*Celebrating*
*90*
*Years of*
*University News*

#Let'sBeatCoronaTogether

### In This Issue

**Opinions expressed in the articles are those of the contributors and do not necessarily reflect the views and policies of the Association.**

**#Let'sBeatCoronaTogether**

# Theoretical Framework of Collaboration between MSME and Private Engineering Colleges to Co-exist during COVID-19

**Seema Singh***

In December 2019, a Novel Coronavirus (SARS-CoV-2) emerged in Wuhan, China which became a global pandemic within months (Bouey, 2020). The virus has spread to more than 215 countries with 7.8 million infected and has caused 429,782 deaths. As a preventive measure, Indian Government has imposed a complete lockdown, barring emergency services. This has played havoc on the life and livelihood of a large number of people, more on those who have little reserves to spend. The medical crisis has profound economic and social effects. The Micro, Small and Medium enterprises (MSMEs) are a significant part of India's economic landscape as in many other countries of the globe. The MSMEs generate revenue, enhance employment and provide access to commodities for remote communities (World Bank, 2004; Wiklund, 2005; Satpathy and Rani, 2017). As per the Report of the Working Group on Micro, Small and Medium Enterprises (MSMEs) growth for 12th Five Year Plan (2012–17), the sector accounts for 45 per cent of the manufacturing output and 40 per cent of the total exports of India. Further, it accounted for 30.74 per cent of GDP in the year 2014–15. As per the registration between October 2015 to December' 2019, the micro sector (88.6 per cent) is the largest component of the MSME than the other two, small (10.9 per cent) and medium (0.42 per cent) sectors and provides employment to 61.5 per cent of the workforce against 32.2 per cent and 6.3 per cent in case of small and medium enterprises respectively (GoI, 2020). However, the micro sector has remained comparatively under-researched (Cristian, 2016). Add to this, Indian engineering education system has registered an exponential growth during the last twenty-five years due to enhanced global demand for English-language speaking engineers, who are equally competent, but at lower wages. Moreover, the un-aided private sector is a significant component of the whole spectrum of engineering education systems in India. What is the effect of lockdown on the micro sector as per the anecdotal evidence available? The hundreds of thousands of stranded migrant workers across the country, suggests that MSMEs have been the worst casualty of Covid-19 induced lockdown (Mishra, 2020). Higher education in general and engineering education in particular has also been adversely affected by the pandemic and they are still in search of an alternative sustainable model. In this background, the study tries to investigate whether a collaboration between these two sectors will be a win-win situation for both. The second section of the paper provides relevant literature review. Objective and methodology have been discussed in

*Professor, Department of Economics, Delhi Technological University, Rohini, Delhi- 110 042. E-mail: seemasinghdtu@gmail.com

the third section of the paper. Fourth section provides an analysis. A model has also been developed for cooperation between these two sectors Last section concludes the discussion and provides suggestions.

## Literature Review

The literature review has been done in the four groups as i. The Micro Sector and Impact of COVID-19 on it; ii. Private Engineering Education in India and impact of COVID-19 on it; iii. University and Firms collaboration:

### *The Micro Sector and Impact of COVID-19*

MSMEs are perceived as the backbone of the economy and 'an engine of growth' not only in India (Satpathy and Rani, 2017) but in other parts of globe (European Commission, 2016; Audretsch, 2009; Tesfayohannes, 1998). They also have a high export propensity (Claudiu Cicea, Ion Popa, Corina Marinescu & Simona Cătălina Ștefan, 2019), Huong T.X. Nguyen & Viet Le (2019)). However, it needs to be kept in mind that the small firms are not homogenous. They all are unique in nature and not like miniature corporate firms. So, any theory developed for corporate firms cannot be replicated to them (Beaver and Prince, 2004). In spite of being so important a segment of the economy, they have very poor technological endowment and their up-gradation is essential for the economic wellbeing of the nation (Venkatesh and Muthiah, 2012). Their output may be high in quantitative terms, but is very low in quality which can be up-graded by technological up-gradation of the sector. The author further view that advanced technology enables the small firms to create quality employment improving remuneration, duration, and skills (Bhavani T.A.2011; Singh et al. 2012). However, the study conducted by Bargal et.al. regarding performance of small scale industries (SSIs) during the period of nineties vis-à-vis the pre-reform years the annual average growth rate of different parameters have concluded that they have declined during post-liberalisation period (Bargal et al., 2009). According to Lawson and Samson (2001), a firm which is able to link the technological strategy with its business and innovation strategy, are capable of bringing innovation in the firms. Experts as Yang (2012), Martín-de Castro et al. (2013) and Gupta and Nanda (2015) have also highlighted the importance of technological adaptation for enhancing competitiveness. There is consensus among scholars that small firms should concentrate on developing market reach (Wheelen & Hunger, 1999). However, they are unable to raise finances to invest in cost-reducing technology for the firm (Beaver and Prince, 2004).

During COVID-19, countries have taken unprecedented and drastic measures to contain the spread of the virus by closing towns, cities, and national borders, disrupting not only the big corporations but also millions of SMEs around the world (SMEFF, 2020). Though it is too early to assess its full impact on MSME, but given that the COVID-19 is a pandemic has affected humanity, MSMEs would not be immune from it. The world economy is expected to face a very serious crisis besides on the social and political sphere. Over a period of fewer than two weeks, since it was officially declared a pandemic by WHO, COVID-19 has disrupted lives and economies around the globe. According to a briefing issued by the United Nations Department of Economic and Social Affairs, the COVID-19 pandemic will likely shrink the global GDP by almost one per cent in 2020. In such a brief period, many international organizations have analysed, assessed, the impact of the COVID-19 pandemic, and formulated scenarios for world economic growth in 2020. According to Citi Research (published April 7, 2020), the world economy will decline by -2.3 per cent in 2020 (compared to 2.6 per cent in 2019, more than -1.7 per cent in 2009). In particular, China's GDP growth was only about 2.4 per cent (compared to 6.1 per cent in 2019), United States -2.6 per cent(compared to 2.3 per cent in 2019), Japan -1.9 per cent (compared with an increase of 0.7 per cent in 2019), while the Eurozone has regressed -8.4 per cent (compared to 1.2 per cent in 2019) (Dung, Thi Bich and Tho Trần Bá, 2020). About 9-18 million formal jobs may be lost and 100 mn informal jobs vulnerable to income loss in Sub Saharan Africa (McKinsey, 2020). Even studies have been done on the impact in India show that about 30 to 40 percent of the micro sector firms will not be able to survive. However, the impact will be differential depending on the activity of the firm. (ISLE-ILO, 2020).

The pandemic cannot be compared with any other natural disaster due to its magnitude. But, in absence of any other event similar to COVID-19, a comparison to flood can be made. Aruzzir (2018) in her study in Malaysia for another natural calamity, flood, has found that the effect of any natural disaster on SMEs is very severe (Auzzir, 2018). Bouey (2020) has done the immediate impact analysis on the Chinese SME sector. China is the second-largest

economy with international trade with almost all countries of the world which ranges from mineral and food products to highly sophisticated electronic gadgets and automobile parts. So, certainly, it will affect the world's economy (Bouey Jennifer' 2020). With fears of a new recession and financial collapse, Nicola et. al. (2020) have suggested that these times call for resilient and strong leadership in business and government along with wider society. Immediate relief measures need to be implemented and adjusted for those that may fall through the cracks. A broad socio-economic development plan including sector-by-sector plans need to be created, and along with it an ecosystem that encourages entrepreneurship so that those with robust and sustainable business models can be allowed to flourish. COVID-19 will put many small businesses on life support (Nicola et. al. 2020). Karen G. Mills has suggested policymakers on aid options, offers guidance to owners on the brink of ruin (Kost, 2020), and organizations need to develop a trust-based culture with their employees (Beer, 2020). Samuel in a study of 300 randomly sampled SME-Owners in Ghana has discussed the importance of financial literacy for the SME growth (Samuel, 2018).

According to the extant literature, MSMEs are more vulnerable to natural hazards than large firms due to the fact that MSMEs: tend to operate in sub-optimal locations; are smaller and financially weaker; have a more limited, usually local market; tend to implement less DRR measures and be more excluded from recovery programs (Zhang et. al. 2004; Battisti, Martina, and David Deakins, 2012). According to the US Institute for Business and Home Safety, many businesses do not reach the post-disaster stage (Institute of Business and Home safety).

