises (MSMEs), which form these BMOs. Further, the Quality Council of India, GIZ, and the Ministry of MSME came together to organise a two-day national conference in Delhi on innovation and internationalisation for BMOs.

⁹ Source:

https://www.giz.de/projektdaten/projects.action;jsessionid=387D59670ABDD7283C13E3B B94C094ED?request_locale=de_DE&pn=201422948.

Role of Businesses and Companies: Businesses and companies perform the following roles:

- Employing trainees/students (under the new Apprenticeship Act);
- Rendering systematic in-house trainings (based on the principle of duality);
- Collaborate with Centers in curriculum design, management boards.

Role of the Government: The Government is expected to perform the following role:

- Transform, upgrade and run the existing facilities (like ITIs, polytechnics, and colleges);
- Support initial funding of the “dual structure”;
- Cooperate with the SMEs under the new apprenticeship programme; and
- Develop a regulatory framework in close collaboration with SMEs and the BMOs in accordance with the National Skills Qualification Framework (NSQF).

Following is an example of Indo-German business cooperation:

The Indo-German Chamber of Commerce (IGCC), Pune: The cooperation between India and Germany in VET has gained momentum in recent years. The idea of a cluster approach emerged from this cooperation, and the idea of trying out the dual principals in a holistic environment of selected industry clusters also found many supporters. The IGCC is part of this aim and helps the industry in meeting its need for quality VET and eventually well-skilled staff. German VET services are offered under the brand DUALpro. As part of DUALpro, the project VETnet has come a long way—after the establishment of a VET Council and specialised working groups in 2014, intensive discussions started and brought industry representatives together. In cooperation with some of these companies, IGCC conducted a pilot course in Metal Working in early 2015 along with the school partner Don Bosco Private Industrial Training Institute in Pune. The training showed positive results in terms of progress in learning achieved by the trainees and feedback from the participating companies. Based on this, several companies requested the IGCC to extend the course and develop a one-year training module for industry mechanics. This training course, which started in November 2015, enables these mechanics to focus on practical skills and applications, obtain shop floor experience in their respective training companies, and join the working world immediately after graduation with great prospects for their future. The IGCC also started its second batch in January 2017 but with only four participating companies. The project is sponsored by the German Federal Ministry of Research and Education (BMBF), and is coordinated by the Association of German Chambers of Industry and Commerce (DIHK) and carried out by nine participating German chambers abroad (AHKs), with one of them being the Indo-German Chamber of Commerce. Further, it has introduced a course in Mechatronics, which seeks to train students vide a three- and a half year mechatronics apprenticeship program. The curriculum is the same as in Germany with only a few minor adjustments to local requirements. It includes content in mechanical, electronic and informatics skills, as well as other modern automation technologies. Apart from these skills, the workforce will also develop their interpersonal skills through the programme.

XI. FARMART: Entrepreneurial Skills, 2017

Interview with Alekh Sanghera at NCAER dated 20.01.2017

According to a report by NABARD (2014¹⁰), there has been a conspicuous fall in the average size of occupational landholdings in the country, resulting in an increase in the number of small and marginal farmers with landholdings of size less than two hectares. Data from the 2011–12 Agricultural Census¹¹ show that 85 per cent of farm holdings belong to small and marginal farmers. Ownership of small and marginal holdings prevents both farm mechanisation and the accrual of productivity benefits from economies of scale. This also makes it unviable for small and marginal farmers to own agri-machinery and equipment like tractors, and tillers, among others, solely for use on their own farm. Renting such machinery has been cumbersome due to limited access to such services. The prevailing rental market for agri-machinery is highly fragmented due to information asymmetry, lack of standard pricing, and other barriers.

In order to solve this problem, FarMart was launched in 2016, with the goal of filling in this gap by using technology to connect large farmers, who own such machineries, with those who don't.¹² FarMart is a "for farmer, from farmer" initiative that delivers machinery from a diverse catalogue assisting at every stage of farming, including ploughing, sowing, and threshing. Essentially, FarMart is an on-demand agri-machinery renting platform for the farmers and from the farmers.¹³

Under the first initiative, under-utilised agri-machinery is offered for rent by large farmers on the FarMart platform. Farmers who need such equipment but find it unviable to buy one have the option of renting the machinery by booking it on a mobile App or through the call centre. FarMart prices are tailored according to farmers' usage and needs, including soil type across regions. Payments under the programme are made by using their Aadhaar number, virtual ID, or phone number, instead of cash, using the foundation of Prime Minister Modi's flagship project, the Prime Minister Jan Dhan Yojana (PMJDY).¹⁴

