Wales India SME Innovation Initiative

*A paper on the challenges faced by **Micro, Small & Medium Enterprises** (MSMEs) in India and the **innovative interventions** needed*

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The role and potential of Micro, Small and Medium Enterprises (MSMEs) in the Indian economic system, and their contribution to industrial development, are extensively acknowledged and MSMEs in India have seen a vital growth in terms of industrial output, exports, innovation and employment generation over the last two decades. Most of these companies are very small in size compared to MSMEs of developed countries, yet they have been a significant contributor to the national income. Several Studies have pointed out that the innovation capabilities and potential of Indian MSMEs are accompanied by many structural weaknesses.

In order to understand the challenges faced by MSMEs, their inherent weaknesses and the innovative responses devised by some of them and to experiment with innovative interventions which would improve the ecosystem for MSMEs in India, a set of three studies / interventions were conducted by ISEEDS with assistance, in some cases, from reputed partners.

The first study involved a random sample of ten SMEs situated in three locations viz. Jaipur, Chandigarh and Delhi-NCR to understand the kind of challenges which have to be faced by SMEs across sectors and to understand how they cope with adverse situations. Based on the findings, a set of case studies have been developed which are a source of learning and can suggest some approaches to supportive interventions.

One common weakness in many SMEs studied by us was the inadequate skill development infrastructure. The second study was done in a cluster of automotive component SMEs to understand their requirements for skill development and technology upgradation. This programme named “Pilot programme on technology transfer and sustainable workforce development”, was initiated with the support of Coleg Sir Gâr, a specialized skill development institute of the University of Wales Trinity Saint David. This programme involved not only study but also an intervention component through post study prescription of best practices and technology and training needs.

The pilot programme and subsequent analysis revealed the need not only for improved technology requirements to meet domestic and international competition but also an abysmal lack of advanced engineering skills development among the workforce of even very good and competitive SMEs in the cluster. **A team of ISEEDS visited** the **Advanced Engineering UK 2014** Exhibition and the **Worlds Skills Show** in Birmingham, **Auto Links Wales** in Llandidno, Wales and the training facilities of Coleg Sir Gâr, to understand the nature of skills required by quality international SMEs and the kind of skill development facilities they are able to access. Consequently it has been decided to set up an Advanced Engineering Skills Centre in India jointly by ISEEDS and Coleg Sir Gâr to provide the required level of engineering skills to the employees and entrepreneurs of Indian SMEs.

In order to get in-depth understanding of the existing vocational skills training infrastructure and its quality before setting up the Advanced Engineering Skills Centre, a preliminary study of vocational education institutions in and around Chennai, where the proposed skills centre is to be located, has been undertaken. A gist of the preliminary findings is revealing in terms of the inadequacy of the present infrastructure.

The Executive Summary of the studies and innovative interventions attempted is given below.

1. *A synopsis of the case studies on the challenges faced by* ***Micro, Small & Medium Enterprises*** *(MSMEs) in India and the learnings relating to the needed interventions*

A study was conducted on MSMEs and a short case study on each company was developed on the basis of their experiences to overcome the challenges faced during the venture.

A handicraft products manufacturer in Jaipur, unlike any other MSME, face an enormous challenge in fulfilling the expectations of importers due to lack of artisans and craftsmen in the market. Good talents get picked up by multi nationals and the MSMEs do not have the capacity to pay such talents on a huge scale, thereby leaving them with no other choice than to absorb locally available resources for their workforce.

MSMEs prefer to employ freshers and provide on-the-job trainings and sometimes also provide regular short-term training programmes through professional trainers to train employees as much as possible for establishing an effective and personalized communication with customers. *According to Rajesh Kumar, a budding social entrepreneur, "Innovation is a process and regular practice unleashes innovation rather than deep thinking"*. Development of skills not only facilitates in developing an ownership ability for any employee but also intensifies the capacity to innovate by providing an ability to think independently. Good SMEs consider knowledge as the greatest wealth and do take a lot of effort in training their employees.

These days, MSMEs have started following the internship model for disseminating practical knowledge to freshers in order to reduce training costs for the company. Employees are also encouraged to go through documentaries and videos to keep themselves updated on their profession. *One such example is a Jaipur based electrical equipment manufacturing company, where the company has its own in-house skill development centre. The centre organizes on-site engineering courses to impart hands-on practical exposure for the freshers after a year's training as apprenticeship under them*. In spite of all the trainings given to employees, there always remain a threat that multinationals would pick their talents, which is why many MSMEs *are never comfortable in nominating its employees for long trainings in common skill centres*. As it is said that human resources are the greatest asset to any company, MSMEs in India face a huge employee retention issue apart from the other distinguished challenges faced.