### Private Engineering Colleges in India and Impact of COVID-19

History of Engineering Education in India can be traced back to 1794, when the School of Survey was established at Guindy, Tamil Nadu on the recommendation of Michael Topping to train Indians on construction of roads, bridges, docks, etc. With the involvement of British in the Second World War and the first Indian war of independence, mechanical engineering was added with civil engineering to train the lower grade technicians to manage equipment used for the army, navy and other technical establishments for maintenance of British Empire. (Shaha S., 2011). Private higher education institutions are established by philanthropic, private business establishments, religious and for-profit organizations. In 1970, India had a total of 139 engineering institutions, and only four of them were private. (Singh and Singh, 2018).

After Globalisation and use of Information and Communication Technology in the production process, producers have the opportunity to shift a part of the production process to far off places, where it can be done with required quality at low cost. Many large and multinational corporations came to India to use its English-speaking engineers besides many other resources (Singh, 2005). With the country counting on its demographic dividend, the increase in the number of students seeking engineering degrees put up pressure on the higher education sector to expand. Limitation of the government funding in engineering education which was not sufficient to meet the growing demand, led to the historic decision of privatisation. The Private Universities (Establishment and Regulation) Bill was introduced in 1995 in the Parliament. Passing the bill gave a boost to the opening of many private engineering colleges. By the end of 2000, number of engineering institutions rose to nearly 1,400 out of which about 200 only belonged to the government (Singh and Singh, 2014).

As per the Table-1, private engineering colleges were established across India but number was quite impressive in southern states. This is necessary for higher education institutions (especially private engineering institutions) to collaborate or develop partnership with any reputed organization or elite institutions both nationally and internationally rather than depending on students pass out rate and placement only to attract students amidst the fierce competition (Singh & Singh 2018).

### University and Institute Collaboration

The Higher Educational Institutions are indulging in market-like behaviour for revenue generation. They are collaborating with business firms for technology transfer all over the world for raising funds. On the basis of the 2008-10 data from National Research Foundation of Korea, Ministry of Education and Technology and Korea Foundation for Promotion of Private Schools, Han and Heshmati (2013) have analysed the financial rewards from university-industry research cooperation. As per the findings, participation of engineering faculty, patent approvals, the volume of research funds, and firms in

**Table 1. Regional Presence of Engineering Institutions**

| Region | State/Union Territory | Government Aided | Private Unaided | University Managed |
|---|---|---|---|---|
| North | Chandigarh | 6 | 1 | 2 |
| | Delhi | 18 | 18 | 1 |
| | Haryana | 46 | 288 | 5 |
| | Himachal Pradesh | 17 | 36 | 1 |
| | Nammu & Kashmir | 9 | 18 | 1 |
| | Punjab | 34 | 186 | 6 |
| East | Arunachal Pradesh | 2 | 1 | NIL |
| | Assam | 15 | 5 | 2 |
| | Jharkhand | 16 | 16 | 1 |
| | Maniour | 2 | NIL | NIL |
| | Meghalaya | 3 | 1 | NIL |
| | Orissa | 23 | 172 | 2 |
| | Sikkim | 2 | NIL | 1 |
| | Tripura | 2 | NIL | NIL |
| | West Bengal | 59 | 93 | 3 |
| West | Goa | 7 | 3 | NIL |
| | Maharshtra | 71 | 660 | 8 |
| South | Andaman and Nicobar | 1 | NIL | NIL |
| | Karnataka | 158 | 239 | 3 |
| | Kerala | 90 | 95 | 13 |
| | Andhra Pradesh | 132 | 763 | 5 |
| | Pondicherry | 8 | 13 | NIL |
| | Tamil Nadu | 78 | 852 | 4 |
| | Daman & Diu | 1 | NIL | NIL |
| | Goa | 7 | 3 | NIL |
| Central | Chattisgarh | 25 | 47 | 3 |
| | Gujarat | 49 | 128 | 3 |
| | Madhya Pradesh | 66 | 213 | 6 |

*Source: AICTE website, Singh & Singh 2018.*

incubators within universities turn out to be significant contributors to externally sourced university revenues. They have given an exhaustive list of study conducted on the same issue (Table-2) which shows positive result out of their collaboration.

It appears that industry-university cooperation foundation programs are likely to play a significant role in private university finances.

In this background, the paper discusses the possibility of collaboration of private engineering colleges and micro sectorto overcome the setback from the COVID-19 pandemic. Whether it will be a win-win situation. The discussion has been made on the basis of secondary sources and small studies done by individual researchers and organisations.

**Analysis**

Recently, the government of India has tried to remove the ambiguity and clearly define these sectors as discussed in the Table-3. Along with investment, turnover criteria has also been added. The rand has also been increased. However, keeping micro and medium enterprise in one group is akin to comparing cheese and chalk. While the medium sector is qualified and have resources to hire experts and technology to improve their productivity and efficiency, take lone from the bank, the micro sector is not the perspective or if they have, they are not able to develop sufficient resources to accomplish the task.

Coronavirus and following nationwide lockdowns have put the economic future in jeopardy. However, it is a question of survival for micro sector As per various studies about 30 to 40 percent of the micro sector firms will not be able to revive again (ISLE-ILO, 2020). At the same time, many of them are working in such areas that if they become part of a network or ammelgoration, their return on investment will increase which needs strategic planning and technological updardation along with finances. So, in the light of government financial package for revival and mudra loan, micro firms need an institutional support for assist in strategic planning and technological upgradation.

As per AICTE dashboard, in 2018-19, there were 2,678 private unaided engineering institutions in India with 6,09,090 enrolments and 3,14,840 faculty. The intake capacity was 13,20,573. Its means more than fifty percent seats remained vacant during 2018-19. Now, in the post COVID-19 academic session 2020-21, loss of parent's job or cut in salary or delayed payment of salarymay have cascading effect on the demand for seats in such engineering colleges. Universities across the world are expecting shrink in sources of income and as an alternative, many world class universities have started offering on-line

**Table 2: Study on University - Firm Collaboration**

| Researcher and Sample | Findings |
|---|---|
| Joshua and Patricia (2003) on the basis of study of 108 universities in the USA | Age of Technology Transfer Office, the number of outstanding engineering faculty members and research fund received by external organisations have a positive relation with performance respectively. |
| Thursby and Thursby (2002) on the basis of 64 universities in USA | Performance is related to the number of experts, faculty members, andpersons working at the Technology Transfer office and their relationship with external firms |
| Jenson and Thursby (2003) Interview and Regression (2003 | Reward system through technology transfer is directly related with performance |
| Sigel et al. (2003a) Interview and Regression for 98 people who are directly related to TTO in US | Reward systems for interested persons have effects on performance |
| Power (2003) Interview and Regression for 66 enterprises and 312 university researchers. | Research funds including both public and private have a positive correlation with patent products. But this is not related to revenue through the licensing. ·The more distinguished faculty member a university has, the more patents and licensing a university has. |
| Kim and Lee (2007) Regression 61 universities in Korea | Research competency such as the number of SCIE papers and the number of patent registrations were significant, but managerial competency such as the scale of technology transfer organizations and the number of specialists was not statistically significant |
| Kwon and Han (2009) Regression for 169 universities in Korea, Explorative | • Public universities have higher performances than those of private universities in terms of the number of technology transfers and the amount of technology licensing fees.<br>• The characteristics of university such as age, size, number of departments, faculty members, students, and experts, the number of SCIE papers are not statistically related to performances.<br>• Regional universities have higher performance than universities in urban areas in terms of technology transfer. |
| Seo et al. (2005) descriptive | University's own firms based on university's own technology and holding companies are related with revenue through industry-university collaboration. |
| Sapsalis et al. (2006) Regression for 89 universities in United States. · | Scientific competency, the number of papers, and patents have a positive effect on revenue through industry-university collaboration. |
| Kim (2005) Survey for 54 universities and 79 firms in Korea | • Level of education of experts working at technology transfer office has a positive effect on revenue through industry-university collaboration<br>• The number of patents has an effect on revenue through industry-university collaboration |
| Friedman and Silberman (2003), Jaffe et al. (1993) regression with 12 firms | • The degree of proximity of high-tech firms near school has positive effects on technology transfer.<br>• Geographical location of universities has positive relation with knowledge spill over. |
| Foltz et al. (2000) Survey for bio-agricultural firms in United States | Research funds received from federal government and university have positive effects on revenue, while research funds received from industries have no relation with performance. |
| O'Shea et al. (2005) Byun (2004) survey 107 universities in Korea | It shows that university scale, age of professional institutions, and incentive systems for technology developers have positive effects on revenue through industry-university collaboration. |

*Source: Han Junghee and Heshmati Almas (2013), p.19-20*

degrees. A representative list has been discussed in the Table 4.

