

Need for Skill Development and Knowledge Up gradation for Rural Engineering College students to sustain the Manpower needs for making Make in India work.

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Abstract

The Indian industries are facing acute shortage of the skilled manpower, Indian universities and colleges have been producing the graduates in various streams, at the same time the graduates fail to meet industry expectations due to lack of adequate and appropriate skills. The ambitious initiative of the government -‘Make in India’, if it has to succeed there would be enormous demand for the manpower with the skills and abilities matching the industry expectations. It is the responsibility of the institutes and universities to identify the changing needs of the industry and training the students to match expectations. As manufacturing is given a thrust under Make in India initiative, there would be more demand for workers with technical skills. Compared to Metro and Urban institutions, the Rural institutes students are not adequately trained in the industry oriented skills. This is mainly due to unavailability of resources, training centers, lack of awareness and affordability to undergo training. As a consequence, the rural students lose out on opportunities compared to their urban counterparts. The present study focuses on the Engineering students of Rural Engineering colleges in North Karnataka that includes a study of their present level of skill sets like CAD/CAM, Project management, Aptitude and Soft skills.

Introduction

The present NDA-2 government came to power with a promise of revival of the economy and bringing out reforms and key policy initiatives that will bolster the economic growth of the country and create more employment to the ever expanding and aspiring Indian youth population. The government in its diplomatic and foreign policy actively engaged with France, Germany, Canada and USA which were visited by Prime Minister in the past one year. On his visit to these nations, Prime Minister Narendra Modi himself tweeted, “My France, Germany and Canada visit is centered around supporting India’s economic agenda and creating jobs for our youth. While launching the website, and releasing the logo of Make in India he said to the audience including CEO’s of many major Indian and Foreign companies “India is the only country in the world which offers the unique combination of democracy, demography, and demand,”

The comprehensive ‘Make in India’ programme has immense potential to revive economic growth, harness demographic dividends and open huge business opportunities and international collaborations as well. The ambitious economic revival project “Make in India”, has identified around 25 sectors in the economy comprising of manufacturing and service sectors, where India has a potential to emerge as one of the global manufacturing base and also build a capacity to act as one of the global outsourcing hub. The objective of this programme is to attract Foreign Direct Investment as well as encouraging the domestic industries to develop competencies to capitalize on the Make in India initiatives.

But the challenges ahead are plenty and the promises made are not easy to deliver, there are skeptics arguing that the policy paralysis that has affected the slow growth over decades may affect the success,

unless the government takes some bold and confident steps to project India as an investment friendly destination. Globally India has not been a favorable destination due to lack of Investors and Industry friendly environment. The UNCTAD’s World Investment Report (2014) ranked India in 4th position for FDI destination ranking slipping from 3rd position in 2013. The World Bank’s Ease of Doing Business report (2015) ranks India at 142 position among a list of 189 countries, again a slip of 2 ranks from 2014.

Apart from the institutional drawbacks there are certain issues and challenges that directly affect the success of the program. Such a gigantic initiative needs quality, trained and skilled manpower to sustain the rapid growth that may arise. According to ‘Aspiring Minds’ National Employability Survey 2014, among the Indian engineering graduates only 18.43% are employable. Out of over 1.2 lakh candidates surveyed, 91.82 per cent lack programming and algorithm skills, 71.23 per cent lack soft and cognitive skills, 60 per cent lack domain skills, 73.63 per cent lack English speaking and comprehension skills and 57.96 per cent lack analytical and quantitative skills. This may result into drastic skill gap and affect the growth of the industries that require right skilled work force.

Significance of Skill development

Majority of the sectors identified in Make in India are manufacturing and allied sectors, which requires trained workforce with sound technical skills and knowledge to become efficient and more competitive to a global scale.

According to the International Labor Organization (ILO), “Skill development is of key importance in stimulating sustainable development process and, can make contribution in, facilitating the transition from an informal to formal economy. It is also essential to address the opportunities and challenges to meet new demands of changing economies and new technologies in the context of globalization.”

Skills development can help build a “virtuous circle” in which the quality and relevance of education and training for women and men fuels the innovation, investment, technological change, enterprise development, economic diversification and competitiveness that economies need to accelerate the creation of more jobs.

The objective of Skill Development and Skill upgradation is to create a workforce empowered with the necessary and continuously upgraded skills, knowledge and internationally recognized qualifications to gain access to decent employment and ensure India’s competitiveness in the dynamic global market. It aims at increasing the productivity and employability of workforce (wage and self-employed) both in the organized and the unorganized sectors. It seeks increased participation of youth, women, disabled and other disadvantaged sections and to synergize efforts of various sectors and reform the present system with the enhanced capability to adapt to changing technologies and labor market demands.