It was really important to create a culture of open innovation within their organization. Emphasis was given to host gatherings and regular meets for all the employees with a focus to create a platform where everyone could share their ideas and achievements. Bringing in such a kind of culture not only encouraged / motivated the employees but also made them feel as being a part of a family. In fact the MSMEs have gone a step further in incorporating new methodologies to link private companies with academics and public institutions. Dileep Baid mentions that *"An academia-industry collaboration is very essential for catching up with ongoing development of skills in the market and for designing the curriculum for students as per the companies' requirement"*. Collaborations with public institutions allows MSMEs to access state-of-the-art infrastructure for their research activities. Therefore, such platforms with academic and public institutions has always helped employees in adding fuel to their innovation due to constant interaction with different groups of people from students up to senior level employees of different companies. For example, employees in a genetic research company in New Delhi are allocated funds exclusively for education, training or overall enhancement and also get the freedom to switch between various profiles through any department. Puneet Chandna mentions that "*such initiatives leads to higher possibilities to think out of the box or what is called as process innovation*".

It is also necessary for the MSMEs to keep themselves updated with the latest technologies available in the market and implement the same in their manufacturing processes else it is going to be really difficult to bounce back in tough times and be ahead in the race. Companies have begun to explore various avenues such as international collaboration or technical tie-ups in order to further instil quality to their manufacturing / production process by information and technology transfers. With this, companies do get opportunity to offer more innovative products or innovative up-gradation of existing products.

Intellectual Properties (IP) protection does play a vital role in protecting any research or findings by any company, but in India, the awareness is very low and has failed to facilitate business development and penetrate successfully into the market due to various hindrances. Industries introducing fast moving concepts such as design, crafts etc generally don't register for IPs as they feel that the concepts tend to change regularly with the development of the industry and filing for patents will turn to become a burden on any firms' shoulder, which is not the case with companies involved in component manufacturing or IT solutions etc. As rightly mentioned by Puneet Chandna, Managing Director of a Genetic Research company in New Delhi, *"Intellectual Properties (IP) are important only if a company is sure that it will be able to enforce the IP and stop infringement. Quick commercialization of IPs should be planned rather than filing for IPs for future use, else there are lot of chances of the technology becoming obsolete"*.

There are more than 1.3 million MSMEs in India and not all the enterprises undergo the same challenge or the same experience. The case studies by ten different companies highlighted the fact that while innovative ways were followed by most companies to overcome their specific problem, all of them struggled with the challenge of upgrading the skills of the workforce and keeping abreast of changing technologies.

2. *Pilot Programme on* ***Technology Transfer & Sustainable Workforce Development***

In association with Coleg, Sir Gar, Wales, UK and Automotive Component Manufacturers Association (ACMA)

As part of the Wales India SME Innovation initiative, Coleg Sir Gâr (CSG) was identified as an institution that specializes in Technology Transfer and Skill Development for Small and Medium Enterprises (SMEs) and Multi-National Companies (MNCs). Hence CSG was recommended by the University of Wales for partnering with and conducting the research.

The pilot study on *technology transfer and sustainable workforce development* was initiated by Innovators Society for Economic & Enterprise Development Studies (ISEEDS) and Coleg Sir Gar(CSG), University of Wales Trinity Saint David, UK in association with Automotive Component Manufacturers Association (ACMA), where two representatives from Coleg Sir Gâr (CSG) visited New Delhi, India, for a duration of one week to visit companies personally and understand the gaps involved in order to prepare a proposal on the pilot study for MSMEs.

The main objective of their visit to India include:

- Develop a long term, mutually beneficial relationship with MSMEs
- Meet member companies
- Identify Training and Development needs
- Identify Technology Transfer opportunities
- Discuss issues arising from identified needs
- Reflect and respond with solutions (including post visit response)

The first step was to develop a tentative proposal for **Technology Transfer & Sustainable Workforce Development** for the SMEs of India. There were several industries that were discussed with CSG based on use of higher level of technology and where contacts to the respective industrial chambers were available with ISEEDS. Finally, it was decided to go ahead in conducting the pilot programme with the MSMEs of Auto Component industry in India.