These efforts may further bleak the future for unaided private engineering colleges in India. However, they have human capital, in the form of qualified faculty, laboratory assistants and young energetic students. Not to forget, the role of higher education institutions (HEIs) towards the development of their surrounding regions is not a new phenomenon. This has been illustrated by the establishment (in the late 1800s) of land-grant colleges in North America and technical and civic universities in Germany and England, respectively (Editorial, 2017).As Borrel-Domial et.al. (2010) have discussed that generally Ph.D. is pursued for following teaching profession but now, about 50 per cent are pursuing for a wide range of careers. On the basis of the experiences reported by stakeholders, the paper suggests working practices and supporting policy measures that can address the (potentially conflicting) requirements for a high quality of education, sound research and adequate

preparation for diverse career with participation of private sector firms (Borrel-Domial et.al., 2010). Maya Ziswiler of the UBS Optimus Foundation (UBSOF) has discussed innovative ways the education sector is using both blended finance and outcome-based financing. For example, UBSOF's investment in education social enterprises with Acumen in East Africa provides loans and equity investments coupled with a grant for pre- and post-investment support and an outcome-based incentive for both the investment manager and the investees if outcome targets are reached. Another example mentioned for supporting education social enterprises was impact loans, where the interest rate fluctuates based on the outcomes achieved. social and development impact of bonds (SIBs and DIBs), a form of outcome-based financing where investors provide up-front capital to service providers with the opportunity for a return if agreed-upon outcomes are achieved (Gustafsson- Wright Emily, 2020). In India, firms are collaborating with engineering institutions but they are generally large firms or government organisations. It is not common for

**Table 3: MSMEs Classification in India**

| Existing Criteria | Investment in Plant & Machinery or Equipment | | |
|---|---|---|---|
| Characteristic | Micro | Small | Medium |
| Manufacturing Entreprises | Investment< 25 Lac | Investment< 5 Crore | Investment.< 10 crore |
| Service Entreprises | Investment.<10 Lac | Investment.< 2 Crore | Investment< 5 crore |
| Revised Criteria | Composite Criteria - Investment and Annual Turnover | | |
| Manufacturing & Services | Investment< 1 crore and Turnover< 5 crore | Investment.< 10 crore and Turnover< 50  crore | Investment< 20 crore and Turnover< 250 crore |

*Source: Rao Harshitha, 2020*

**Table 4: List of On-line Courses**

| SN | Course | Offered by |
|---|---|---|
| 1 | MS in Computer Science | Arizona State University |
| 2 | Data Science for Engineers | IIT, Madras, July 20-Sept. 11, 2020 |
| 3. | Industry Ready Master Classes for Civil Engineering Students | contact@protrainy.com +91 7978817062, +91 8617833413 programme starting from June 7' 2020 |
| 4. | Basic Electrical Circuits | IIT Madras [ July 20 to Oct 9' 2020 |
| 5. | M.Sc in Computer science | Liverpool John Moores University |
| 6. | Master of Computer and Information Technology | University of Pennsylvania [16-40 Months, Fully Online]: Apply by Aug 1 |
| 7. | From 0 to N: Architecting on Alibaba Cloud | Alibaba Cloud Academy [Online, 5 Months] Gustafsson-Wright Emily (292 |

*Source: Compiled by author*

**Fig 1: Model of Engineering Institutions and Micro Sector.**
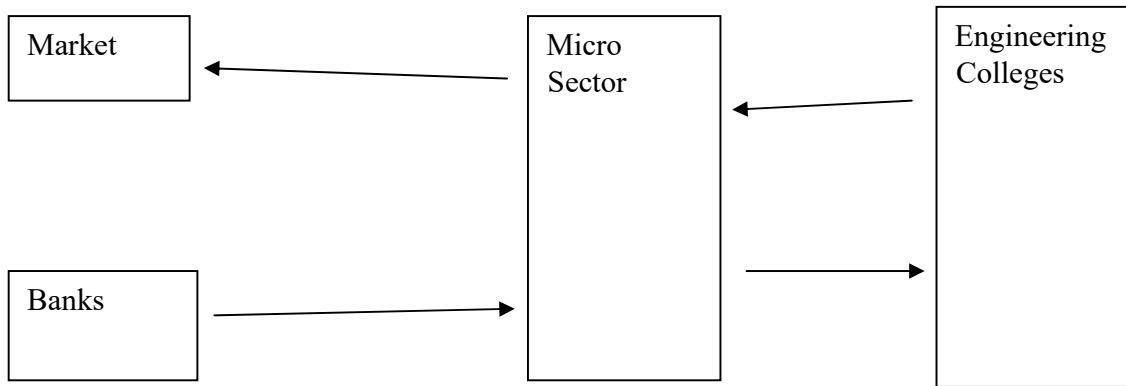


the medium sector, and almost absent in case of micro-sector. However, looking at their capacity to contribute towards the GDP and create employment and for enhanced use of ICT after COVID-19 in the production process, they need use of technology which can be provided by the Private engineering colleges and along with helping them in strategic planning. At present, there is no such platform. It is up to colleges, Industry bodies as CII or FICCI etc. which may work in that area. At Delhi Technological University, B.Tech. students visit slum to assess how knowledge of their branch of engineering can be used to improve life at slum since the academic year 2011-12. (Singh, 2013). The process has been integrated with the examination system as marks is given out of internal marks (Singh, 2016). Similar procedure can be adopted for associating with micro sector. The Unnat Bharat Abhiyan[2]of the Ministry of HRD is similar programme for rural development since 2014.Funds for Awareness, survey, visits etc @₹ 10000/- per village • Technical Intervention ₹ 1.0 lakh per technology for implementation in the village • Customization of Technology ₹ 50000/- per solution for villages.In the Fig-1, a Model for collaboration between Micro sector and Private engineering colleges (unaided) has been represented to achieve a win-win situation for both.

From the financial help under COVID-19 revival package of the government or Mudra loan, the Micro sector can approach engineering institutions for technological help or assistance in strategic planning. The enabled Micro Sector with the help from engineering colleges may go to market alone or may be as part of Cartel. They can become member of a production network for value addition also. This is the time to float loan to Micro Sector and knowledge input from engineering colleges to see the practical implication of the model. Professor ERichard Thaler and legal scholar Cass Sunstein have discussed about NUDGES in their New York Times best seller book entitled Nudge: Improving Decision about Health, Wealth and Happiness. It is crucial to get the necessary response from the beneficiaries, Micro sector firms and Private engineering colleges (unaided) to determine the success or failure of the model. NUDGES stand for incentives, Understand mappings, Defaults, Give feedback, Expect error, Structure complex choices. Through NUDGES, the model will improve further and become sustainable over a period of time.

**Conclusion**

The lockdown as a preventive measure during COVID-19 has disastrous impact on the micro sector which has employment potential and which contributes significantly to the GDP and exports. Though the government has provided a revival package, but *sans* competitive technological assistance or sustainable business model, survival will be difficult post-lockdown. On the other hand, Private engineering colleges will also have pressure of generating finances to survive. The paper concludes that more empirical research is needed to develop a more unified approach to MSMEs success factors, which informs thinking on this critical matter, to both policy makers and business owners (Lampadarios Evripidis; Kyriakidou Niki; Smith Gordon (2017) and engineering institutions. The paper has real implication for today's world situation which has never been experienced earlier. The model may be used as a win-win situation for both. A secondary source of financing for private engineering colleges and a hand-holder for micro sector.

## Notes:

On 13th May 2020, Finance Minister Nirmala Sitharaman added the additional principle of turnover along with the investment. The Union Cabinet had approved the amendment to change the criteria to classify MSMEs from "investment in plant and machinery" to "annual turnover."

Unnat Bharat Abhiyan 2.0, an extension of the programme with improved feature has been stated in 2018.

## References

1. Attisti, Martina, and David Deakins (2012). Perspectives from New Zealand Small Firms: Crisis Management and the Impact of the Canter bury Earthquakes, New Zealand Centre for Small & Medium Enterprise Research (Ed.), Business SM Easure. Palmerston North: Massey University.

2. Audretsch, D B (2009). The Entrepreneurial Society. *The Journal of Technology Transfer*, 3, 245–254.

3. Ballesteros, Marife M, and Sonny N Domingo, (2015). Building Philippine SMEs Resilience to Natural Disasters. No. 2015-20. PIDS Discussion Paper Series, 2015-20, Econstor; https://www.econstor.eu/bitstream/10419/127030/1/pidsdps1520_rev.pdf dated 10.6.2020.