Background of the study

Nationally and within North Karnataka, there is a sense of urgency to address the difficulties some employers have in finding qualified workers. Even with high numbers of unemployed individuals, some employers claim it is difficult to find qualified employees to fill vacant positions in a variety of industries and occupations. Employers report that the North Karnataka labor pool is not matching growing demand for jobs that require strong skills (both “hard skills” and “soft skills”), proper training and certification, sufficient levels of education, and previous work experience.

The “skills gap” has been used to explain this paradoxical phenomenon at both the national and state level; the explanation offered is that while there is strong demand for certain types of workers and a large supply of jobseekers in the state, the skills of applicants do

not match the needs of employers. While there is no consensus on exactly which set of skills are lacking, the issue has been identified as an obstacle to lowering unemployment as well as a threat to our competitiveness. However, evidence of skills gaps are often based on anecdotal accounts and non-scientific surveys rather than on careful empirical studies.

In 2013, the report of National Skill Development Center (NSDC), District wise skill gap study for the State of Karnataka in general and North Karnataka in particular, suggests that the state could benefit from a more comprehensive approach to understanding the needs of employers focusing exclusively on skills gaps.

As per The NSDC Skill Gap Analysis Report for Karnataka state for Information Technology (IT) & Information Technology Enabled Services (ITES), Automobile, and Manufacturing and as per 2014 Survey on Needs & Availability of Skilled Human Resource it is evident that existing and projected major centers for IT/ITES in India & 75% of Skill gap was assumed to be from existing and expected major centers. This was apportioned on the basis of total population of cities which are major IT centers. Karnataka thus gets a state allocation of 9% and according to Skill Gap Analysis for Karnataka- Dharwad, Belgaum, Bijapur, Bellary, Haveri, Gulbarga districts have huge Incremental Demand for ITES & IT Skills for the upcoming years till 2022 is on an average of 25%-29%. A huge market is emerging in this area for IT & Auto and Auto components manufacturing where there is a need of highly skilled design engineers, but current Supply is just around 3%-6% in these areas Fresh engineers of rural engineering colleges from these districts are having lack of these design skills due to unavailability of infrastructure and affordability at rural place.

Review of Literature

Agrawal Pradeep (2014) states that next 20-25 years are extremely important for India, as we have the support of demographic dividend in the form of world’s youngest population in the working age group. If we do not achieve 8-10% growth in the next 2 decades eradicating poverty will be difficult and India may not see itself in the league of developed countries.

Subhashree and Abdulla (2015) in their study of Micro Small and Medium Enterprises (MSME) and their Perception analysis of Make in India have observed that most of the respondents perceived that ‘Make in India’ is a program to attract Foreign Direct Investment(FDI). The respondents described Make in India as a central government program aimed at mobilizing foreign trade partners and investors of large scale sectors and that the direct beneficiaries are not MSME. They had difficulty in perceiving a link between MSME and Make in India program. The authors noted that the MSME operators are completely unaware of the functional and operational dimensions of the schemes.

Monalisa Bal (2015) in her paper on “Skill India, Education policy and budgeting” has pointed out that the India’s budget of 2015-16 is high on intent and low on implementation and gives less attention to Human Development Index concerns, and that it fails to address the challenges of bolstering the Skill India initiatives. In her concluding remarks she states that India needs a bigger push in public investment in new education policy which truly puts a premium on skill up-gradation and quality in lieu of ‘creative incrementalism’

Bossworth and Susan (2008) drawing reference to OECD 2005 report state that China has made much greater progress in raising educational skills of younger workers and despite an external reputation for having a large pool of highly educated persons, India faces serious deficiencies in the education of the bulk of its youth population.

Skills and knowledge are the driving forces of economic growth and social development of a country. India is one of the few countries in the world where the working age population will be far in excess of those dependent on them and, as per the World Bank (2013), this will

continue for at least three decades till 2040.

As per United Nations (2014) report India has 356 million youth aged between 10-24 years, which is highest in the world. This has increasingly been recognized as a potential source of significant strength for the national economy, provided this pool is continuously upgraded on the skills. In rapidly growing economies like India with a vast and ever-increasing population, the problem is two-fold. On one hand, there is a severe paucity of highly- trained, quality labor, while on the other; large sections of the population possess little or no job skills.