A detailed proposal was presented to the Automotive Component Manufacturers Association (ACMA) during their Annual MSME Council Meet for ACMA to be a partner in this study and its MSME members to participate. A list of 17 companies were short-listed from the ACMA buyers' guide (A guide to the PAN-India membership base of ACMA which is around 750 in number) based on the location preferences (Delhi/NCR) and size/turnover (Around 20 crores) of the company. Once the representatives of CSG International confirmed their travel from the 10^{th} – 15^{th} March 2014 to India, calls were made and meetings were fixed with the entrepreneurs with all the companies seeking their interest to participate in the pilot study. The representatives from CSG International comprised the Director of Learning & Recruitment and a Corporate Advisor, making a perfect combination for analysing in an Academia-Industry perspective. Challenges faced while searching for participating companies included certain restriction such as insecurity to display their facilities, unavailability during the representatives travel dates and disinterest to participate. Within the stipulated time of their arrival, 8 companies were lined up for their visit.

Before the visit, a brief profile of the pilot companies based on some parameters was developed for the Coleg Sir Gâr team to analyse and perform a preliminary study before they actually met the entrepreneur and studied the enterprise. There were challenges faced even to get the profiles completed for each and

every company. Individual visits were made to the participating companies and the respective forms were filled on after discussions with the entrepreneur. Thus, before the representatives started from Wales, an itinerary was prepared and sent across to them in order to be prepared for the individual visit.

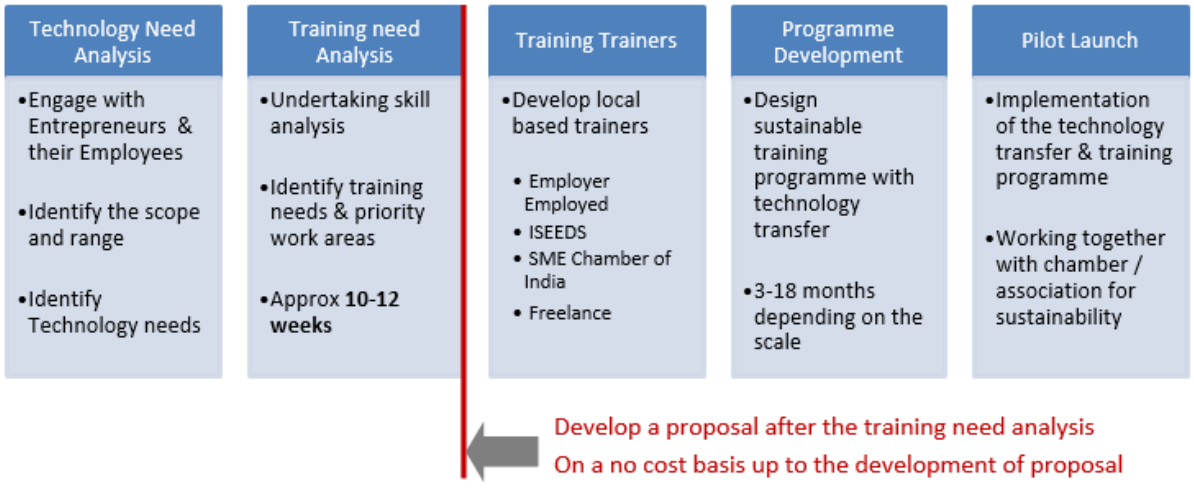
Objective of the Pilot Study

A unique international collaborative effort where academia and business chamber have come together to inculcate culture among MSMEs by identifying the bottlenecks and facilitating growth through technology transfer and sustainable workforce development

ColegSirGar (CSG) of University of Wales Trinity Saint David has been roped for the mission of 'technology transfer and sustainable workforce development' to develop and deliver technology transfer, training and skill development programmes for Indian MSMEs representing the Automotive Component industry.

Proposal for an integrated programme on Technology Transfer & relevant skill development

- Transfer of technology and skill development will be company specific
- Detailed discussion and Intensive engagement with the company
- Identification of the relevant technology after a detailed analysis
- Programme designed by experts from ColegSirGar, University of Wales Trinity Saint David
- Development of a complete financial package on completion of the gap analysis, jointly by ColegSirGar, University of Wales Trinity Saint David and the primary partners of this project
- The process of technology transfer will begin along with appropriate skill development programme



Benefits for the Participating Enterprises

- Access to International markets and World Class technologies
- Opportunity for International Collaborations
- Business Improvement:

  Improve quality

  Raise skills levels

Reduce waste, accidents

Increase profits, efficiency and productivity

Self sufficient

Develop business expertise

Provide employees with progression opportunities

Enhance training role and profile of the MSMEs

- Sustainable Model operated by Companies utilizing their own employees
- Business can evolve for other work areas

Initiation of the Pilot Study

The study was initiated on eight automotive component manufacturers in the New Delhi-NCR region of India. The two representatives invited by ISEEDS were from the Academic and the Corporate Advisory Body to understand the entire manufacturing processes of these pilot companies and identify the potential gaps and any scopes for improvement with respective to various parameters.