4. Bargal, H, Dashmishra, M., and Sharma, A. (2009), „Performance Analysis of Small Scale Industries - A Study of Pre-liberalization and Post-liberalization period", International Journal of Business and Management, Vol 1, No 2. [3].

5. Bavel Jay J Van, Baicker Katherine et.al.(2020), Using social and behavioural science to support COVID-19 Pandemic Response, Perspective, Nature Human Behaviour, https://doi.org/10.1038/s41562-020-0884-z, pp.

6. Beaver and Prince (2004). Management Strategy and Policy in the UK small business sector: a critical review, *Journal of Small Business and Enterprises Development*, 11(01).

7. Beer Michael (2020). Organizations will Develop Trust-based Cultures with Employees in Gerdman Dina, How The Corona Virus is already Rewriting the future of Business, Working Knowledge, Harvard Business School, March 16 https://hbswk.hbs.edu/item/how-the-coronavirus-is-already-rewriting-the-future-of-business, 14.5. 2020.

8. Bhavani, T.A. (2011). Dynamic Business Environments: What These Mean for Indian Small Enterprises in Micro and Small Enterprises in India: Era of Reforms: Keshab Das (Ed) pp. 27-45.

9. Borrell-Damian, L, Brown, T, Dearing, A. *et al. (2010)* Collaborative Doctoral Education: University-Industry Partnerships for Enhancing Knowledge Exchange. *High Educ Policy* 23 (2), pp. 493–514.

10. Bouey, Jennifer (2020). Assessment of COVID-19's Impact on Small and Medium-Sized Enterprises: Implications from China. *Santa Monica*, CA: RAND Corporation,. https://www.rand.org/pubs/testimonies/CT524.html.

11. Claudiu Cicea, *et. at.* (2019). Determinants of SMEs' performance: evidence from European countries, Economic Research-Ekonomska Istraživanja, 32:1, 1602-1620, DOI: 10.1080/1331677X.2019.1636699.

12. European Commission. (2016). Annual Report on European SMEs 2015/2016. Retrieved from http://ec.europa.eu/growth/smes/business-friendly-environment/performance-review-2016_ro

13. Gherhes Cristian, *et. al* (2016). Distinguishing micro-businesses from SMEs: A systematic review of growth constraints *Journal of Small Business and Enterprise Development,* 23(4), November.

14. Gupta, H and Nanda, T, (2015). A Quantitative Analysis of the Relationship Between Drivers of Innovativeness and Performance of MSMEs', *International Journal of Technology, Policy and Management*, Vol. 15, No. 2, pp.128–157.

15. Gustafsson- Wright Emily. (2020). Education In the time of COVID- 19: Reflection from the Charcha 2020 Forum Brookings, https://www.brookings.edu/blog/education-plus-development/2020/05/26/education-in-the-time-of-covid-19-reflections-from-the-charcha-2020-forum/?utm_campaign=Center%20for%20Universal%20Education&utm_medium=email&utm_content=88647927&utm_source=hs_email on 10.6.2020

16. Han Junghee and Heshmati Almas , (2013). Determinants of Financial Rewards from Industry-University Collaboration in South Korea, IZA Discussion Paper No. 7695 October, Bonn, Germany pp. 1-21.

17. Huong T.X. Nguyen & Viet Le (2019). Network Ties and Export Propensity of Vietnamese Small and Medium Enterprises, *Asia Pacific Business Review*, 25:1, 100-122.

18. Jensen. R. and Thursby, M (2003). Disclosure and Licensing of University Inventions: The Best We Can Do, *International Journal of Industrial Organization* 21, 1271- 1300.

19. Kohoutek, J, *et al.* (2017). The Role of Higher Education in the Socio-Economic Development of Peripheral Regions. *High Educ Policy,* 30 (4), 401–403 (2017).

20. Kost Danielle (2020). How Small Business can survive the Coronavirus Outbreak, Working Knowledge, Harvard Business School, March 20https://hbswk.hbs.edu/item/how-small-businesses-can-survive-the-coronavirus-outbreak

21. Lampadarios Evripidis, Kyriakidou Niki, and Smith Gordon (2017). Towards a new framework for SMEs success: a literature review, *International Journal of Business and Globalisation,* 2017 Vol.18 No.2, pp.194 – 232.

22. Lawson, B and Samson, D (2001). Developing Innovation Capability in Organisations: a Dynamic Capabilities Approach, *International Journal of Innovation Management*, Vol. 5, No. 3, pp.377–400.

23. Martín-de Castro, *et.al,* (2013). Linking Human, Technological, and Relational Assets to Technological Innovation: Exploring a New Approach', Knowledge Management Research & Practice, Vol. 11, No. 2, pp.123–132.

24. Metcalf, G., Jenkinson, K. and Johnstone, K A, (2010). Changing Climate for Business. 3rd ed. Oxford: UK Climate Impacts Programme, https://ukcip.ouce.ox.ac.uk/wp-content/PDFs/UKCIP_Business.pdf 12.6.2020

25. Mishre Udit (2020). Explained: Why are Medium, Small, Micro Enterprises worst hit by Covid-19 lockdown?, *The Indian Express*, May 7, https://indianexpress.com/article/explained/coronavirus-india-lockdown-msme-sector-crisis-government-relief-package-6395731/ on 14.5.2020

26. Nicola, M., *et.al*., (2020). The Socio-Economic Implications of the Coronavirus and COVID-19 Pandemic: A Review. *International Journal of Surgery (London, England)*, S1743-9191(20)30316-2. Advance online publication. https://doi.org/10.1016/j.ijsu.2020.04.018 on 11.6.2020

27. Rampal Jeevant, (2020). Corona Virus Crisis: A Behavioural Economist's guide to shaping India's Covid:19 Policy, https://scroll.in/article/958269/a-behavioural-economists-guide-to-shaping-indias-covid-19-policy on 26.5.2020.

28. Rao Harshitha (2020). Turnover to Define MSMEs: The New MSME Definition 2020, https://razorpay.com/learn/new-msme-definition-turnover-2020/ on 27.5.2020.

29. Saha, S.K. and Ghosh, S (2011). Engineering Education in India: Past, Present and Future. *Propagation*, 2(2), pp.114.

30. Samuel Kwaku Agyei, Christian Nsiah (Reviewing Editor) (2018) Culture, financial literacy, and SME performance in Ghana, *Cogent Economics & Finance*, 6:1.

31. Satpathy Saritaand and Rani Sailja (2017). A Study of Micro, Small and Medium Entrepreses: the Back Bone for Economic Development of the Indian Economy, International *Journal of Research and Scientific Innovation,* 04(06) June, pp 75-82.

32. Singh Antra and Singh Seema, (2018). Expansion of Private Engineering Institutions: Challenges Ahead, *Higher Education for the Future*, 5(1) pp. 20–39.

33. Singh Antra and Singh Seema, (2014). Private Engineering Education in India: Past, Present and Future, *International Journal of Management and Social Sciences Research, ISSN: 2319-442; 03(11),* November; pp. 39-46.

34. Singh, R, Verma, O P, and Anjum, B (2012). Small Scale Industry: An Engine of Growth, *Zenith International Journal of Business Economics & Management Research*, Vol.2 Issue 5.

35. Singh Seema, (2016). Integrating Social Responsibility of University and Corporate Sector for Inclusive Growth in India, *Higher Education for Future* (Sage Publication), 03(02) July 2016, pp. 183-196.

36. -----------------, (2013). Social Responsibility of Engineering Institutions for Inclusive Growth, *Universities News, 2013,* 51(03), pp. 01-04-12.

37. ----------------, (2005). MNCs Effect on Employment of Engineers, *The Indian Journal of Technical Education,* 28(2), April- June 2005, pp. 38-44.

38. SME Finance Forum (2020). Five Lessons From COVID-19 Crisis and SME, https://www.smefinanceforum.org/post/5-lessons-we-learned-about-covid-19-crisis-and-smes on 14.5. 2020.

39. Tesfayohannes, Mengsteab, (1998). The Promotion of Small and Medium-Scale Enterprises Financing as a Contribution to Sustainable Industrial Development- The Case of Eritrea. Aachen: Shaker Verlag, Germany.

40. Venkatesh, S and Muthiah, K, (2012). SMEs in India: Importance and Contribution, *Asian Journal of Management Research*, Vol. 2, No. 2.

41. Yang, J (2012), Innovation Capability and Corporate Growth: An Empirical Investigation in China', *Journal of Engineering and Technology Management*, Vol. 29, No. 1, pp.34–46.