Apart from providing a means of supplying farm equipment on a rental basis at a low cost, the initiative also provided a source of secondary income for farmers, thereby promoting entrepreneurship in the rural community. The model is being scaled up by organising roadshows and self-help groups (SHGs), and through the gram panchayats. The company has enabled more than 350 farmers and entrepreneurs (*Business World*, 2017).¹⁵

The launch of the initiative was backed by intensive research carried out by the FarMart entrepreneurial team. Based on a primary survey of 1500 farmers carried

¹⁰ "Agriculture and Land Holding Patterns in India", *NABARD Rural Pulse*, Issue I, January–February 2014

¹¹ *Annual Report 2011-2012*, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, March 2012.

¹² <https://yourstory.com/2016/06/farmart/>

¹³ <https://yourstory.com/2016/06/farmart/>

¹⁴ <http://www.networkedindia.com/2016/07/15/farmart-the-rental-marketplace-for-farm-equipment/>

¹⁵ <http://bwdisrupt.businessworld.in/article/Indian-Angel-Network-Backs-farMart-Farmers-Marketplace-for-Agriculture-Equipment/16-03-2017-114493/>

out in June 2015 across three States—Uttar Pradesh, Uttarakhand, and Punjab, the FarMart team found that 93 per cent of the respondents rented machinery on a regular basis but faced severe challenges. Small and marginal farmers continue to face challenges with regard to access to institutional sources of finance, machinery, and modern technology.

FarMart launched a pilot in January 2016 in ten villages of Saharanpur district (western Uttar Pradesh). In four months of operations, they have successfully completed 400+ orders, with average ticket size of transaction being Rs 800. They have 300 farmers on-board and about 10 machinery owners have registered on their platform. Catering to 60 per cent of repeat customers, they have a month-on-month growth rate of 200 per cent. As of March 2017, FarMart was operational in one district and slated to expand to more than 20+ districts in Uttar Pradesh, Uttarakhand, Haryana, and Madhya Pradesh (*Business World*, 2017).

Background of the Co-founders

The three founders of FarMart are Alekh Sanghera, Lokesh Singh, and Mehtab Singh Hans. From an Army background, Alekh completed his Bachelors of Mechanical Engineering from Sir M Visvesvaraya Institute of Technology, Bengaluru. While working as a digital payment consultant with MicroSave, he met his mentor Lokesh. Lokesh is an Engineer from HBTI University, Kanpur, and he followed it up with a PGDRM from the Institute of Rural Management, Anand, and has over 17 years of managerial and entrepreneurial expertise. Mehtab hails from a family of farmers from Punjab. Studying in the same school as Alekh, he completed his Bachelors of Business Administration (BBA) from Christ University, Bengaluru. Working as a consultant with the National Institute of Public Finance and Policy (NIPFP), he shares a 16-year friendship with Alekh, since their school days at The Lawrence School, Sanawar in the foothills of the Himalayas.¹⁶

Lessons and Interpretation

1. All three co-founders have considerable experience. While Alekh hails from an agricultural background with an engineering degree, Lokesh has extensive experience in this field, having worked in the financial inclusion arena for more than 15 years. Mehtab also hails from an agricultural background but has business acumen. The three co-founders of FarMart can thus be called ‘opportunity entrepreneurs’, who have a comparative advantage in terms of their educational background and expertise, which they collectively bring to the field.
2. Their business model entailed doing background research coupled with technical expertise from their jobs.
3. Using advanced technology in agriculture (one of India’s lagging sectors) will help improve agricultural productivity as mechanisation of agriculture is supposed to do, *ceteris paribus*.
4. It also provides entrepreneurship and employment opportunities to others in the rural sector.

¹⁶ <https://yourstory.com/2016/06/farmart/>.

5. The enterprise is scalable across States though there are teething issues. Language dialects change very quickly in India. ICT connectivity also remains a challenge. Despite these challenges, however, the fact that the company has found an angel investor means that there is business potential too.¹⁷

¹⁷ <http://bwdisrupt.businessworld.in/article/Indian-Angel-Network-Backs-farMart-Farmers-Marketplace-for-Agriculture-Equipment/16-03-2017-114493/>.