The Study team comprised of three members, viz. **Mr. Glenn Jones**, Director of Learner Recruitment & International Manager, Coleg Sir Gâr, Wales, UK, **Mr. Mike Evans**, Corporate Advisory Board Member (Curriculum, Standards & Technology Transfer), Coleg Sir Gâr, Wales, UK, and **Mr. Kaushik Srikanth**, Research Associate, ISEEDS. The study was successfully initiated and an interim proposal highlighting the representative's observation, scope for improvement and the way forward, has been developed for all the eight participating companies.

Quick analysis *on the status of Micro, Small and Medium Enterprises (MSMEs) in India*

Analysis made from a random sample of MSMEs in Jaipur, Chandigarh, and the Delhi NCR region and a sample of automotive component SMEs in Delhi-NCR region.

The above analysis is made using research tools such as questionnaires and personal interviews with the entrepreneurs, including due-diligence to all the companies. Observations of the research associate is also included and considered in the above analysis.

Highlights

- Intellectual Property Rights (IPR) and Quality Standards (QS) are very essential for companies' not just for commercialization and business development but also for receiving higher valuations, and it is high time that the Indian MSMEs create a differentiation to survive in this stiff competition.

- Finance is one of the biggest constraint of the Micro, Small and Medium (MSME) Industry today in India, the reasons for which include – Poor Cash / Financial Management leading to negative cash flows, limited resources to purchase new technologies and expand the reach of the company, etc

- **73.33%** of the MSMEs who lack the access to skilled labour force also face employee retentions issues.

- Companies are very much interested in training & development of its employees and workforce but the fear always remains with the MSMEs that trained employees will be picked up by the Multi-National Corporations (MNCs).

- New technologies not only facilitate timely / speedy manufacturing of the product, but also in coping with the rising issues such as Health & Safety Standards, etc. Access to newer technologies will not only make their manufacturing process simpler by reducing human resource involvement, but also improve the Quality Standards maintained by the MSMEs.

Result

From the above random sample analysis of MSMEs, there were few points taken into consideration while coming down to a conclusion. It was identified that MSMEs had a strong inclination to train and develop employees, in spite of the threat of head-hunting from the Multi-National Corporations. In fact, some of the MSMEs have their own training facilities inside their facility. However, the access of employees to advanced engineering skills training was negligible. From an international perspective and considering some of the best practices followed by MSMEs across the globe, it was felt that the skill deficit could be mitigated by setting up a chain of **Advanced Engineering Skills Development Centres** starting with the first one in Chennai, Tamil Nadu along with Coleg Sir Gar, University of Wales Trinity Saint David, Wales, UK.

3. *Preliminary Study on **Vocational Training Institutes in Chennai, Tamil Nadu***

The idea of setting up the Advanced Engineering Skills Centre was followed by identifying the need for a **preliminary study on Vocational Education and Training** (VET) **Institutes** and **understanding the scope and culture of VET Institutes in Chennai, Tamil Nadu** in order to formulate a tentative business plan of the skills centre.

Vocational Education and Training (VET) has been predominantly prevalent in India for facilitating cost effective employment oriented education to the underprivileged and persons from weak economic background. However, in due course of time, vocational training and education has become an employability benefactor to students and also facilitator for continuous development of the labour force in India. Today Tamil Nadu has approximately 40 Universities, 350 Engineering Colleges, 230 Polytechnics and 1200+ Industrial Training Institutes. The state is also supported by 12 Deemed Universities offering technical / medical education. The preliminary study on a competitor analysis of vocational training institutes in Chennai indicates that the demand for vocational training and education very much exists but there appear to

be very few training institutions that leverage state-of-the-art facilities for the same. Even with the existing technologies, it does not seem difficult to mobilize students for training as the demand is clearly evident. However, the employability of these poorly trained students is low and these courses do not adequately expose the students to modern equipment and Technologies to meet the urgent needs of both SMEs and larger industries.