42. Zairol Auzzira*, Richard Haighb , and Dilanthi Amaratungab, (2018). Impacts of Disaster to SMEs in Malaysia, *International Conference on Building Resilience using scientific Knowledge to informpolicy and practice in disaster risk reduction*, ICBR 2917 27-29 November; 2017.

43. Zhang, Yang, ( 2004). Modeling and Managing the Vulnerability of Community Businesses to Environmental Disasters, *45th Annual Conference of the Association of Collegiate Schools of Planning*, Portland, OR, October. Vol. 23.  ❏

# Impact of Orientation Programmes on Knowledge, Attitude and Skills of Senior University and College Teachers

Preeti Dharmik*, Rekha Sharma** and C G Dethe***

India's higher education system is the world's third largest in terms of students, next to China and the United States. In future, India will be one of the largest education hubs. India's Higher Education sector has witnessed a tremendous increase in the number of Universities/University level Institutions & Colleges since independence (Sheikh Younis Ahmad, 2017). Higher education is becoming a major driver of economic competitiveness in an increasingly knowledge-driven global economy. The imperative for countries to improve employment skills calls for quality teaching within educational institutions. In order to identify and promote good teaching practices, institutions may implement evaluation mechanisms. The environment of higher education institutions can enhance the quality of teaching through various means, for example, by issuing a national policy or recommendations by quality assurance agencies (Hénard, 2010).

The National Policy on Education (NPE) 1986 recognized the urgent need for creating effective systems to provide opportunities for professional and career development of teachers, necessary for quality education and research so that they are well equipped and motivated to accept new challenges emerging from growth of new knowledge, international competitiveness and changing requirements of learners, especially in the institutions of higher education. Therefore, it was proposed to enhance their motivation skills and knowledge through systematic orientation in specific subjects, techniques and methodologies, and thereby inculcate in them the right kind of values that would in turn encourage them to take initiatives for innovative and creative work (Guidelines for Regional Centre for Capacity Building and Human Resource Development Centre, 2015).

* Assistant Professor, UGC- Human Resource Development Centre, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur- 440033. E-mail: preeti.dharmik5@gmail.com
**Associate Professor, UGC- Human Resource Development Centre, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur- 440033. E-mail: drrekha_sharma2000@yahoo.com
***Director, UGC- Human Resource Development Centre, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur-440033.E-mail: cgdethe@gmail.com

In order to achieve the above objectives, the Academic Staff orientation scheme, later known as Academic Staff College (ASC) scheme was initiated by the University Grant Commission in 1987 based on the NPE recommendations. There are 66 ASCs in India spread over 26 states of our country. In 2015, these Academic Staff Colleges were renamed as Human Resource Development Centres. The Guidelines for UGC—Academic Staff College from 2002-07 and 2007-12 and UGC- Human Resource Development Centre, 2019 mentioned the four components to be included in orientation courses viz.,

**Component A:** Awareness of linkages between society, environment, development and education

**Component B:** Philosophy of education, Indian education system and pedagogy

**Component C:** Resource awareness and knowledge generation and

**Component D:** Management and personality development

After renaming of UGC-Academic Staff College to UGC-Human Resource Development Centres in 2015, the topics to be included in Orientation Programmes were redefined as follows:

- 10 per cent weight for topics in higher education such as issues of ethics, gender, marginalized communities, plagiarism etc.

- 10 per cent weight for issues related to environment.

- 10 per cent weight for issues concerning service matters of teachers.

- 20 per cent for broad cross discipline topics to motivate the trainees for development of interdisciplinary understanding and interest including basic legal awareness.

- 10 per cent weight for Research Methodology.

- 15 per cent weight for Communication Skills and Information Technology.

- 10 per cent weight for Microteaching

- The remaining 15 per cent of content of the First Level Programme will be focused on broad understanding of various subjects with recent global trends and developments.

Though the weightage for each domain were redefined, but the main thrust areas were similar to the UGCs Guidelines issued during 2002-07, 2007-12 and 2019. UGC-Human Resource Development Centre of Rashtrasant Tukadoji Maharaj Nagpur University was established in 1998 and till date it has organised 105 orientation programmes and catered to about 4363 teachers from university and colleges. Several researches have been carried out to study the impact of Orientation Programme on the professional development of teachers (Dhawan (2000), Rastogi Savita, (2001), Joshi Suresh and Pareek Sushila (2006), Pawar I. Anand and Mouli. S. Chandra, (2008), Survey and Bagul (2012), Satsangi *et al.* (2012), Sonawane and Survey (2015) and Khadilkar (2016)); however, there is a paucity of researches in terms of impact of different domains of the Orientation Programmes viz., teaching, ICT, research and soft skills and economic, social and environmental knowledge on teachers' knowledge, attitude and skills. Hence, the present study was carried out to assess the impact of Orientation Programmes on knowledge, attitude and skills of senior college and university teachers. The objectives of the present study were to assess the improvement in teachers in following domains after attending the Orientation Programme viz.,

1. Knowledge and practice of teaching skills and methodology;
2. Attitude of teachers towards students;
3. Research aptitude and skills;
4. ICT skills;
5. Life skills;
6. Knowledge of social, economical and environmental issues.

**Materials and Methods**

About 113 university and college teachers who attended Orientation Programme at UGC-Human Resource Development Centre of Rashtrasant Tukadoji Maharaj Nagpur University during the year 2001 to 2017 (20th to 98th Batches) were selected on the basis of judgemental sampling. The study was carried out during 2017. Survey method was used. A structured questionnaire was developed having questions related to personal characteristics of teachers and the core areas of Orientation Programmes. During the Orientation Programme, lectures, seminars, group discussion, panel discussion were organised on the topics stated in Guideline of UGC Academic Staff College (2002-07), (2007-12), and Guidelines for Regional Centre for Capacity Building & Human Resource Development Centre (2015) and Guidelines for UGC- Human Resource Development Centres (2019). Hence the questions included in the questionnaire were focused in the core areas of Orientation Programme. The teachers were asked to rate themselves on improvement in domains viz., knowledge and practice of teaching skills and methodology, attitude of teachers towards students, research aptitude and skills, ICT skills, life skills and knowledge of social, economical and environmental issues on five point Likert scale. The five point Likert scale had options viz., 'very low', 'low', 'neither low nor high', 'high' and 'very high'. The data was analysed for frequency, percent and chi square test. The confidence interval was set at 95 per cent.

**Results and Discussion**

*Personal Characteristics of Teachers*

The personal characteristics of the teachers studied were age, gender, educational qualification, faculty, location of the college and the teaching experience. The results are discussed here.About 67.9 per cent teachers were male and 32.2 per cent were female. About 42.7 per cent teachers were from the age group of 41 to 50 year and 39.1 per cent from 31 to 40 years. Only 7 per cent teachers were below 30 years. Majority (52.2 per cent) teachers were from Arts and Humanities whereas 16.8 per cent and 26.5 per cent were from Commerce and Science faculties respectively. Rest of 4.5 per cent teachers were from other disciplines. The majority teachers were from urban areas (54.8 per cent) and only 32.2 per cent from rural areas however 13 per cent teachers were from semi urban areas. There were 45 per cent and 43.5 per cent UG and PG teachers having teaching experience of up to 10 years whereas 20 per cent and 49.6 per cent UG and PG teachers having 10-20 years teaching experience respectively. Only 7.3 per cent teachers had teaching experience of more than 20 years.