Research Problem

There is a need to understand the skill gap in the north Karnataka rural area, specifically among the engineering stream where students of this region are lagging behind the students who study in Metros and two tier cities. Also there is a need to understand the present competency level of these rural engineering colleges’ engineering students and desired capabilities in the market from the fresh engineers.

Research methodology

This study was conducted over a 60 day period in first quarter of 2015 and the research method used here Descriptive Research, a survey was conducted by personal interview using questionnaire response method. Sampling method used here is Stratified systematic sampling under a Population defined as all north Karnataka rural engineering colleges. And within this population, specialization considered was mechanical engineering students who are studying in their final year. The selected Sample size was of 200 respondents consisting of only Mechanical stream. The Sampling Area has six rural area engineering colleges, and out of the 6 engineering colleges 4 colleges have been chosen for survey.

Following are the institutes considered for survey

SKSVMACET: Smt. Kamala & Sri. Venkappa M Agadi College of Engineering and Technology, Lakshmeshwar

VDRIT: Vishwanathrao Deshpande Rural Institute of technology, Haliyal

AGMREC: Acharya Gunadharanandhi Maharaj Rural Engineering College, Varur

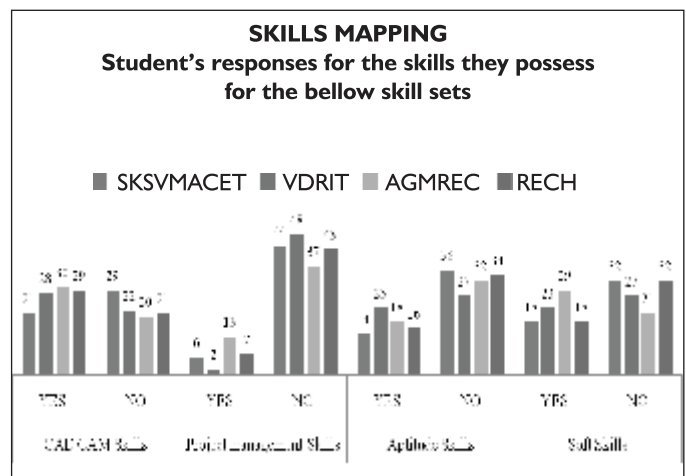
RECH: Regional Engineering College, Hulkoti

Research Objectives

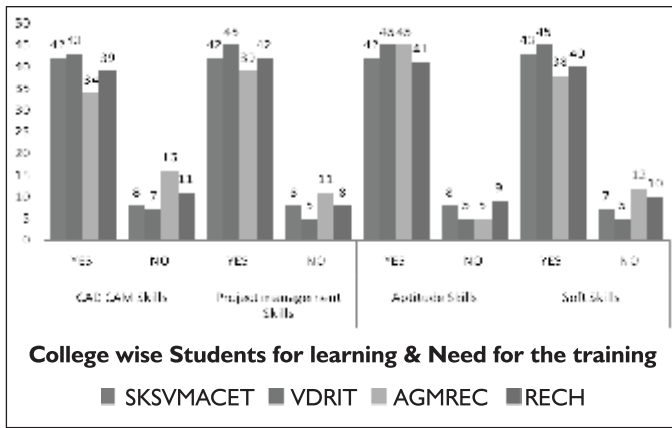
1. To understand the competency and skill level of rural engineering college mechanical engineering students of north Karnataka.
2. To understand the present need for skill development in the area of PDM, PLM & Project management skills.

Findings of the Study

Skills and Knowledge Mapping findings of the survey among the North Karnataka engineering students.



Graph No. I : Students response to Skills Mapping



Graph No. II: Students Interest for learning the necessary skill sets

The responses were obtained from Mechanical Engineering students for the following skill set such as Computer Aided Design/Computer Aided Manufacturing skills(CAD/CAM), Project Management Skills, Aptitude Skills and soft skills possessed by the students and their willingness and need for training for the skill sets.

Particulars	Skill Gap Observed (NEED)				Students willingness to learn (POTENTIAL)			
	CAD	PM	Apti	Soft	CAD	PM	Apti	Soft
SKSVMACET	58%	88%	72%	64%	84%	84%	84%	86%
VDRIT	44%	96%	54%	54%	86%	90%	90%	90%
AGMREC	40%	74%	64%	42%	68%	78%	90%	76%
RECH	42%	86%	68%	64%	78%	84%	82%	80%

Table I: Skill Gap and Interest for learning among the students

Among the 4 skills where gap is observed, Project Management skill is rated higher by the respondents of all 4 colleges followed by Aptitude and Soft skills. The CAD/CAM skills gap is above 50% in 3 colleges. In regard to students willingness to learn these skills, almost all skills find near equal preference and there is not much difference among the colleges and their students behavior.