The below analysis is derived from the competitor analysis structure shared by Coleg Sir Gâr, including additional inputs to the structure and due diligence from ISEEDS to gather information on Vocation Training Institutions in Chennai and the level of Engineering skills imparted. The analysis was also made based on personal interviews with Managing Directors / HR Managers / Managers' in-charge. The preliminary report on the competitor analysis of vocational training institutions includes a small sample of distinct training providers, ranging from Vocational Training Providers (Both for-profit entities and charitable organizations) to Industrial Training Institutes (ITI), in the field of engineering.

Some Preliminary Research Statistics

- 75% of the educational institutions studied were private for-profit companies
- Languages used for training:

  However, there are few exceptional cases where students are also trained in Hindi if necessary.
- Type of candidates who attend further educational institutions / organizations:

  It is identified that the major chunk who attend the further / vocational educational institutions are the industrial workforce and the corporate employees, however, there remains a strong interest from the School Drop-Outs and the students passing out of polytechnic and engineering colleges.

- It is identified that 87.5% of the students who enrol into these types of vocational education institutions / organizations are of 18 – 25 years age group

- 62.5% of the vocational education institutions / organizations offer short-term courses and 50% of the vocational education institutions / organizations offer regular (long-term) courses at an average of Rs.15,000 (GBP 163) per participant

- 50% of the students getting trained on a part-time basis spend more than 16hrs per week

- 50% of the students getting trained on a full-time basis spend 7-8hrs per day

- 75% of the courses with vocational education institutions / organizations are delivered round the year

- Training days in a week:

- Students from more than 60% of the vocational education institutions / organizations are either company sponsored of self-funded, out of which, only 50% of the institutions / organizations enrol their students under government schemes

- Out of the 50% of the educational institutions / organization that enrol their students under government schemes, only 37.5% take course fee from students after final job placements. Whereas the others, either take payment in full before initiation of training or take payments in instalments from time to time as stipulated by the institution

- Number of Employees / Staff working in vocational educational institutions / organizations:

- Number of Employees / Staff working in vocational education institutions / organizations who can communicate in English

- 87.5% of the vocational education institutions / organizations provide free placements assistance

- 25% of the vocational education institutions / organizations provide free study materials / reference guides

- 37.5% of the vocational education institutions / organizations offer unlimited training and duration for the fee paid till the student is satisfied

- Average annual salary package of students taking up qualifications offered by vocational education institutions / organizations

Conclusion

From the above information on vocational training institutes, we witness that,

a. The result clearly concludes that there is demand for vocational training and education in Chennai and mobilization of students does not look to be a matter of concern for institutions with the basic facilities available in the market. However, there are exceptional educational institutions who provide on-site trainings to students using high end technologies such as the Welding Simulator and Robotics witnessed back in Wales, during the ISEEDS delegation in November 2014, thereby making it will be even easier for educational institutions to penetrate into the market and mobilize students and workforce.

b. There are a category of educational institutions who are the expert in their own field i.e., information technology training service, and in order to avoid any competition with big players, it was decided by the team that it might be better not to concentrate too much on CAD CAM laboratories, rather, set up basic laboratory facilities required to use technologies like rapid prototyping / 3D printing and other essential CAD CAM software.

c. As far as the Industrial Training Institutes are concerned, most of such institutions work either on charitable purpose or with government support and are not exposed to up to date technologies. Hence the students receive only basic education under it this, and offering a refresher / finishing course for the Industrial Training Institute graduates is one other area that can be looked into.

d. The proposed Advanced Engineering Skills Centre can also look into developing programmes for the employees (including industrial workforce) and entrepreneurs of MSMEs which has not been really much covered by the institutions in Chennai and the target market is predominantly the workforce / labour force and the students.

The analysis of this preliminary report has been positive and shows that there is definitely a huge scope for an Advanced Engineering Skill Centre in Chennai and will be even stronger when the analysis is made with more players in the vocational training and education space.

From the interaction with Coleg Sir Gâr, supplemented with the preliminary study findings, it was decided to set up an Advanced Engineering Skills Centre in Chennai, Tamil Nadu under the following grounds.

Objective

- To address and react to the emerging need for skills in the Indian automotive and engineering industry with the aim to develop future workforce for the industry, particularly for the MSMEs.
    - *Training in generic engineering skills to meet the industry needs.*
- To create sustainable skills development programme over a significant time frame.
    - *Provide exposure to advanced technology and manufacturing practices to the existing workforce and new graduates entering the industry.*

Scope

The scope of the advanced engineering skills centre can be specifically categorized with four functions viz.,

1. Developing a range of skills for the Indian industrial workforce to bridge their skills shortages by *upskilling* to enhance their productivity and efficiency.
2. Developing a range of skills for the *unemployed individuals* to enter into industry.
3. Continuing Professional Development (CPD) programmes for the entrepreneurs and *employees of MSMEs* such as Supervisors, Managers, etc.
4. Training in entrepreneurship and practical skills to facilitate setting up of enterprises servicing the automotive and engineering industries.