*Teaching Related Skills*

During Orientation Programmes lectures and practical sessions were organised on effective teaching, teaching and learning styles, microteaching,

communication skills, use of ICT during teaching, learning and evaluation. The teachers were asked to rate themselves for the improvement in teaching skills, teaching methodology, use of ICT in teaching, evaluation and communication skills after attending Orientation Programme and results are presented in Figure 1.
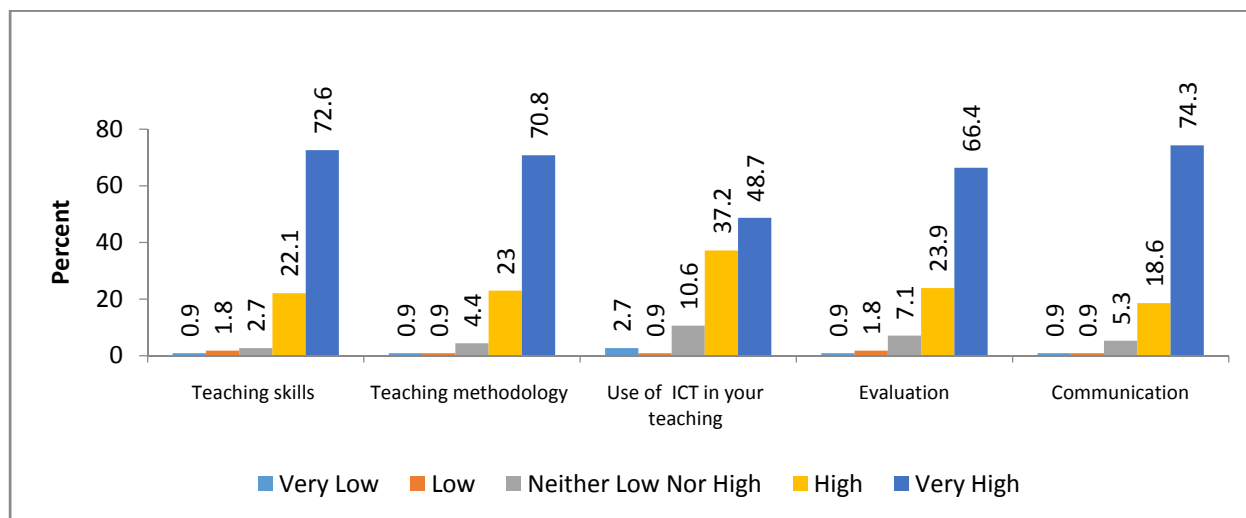
The data presented in Figure 1 shows that the majority teachers rated themselves for 'high' and 'very high' for improvement in teaching related skills after attending Orientation Programmes. The highest number of teachers rated themselves 'very high' for improvement in communication (74.3 per cent) followed by teaching skills (72.6 per cent), teaching methodology (70.8 per cent) and evaluation (66.4 per cent). Slightly lesser percent of teachers (37.2 per cent and 48.7 per cent) rated themselves for high and very high for the use of ICT in teaching which may be because of those participants who attended Orientation Programme before 2005 and did not study computers during the course. The teachers, who rated themselves low and very low, ranged between 0.9 to 2.7 per cent. About 2.7 to 10.6 per cent teachers opted for neither low nor high for the improvement in their teaching skills.

The statistical analysis showed that teachers rating for their improvement significantly differs with respect to teaching skills ($\chi^2 = 212.796$, p=0.000), teaching methodology ($\chi^2 = 201.292$, p=0.000), use of ICT in teaching ($\chi^2 = 105.717$, p=0.000), evaluation ($\chi^2 = 171.204$, p=0.000) and communication skills ($\chi^2 = 220.407$, p=0.000). The study showed higher

impact of Orientation Programme as compared to the reported studies. Satsangi *et al.* (2012) studied the impact of orientation and refresher courses on knowledge up gradation, motivation, leadership traits, technological information, communication skills, personal attributes, health awareness, stress management and national and social values on the participants. Authors reported that ASCs functioning of teaching in higher education in orientation and refresher programme were effective and its help participants in improving their teaching abilities. Similarly, Sonawane and Survey (2015) studied the impact of Orientation Programmes among the teachers. The study reported that orientation helped 10 per cent of the faculty to increase their abilities as a teacher, 9.33 per cent to improve their lecture delivery skills, 9 per cent to achieve improvement in practical and vocational skills, 8 per cent to improve their contents of teaching, only 7 per cent to improve their skills regarding student evaluation and assessment practice and 6.67 per cent of the student and classroom management skills.

Khadilkar (2016) carried out a study on role of faculty development programme and reported that out of total sampled faculty members from Maharashtra, 44 per cent of the faculty members strongly agree about improving communication skills, 50 per cent in improving teaching learning process, 44 per cent in improvement of lecture delivery, 50 per cent in improvement in contents of teaching, 36.67 per cent of the faculty members them in using innovative teaching pedagogy and 44 per cent in improving use

**Figure 1: Percent Distribution of Teachers According to Improvement in Teaching Related Skills after Attending Orientation Programmes**

of ICT in teaching, after attending the orientation program.

## Understanding Student's Issues

Student counselling and guidance is an important core area which is covered during the Orientation Programme. In this section, the teachers were asked to rate themselves for understanding students' attitude towards learning, towards teachers, their psychological problems, peer group pressure, financial and employment problems as well as employment opportunities for the students and results are presented in Figure 2.

The data presented in Figure 2 indicates that the majority teachers rated 'very high' for themselves for their improvement in understanding student's attitude towards learning (70.8 per cent) and teachers (73.5 per cent), employment opportunities for students (56.6 per cent) and employment problems (49.6 per cent) after attending Orientation Programmes. The teachers understanding for peer group pressure were rated 'very high' by only 50.4 per cent teachers. In case of teachers' understanding of students psychological and financial problems the majority teachers rated themselves for 'high' (46.9 per cent and 45.1 per cent respectively) followed by 'very high' (41.6 per cent and 38.1 per cent). About zero to 2.7 per cent teachers rated for 'very low' whereas 0.9 to 5.3 per cent rated for 'low' scores. There were 4.4 to 8.8 per cent teachers who were indifferent.

The statistical analysis showed that teachers rating of themselves for improvement significantly differs with respect to understanding students' attitude towards learning ($\chi^2 = 135.814$, p=0.000), towards teachers ($\chi^2 = 216.425$, p=0.000), their psychological problems ($\chi^2 = 112.973$, p=0.000), peer group pressure ($\chi^2 = 120.230$, p=0.000), financial ($\chi^2 = 91.558$, p=0.000) and employment problems ($\chi^2 = 96.071$, p=0.000) as well as employment Opportunities for the students ($\chi^2 = 128.018$, p=0.000). Several studies have been carried out on the impact of Orientation Programme on the professional development of teachers (Dhawan (2000), Rastogi Savita (2001), Joshi Suresh and Pareek Sushila (2003), Pawar I. Anand and Mouli S. Chandra, (2008), Survey and Bagul (2015), Satsangi *et al.* (2012) and Sonawane and Survey (2015)), however, none of the studies reported impact of Orientation Programmes on teachers with respect to understanding problems of their students.

## Research Aptitude and Skills

Research in higher education help in discovery dissemination and interpretation of new knowledge, ideas, facts and motivate the teachers. All teachers should normally engage in research because research is essential to their professional identity (Satsangi et al.,2012). Research methodology and statistical analysis is an important core area which is covered during the Orientation Programme. The teachers are acquainted with research process, writing review of literature, bibliography, analysing

**Figure 2: Percent Distribution of Teachers According to Improvement in Teachers' Understanding on Issues of Students after Attending Orientation Programmes**
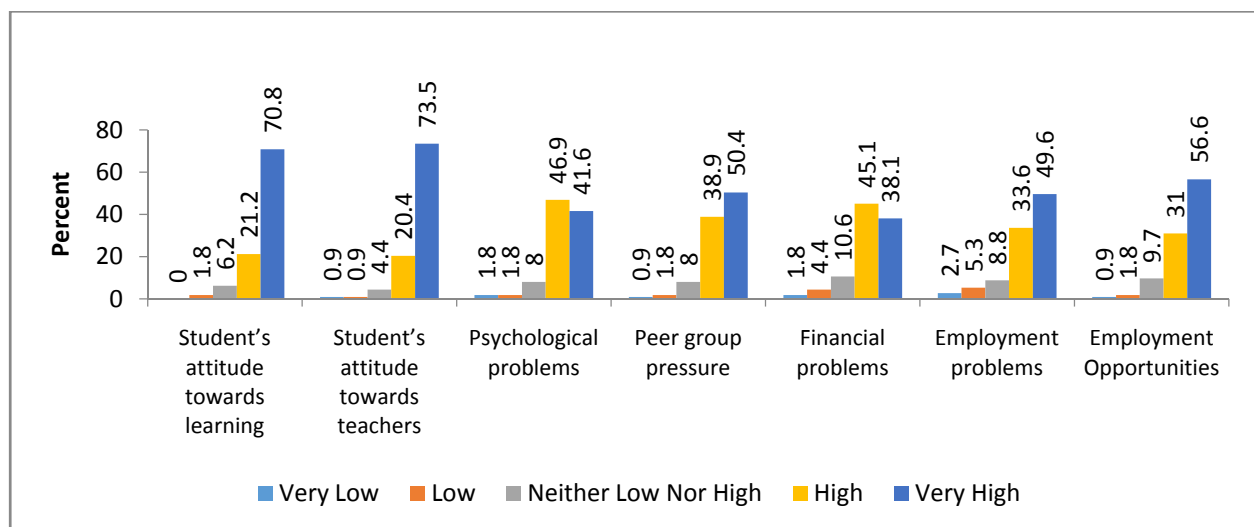
data and interpreting results, writing research proposals publishing research papers at national and international levels besides plagiarism, citation, statistical analysis and statistical tools, during the Orientation Programmes. In this domain, the teachers were asked to rate themselves for their improvement in research aptitude and skills after attending the Orientation Programme and the results are presented in Figure 3.