The findings were tested by constructing a Hypothesis: To know whether there are any significant differences among opinion of the students of these colleges with regard to Need for Skill development

Null Hypothesis

Ho: There are no statistically significant differences among the colleges with regard to Need for Skill development

Alternative Hypothesis

H1: There are statistically significant differences among the colleges with regard to Need for Skill development.

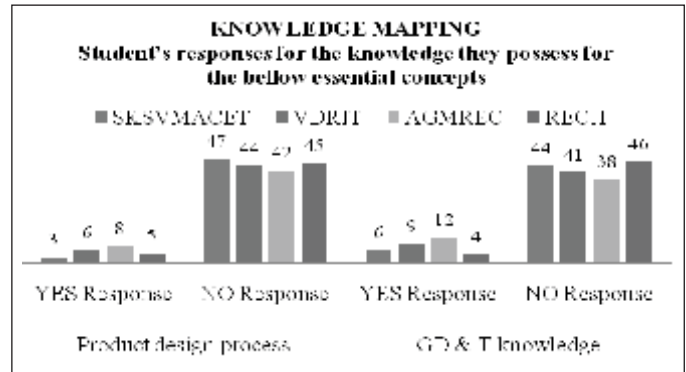
Anova: Single Factor for Need for Skill training

SUMMARY				
Groups	Count	Sum	Average	Variance
SKSVMACET	4	282	70.5	169
VDRIT	4	248	62	536
AGMREC	4	220	55	278.6666667
RECH	4	260	65	326.6666667

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	500.75	3	166.9166667	0.509539557	0.683155791	3.490294821
Within Groups	3931	12	327.5833333			
Total	4431.75	15				

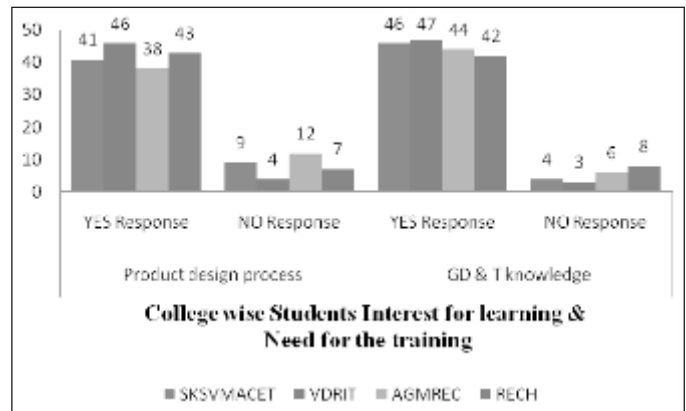
Since F value = 0.5095 is less than F critical = 3.4902, we accept the Null Hypothesis. Therefore we conclude that means are equal or differences between the colleges with respect to need for Skill development training is not statistically significant.

In regard to the students response to the Knowledge mapping and their present state of knowledge of the skills of Product design process and Geometric Designing and Tolerance, the following findings were observed.



Graph No III. Students response for the knowledge they possess for Product Design and Geometrical Dimensioning & Tolerance (GD&T) Knowledge

The above graph shows that students knowledge and skill level in product design and GD & T is very less among majority of the Mechanical students of the surveyed college students. There is an inclination to acquire these skills as the students deem these skills as important which is reflected in their responses shown in Graph IV



Graph No. IV Students Interest for learning and need for training for the Product Design and Geometric Dimension and Tolerance (GD & T) knowledge

Particulars	Knowledge Gap Observed (NEED)		Students willingness to learn (POTENTIAL)	
	Product\ design process Knowledge	GD&T Knowledge	Product design process Knowledge	GD&T Knowledge
SKSVMACET	94%	88%	82%	92%
VDRIT	88%	82%	92%	94%
AGMREC	84%	76%	60.48%	88%
RECH	90%	92%	86%	84%

Table No. II Knowledge Gap and Interest for learning among the students

The data shows that majority of the surveyed students have stated that they have the skill gap in the areas of Product Design and GD&T knowledge and also have shown inclination to acquire these skills by way of training.