Types of Candidates

The Advanced Engineering Skills Centre targets candidates from the following background with age criteria and Standards as stipulated by the National Occupation Standards of NSDC and University of Wales Trinity Saint David,

- School / Polytechnic / Engineering college Drop-Outs
- 10^{th} – 12^{th} grade passed out students interested in entering the manufacturing sector
- Diploma holders passing out from Polytechnic Colleges and Industrial Training Institutes
- Graduates passing out from Engineering Colleges
- Corporate employees
- MSME entrepreneurs

- Industrial Workforce

Nature of Training

The Advanced Engineering Skills Centre will be categorized as a *vocational training institution* and the students will undergo vocational training with in-house technologies and the collaboration with industries outside the institution. However, the training will also include classroom sessions and programmes leading to other academic certifications.

The Skills Centre aims to strengthen the industry-academia interface and get involved in projects and Apprenticeship training programmes with local industries, receive online inputs (both from Indian and Welsh companies) and undertake shop-floor tasks under supervision.

The skills centre, with the assistance of Coleg Sir Gâr, will also provide a Virtual College environment through online programmes and practical contact sessions.

Deliverables

It was identified, both from the preliminary research and from the visit by UK representatives to India during March 2014 that students passing out of polytechnic colleges and engineering colleges lack the practical exposure to advanced Engineering Skills and Processes required in their relevant field thereby making them unemployable. Thus, it has been decided that the Advanced Engineering Skills Centre will focus on delivering short-term refresher and Finishing courses in engineering processes.

Apart from the Refresher and Finishing courses, **advanced vocational** and other **certifications based** trainings will also be delivered with practical hands-on training with the state-of-art technologies that will be available in the skills centre. The skills centre will also have ***Corporate Training Programs*** for the Indian automotive component manufacturers to be internationally qualified in order to supply to the international markets. The training will be given in their respective companies in areas such as Health & Safety, Standard Operating Procedures, Quality Control, Bench Marking, Kaizen, 5S, etc.

Initiatives for organizing a country wide **Skills Show** in collaboration with Coleg Sir Gâr, University of Wales Trinity Saint David, Wales, UK to showcase the projects and talents of students from various institutions including vocational education institutions, polytechnic colleges, engineering colleges, and other community colleges.

Trainers

The Skills Centre will appoint in-house trainers to deliver the programme after initial training from Coleg Sir Gâr (CSG) on the technologies. The Centre will also have Empanelled Trainers from Academia, Industry and Visiting Faculty from Coleg Sir Gar/University of Wales, UK. In order to maintain the standard and reputation of Coleg Sir Gar and the University of Wales Trinity Saint David, CSG has decided to send Welsh trainers to India initially to train the local trainers and also provide virtual support for these trainers, thereby creating a sustainable model for developing internationally qualified trainers in India.

In-house technologies of the Skills Centre

The Skills Centre is proposed to house the following equipment that had been identified together from the UK delegation to India during March 2014 and Indian Delegation to UK during November 2014:

- State-of-the-art Rapid Prototyping / 3D printing with advanced materials
- Automation Technologies
- Robotics technologies
- Simulators for Training in Welding, Pnuematics and other such skills
- Other equipment will also be identified and used depending upon the demand for skills

The training provided in the skills centre will be monitored and certified by Coleg Sir Gâr, University of Wales Trinity Saint David, Wales, UK

Extensive Research *on Vocational Education Institutions in Progress*

In order to understand the challenges faced by the MSMEs, an extensive study on vocational education institutions / organizations is in progress with many tools being prepared such as research questionnaires and personal interview formats. The study will be conducted to develop the actual Business Plan for the Advanced Engineering Skills Centre and also for presenting it to Corporate Advisory Board of Coleg Sir Gâr, University of Wales Trinity Saint David, the Govt. and other potential partners.

The Advanced Engineering Skills Centre will serve as an innovative intervention to improve the vocational education and training infrastructure in India that will facilitate in improving the ecosystem of Micro, Small & Medium Enterprises (MSMEs) in India.