The data presented in Figure 3 shows that the majority teachers (73.5 per cent) benefitted 'very high' for searching review of literature whereas 67.3 per cent and 66.4 per cent teachers rated 'very high' for writing research proposals and research papers at national levels respectively. About 59.3 per cent, 54 per cent and 49.6 per cent teachers rated themselves very high for writing bibliography, writing research papers at international levels and analysing and interpreting data respectively.

The statistical analysis showed that teachers rating of themselves for improvement significantly differs with respect to knowledge and skills of teachers viz., writing review of literature ($\chi^2$ = 210.673, p=0.000), bibliography ($\chi^2$ = 139.257, p=0.000), analysing data and interpreting results ($\chi^2$ = 113.150, p=0.000), writing research proposals ($\chi^2$ = 176.159, p=0.000), publishing research papers at national ( ($\chi^2$ = 167.133, p=0.000) and international levels ($\chi^2$ = 100.230, p=0.000). Satsangi *et al.* (2012) studied the impact of orientation and refresher courses on teachers with respect to research aptitude

of teachers viz., knowledge up-gradation, art of thinking, writing skills, technological information and research skills. It was concluded that, ASCs contribution towards inputs in research in higher education in orientation and refresher programme were effective and its help participants in improving their research skills.

**Use of ICT Skills in Teaching**

Information Communication Technology (ICT) is one of the important buzzwords of today's IT world. It has changed the society into information society and our way of life (Sinha, 2008). During Orientation Programmes, the teachers are acquainted with Microsoft Office. The teachers were given hands on in preparing power point presentation, using M.S. Excel for data analysis, using M.S. word for writing papers, using internet for searching reviews and communicating through emails as well as introduction to web 2.0 tools viz., Blogs/ You tube/ Face book. In this section, the teachers were asked to rate themselves for their improvement in use of ICT skills after attending the Orientation Programme and results are presented in Figure 4.

The data presented in Figure 4 shows that about 63.7 to 66.4 per cent teachers rated 'Very high' for improvement in preparing power point presentation, using M.S. word for writing papers, using internet for searching reviews and communicating through emails. Only 40.7 per cent and 47.8 per cent teachers rated "very high' for improvement in using MS

**Figure 3: Percent Distribution of Teachers According to Improvement in Research Knowledge and Skills after Attending Orientation Programmes**
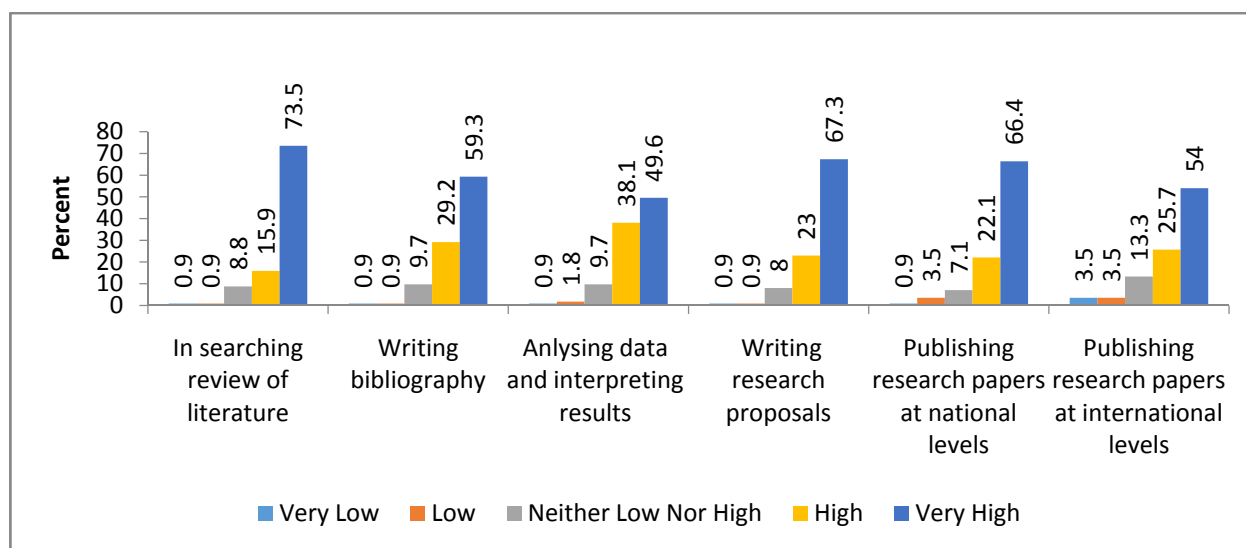
Excel for data analysis and knowing web 2.0 tools viz., Blogs/ You tube/Face book respectively. The statistical analysis showed that teachers rating for improvement significantly differs with respect to preparing power point presentation ($\chi^2 = 172.973$, p=0.000), using M.S. Excel for data analysis ($\chi^2 = 89.611$, p=0.000), using MS word for writing papers ($\chi^2 = 104.876$, p=0.000), using internet for searching reviews ($\chi^2 = 156.336$, p=0.000) and communicating through emails ($\chi^2 = 87.389$, p=0.000), and knowing web 2.0 tools viz., Blogs/ You tube/Face book ($\chi^2 = 59.080$, p=0.000) after attending Orientation Programme.

Sinha (2008) studied Information Communication Technology (ICT) and internet awareness amongst the college and university teachers attending refresher course in ICT. The results showed that 90.24 per cent teachers were using IT in their classroom activities whereas only 9.75 per cent are not using IT for this purpose. 63.41 per cent teachers were comfortable in using MS-Office for their class work whereas 36.58 per cent were not able to use this. MS-Office was used frequently by 42.30 per cent teachers which are followed by 38.46 per cent for moderately use whereas 19.23 per cent were using MS-Office often for their class work. Internet literacy was very much poor among the respondents. Out of 41 participants only 36.59 per cent were Internet literate whereas maximum respondents (63.41 per cent) were Internet illiterate. While assessing the rating of Internet /e-mail services, e-mail ranks first which is followed by WWW (2nd), e-journals access (3rd), INFLIBNET Databases Search (4th) and Chatting (5th). For e-mail service, Yahoo (33.33 per cent) emerged as most preferred e-mail service which is followed by Indiatimes mail service (26.66 per cent), BSNL and Rediffmail (13.33 per cent) and 6.66 per cent for NICNET and Google mail service. 53.33 per cent respondents prefer www.goggle.com search engine which is followed by www.yahoo.com (26.66 per cent) whereas www.msn.com, www.rediffmail.com and www.indiatimesmail.com are preferred by only 6.66 per cent each.

**Soft Skills**

The Component D of the guidelines of ASC/HRDC states inclusion of topics related to management and personality development. During these Orientation Programmes, teachers were given training in soft skills like time management, team work, self analysis, self confidence, interpersonal skills, change management, personality development, communication skills, attitude, motivation level and stress management. Teachers were asked to rate the improvement in these soft skills after attending the Orientation Programme and the results are presented in Figure 5.