The observations were tested by constructing a Hypothesis: To know whether there are any significant differences in the opinion of the students among colleges with regard to Need for Knowledge Up gradation

Null Hypothesis

Ho: There are no statistically significance differences among the colleges with regard to Need for Knowledge Up gradation

Alternative Hypothesis

H1: There are statistically significance differences among the colleges with regard to Need for Knowledge Up gradation

Anova: Single Factor for Need for Knowledge training

SUMMARY				
Groups	Count	Sum	Average	Variance
SKSVMACET	2	182	91	18
VDRIT	2	170	85	18
AGMREC	2	160	80	32
RECH	2	182	91	2

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	169.5	3	56.5	3.22857143	0.14359344	6.59138212
Within Groups	70	4	17.5			
Total	239.5	7				

Since F value = 3.2285 is less than F critical = 6.5913, we accept the Null Hypothesis. Therefore we conclude that means are equal or differences between the colleges with respect to need for knowledge training is not statistically significant.

Acquisitions of skills and knowledge by way of learning and training in industry specific requirements are vital to getting better opportunities in the industry for the students. The students are also aware of the fact that without such skills and knowledge their competitiveness is at disadvantage. Hence there is a need for identifying and bridging any such gaps that may exist that act as hindrance to skills acquisition of the students. The requirement may vary from college to college depending on the variable factors like infrastructure and resources availability. But in case of the rural engineering colleges the resources as well as infrastructure may act as a bottleneck for the students to get trained in the industry specific skills. There is further scope to understand the factors influencing the skills and knowledge upgradation among the students and also in understanding about the students assessment of present level of skills and knowledge acquired and extent of sharpening required.

CONCLUSION

Rural engineering colleges in North Karnataka are giving the best education from the academic point of view but students are lagging behind in the much demanded skills in manufacturing industries like CAD/CAM Skills, Project Management Skills, Aptitude Skills and Soft Skills. The students also lack knowledge in Product Design, GD&T Knowledge. The analysis of the responses received from the students of 4 rural engineering colleges has shown that there is general opinion among the students on skills acquisition in addition to the skills they are gaining from academics. Hence, there is an acute need for skill development in the area of PDM, PLM & Project management skills since 86% of the students do not have these skills which are essential for them to get the better jobs.

As Make in India is a flagship initiative to take the country to the next level in the global industrial map, government has to focus on capacity building in the area of skills development and training to sustain the growth that may arise from the Make in India initiative. The industries should integrate backwards and work in close association with the Institutions to sensitize the academic fraternity and students by constantly addressing the need of new skills, knowledge and technologies. And also align the education institutions with the changes that are happening in their respective fields to ensure that they get better trained and skilled manpower. Government has to act as a facilitator between the industries and academic institutions by creating right atmosphere through the institutions like NSDC to augment the skills.

References

- Agrawal, P. (2015). Reviving Growth in India. Cambridge University Press.
- Barry Bosworth, Susan Collins, (2008). Accounting for growth : Comparing China and India, Journal of Economic Perspectives, Vol, 22, No, 1, pp 45-46
- Bivas Chaudhuri, Panigrahi. A.K, (2012). A comparative study of India and China in key manufacturing sectors, The Journal of Industrial Statistics, Vol, 1, No, 2, pp 241-249
- Dinoj Upadhyay (2015), India and Europe: Scope for breaking new ground. Indian Council of World Affairs
- Subhashree Natarajan, T.K.T. Sheikh Abdulla (2015), A Policy –cum- Perception Analysis on the Economic Reform Program 'Make in India', Mediterrean Journal of Social Sciences, Vol,6. No.4, pp. 261-274
- Monalisa Bal (2015), Skill India-Education Policy and Budgeting-beyond Numbers, JEPER, Vo, 2 No,3, pp 15-22.
- UNCTAD's World Investment Report (2014), investing in the SDGs: An action plan
- http://articles.economictimes.indiatimes.com/2014-11-18/news/56221890_1_demographic-dividend-youth-population-osotimehin - accessed on 10-07-2015
- <http://data.worldbank.org/indicator/SP.POP.DPND> - accessed on 05-07-2015
- http://www.ide.go.jp/English/Publish/Download/Jrp/pdf/154_ch1.pdf - accessed on 05-07-2015
- http://articles.economictimes.indiatimes.com/2014-06-24/news/50825711_1_fdi-destination-fdi-inflows-fdi-policy - accessed on 30-07-2015
- <http://www.doingbusiness.org/data/exploreeconomies/india> - accessed on 30-07-2015
- http://articles.economictimes.indiatimes.com/2014-07-14/news/51484811_1_national-employability-report-amcat-software-jobs - accessed on 10-07-2015
- <http://knowledge.wharton.upenn.edu/article/how-modi-can-deliver-on-make-in-india/> accessed on 10-07-2015
- <http://www.msmedihubli.gov.in/> accessed on 09-07-2015