The data presented in Figure 5 shows that about 72.6 to 77.9 per cent teachers rated 'Very high' for improvement in soft skills viz., team work, communication skills, motivational level, personality development and self confidence. About 64 to 69 per cent teachers rated 'very high' for stress management,

**Figure 4: Improvement in ICT Skills of Teachers after Attending Orientation Programmes**
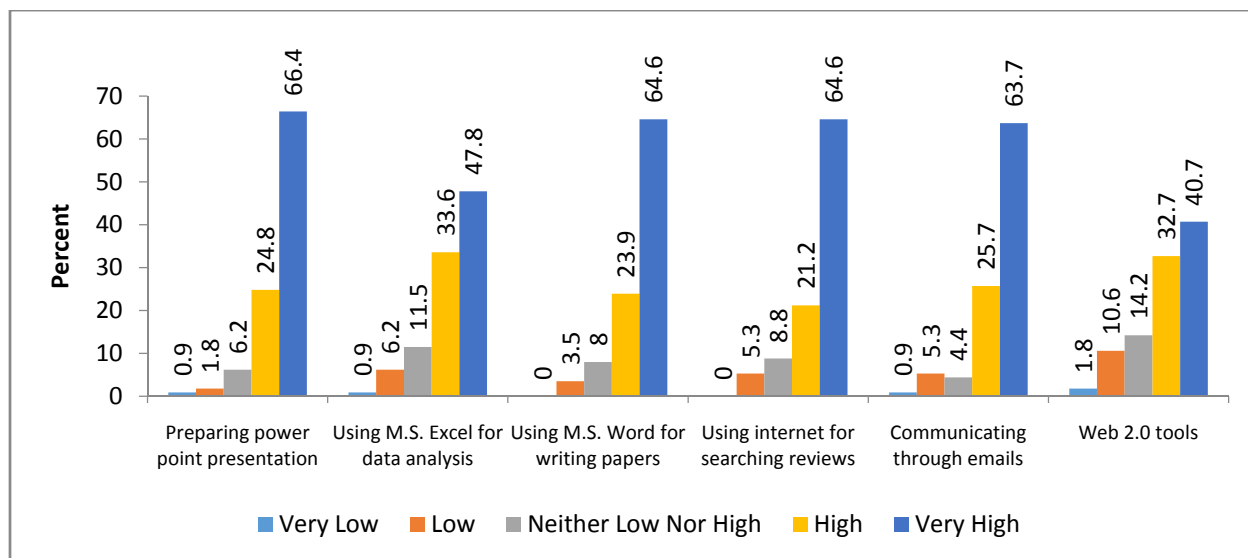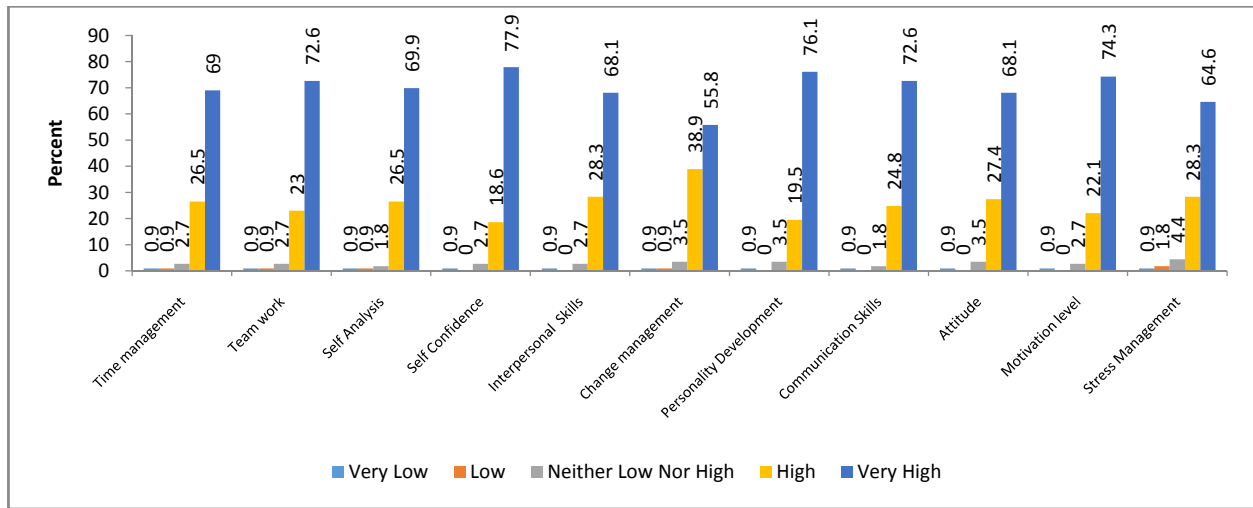
**Figure 5: Percent Distribution of Teachers According to Improvement in Soft Skills after Attending Orientation Programmes**



attitude, interpersonal skills, time management and self analysis. Only 55.8 per cent teachers rated for 'very high' for change management. About 0.9 to 1.8 per cent teachers rated for low and very low for improvement in all the soft skills after attending Orientation Programme. There were 1.8 to 4.4 per cent teachers who rated for 'neither high nor low' for improvement in all the skills after attending the course.

The statistical analysis showed that teachers rating for improvement significantly differs with respect to soft skills like time management ($\chi^2$ = 196.513, p=0.000), team work ($\chi^2$ = 214.920, p=0.000), self analysis ($\chi^2$ = 203.239, p=0.000), self confidence ($\chi^2$ = 177.088, p=0.000), interpersonal skills ($\chi^2$ = 133.478, p=0.000), change management($\chi^2$ = 149.080, p=0.000), personality development ($\chi^2$ = 166.540, p=0.000), communication skills ($\chi^2$ = 152.947, p=0.000), attitude($\chi^2$ = 131.496, p=0.000), motivation level ($\chi^2$ = 159.248, p=0.000), and stress management ($\chi^2$ = 169.434, p=0.000) after attending Orientation Programme.

The extensive review of literature showed the paucity of data on improvements in soft skills of the teachers after attending Orientation Programme.

**Knowledge on Social, Economical and Legal Aspects**

During Orientation Programmes teachers are

**Figure 6: Scores for Improvement in Teachers' Knowledge on Social, Economical and Environmental Issues after Attending Orientation Programmes**
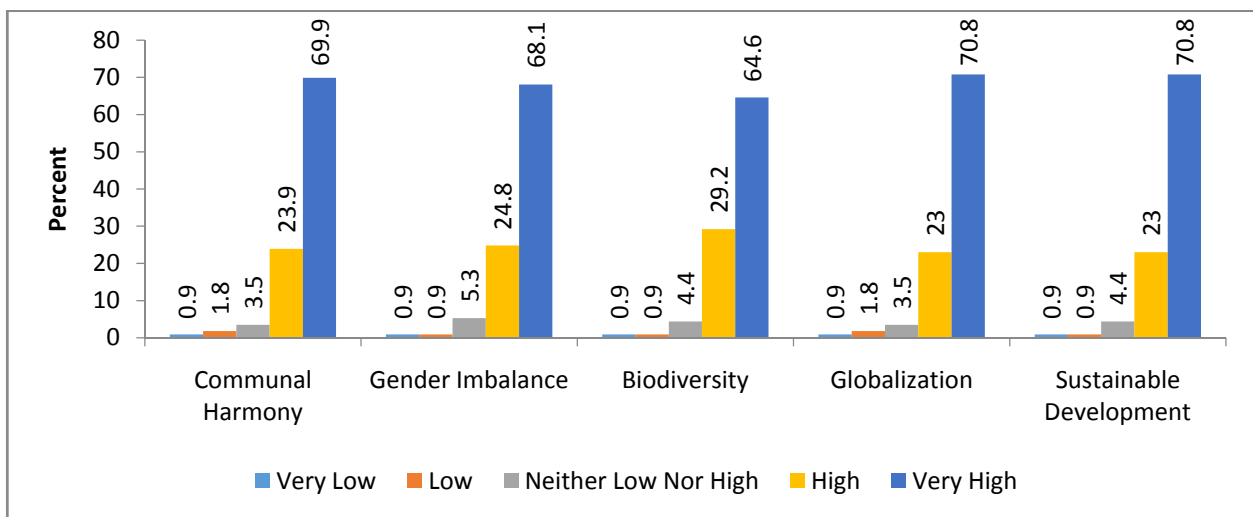
informed about social, economical, environmental and legal issues. The teachers were asked to rate themselves for improvement in their knowledge about communal harmony, gender imbalance, sustainable development, biodiversity and globalization and the results are presented in Figure 6.

The knowledge gained for social, economical and environmental issues during Orientation Programmes were rated 'very high' by 64.6 to 70.8 per cent teachers. About 70.8 per cent teachers each rated 'very high' for gain in knowledge in sustainable development and globalization whereas for communal harmony, gender imbalance and biodiversity 69.9 per cent, 68.1 per cent and 64.4 per cent teachers rated 'very high'(Figure 6). The statistical analysis showed that teachers rating for improvement significantly differs with respect to communal harmony ($\chi^2 = 196.336$, p=0.000), gender imbalance ($\chi^2 = 185.717$, p=0.000), sustainable development ($\chi^2 = 172.177$, p=0.000), biodiversity ($\chi^2 = 201.027$, p=0.000), and globalization ($\chi^2 = 201.292$, p=0.000).

Satsangi *et al.* (2012) also studied the impact of Orientation Programmes on personal attributes, health awareness, environmental awareness, stress management and national and social values and concluded a positive impact on teachers. Sonawane and Survey (2015) reported that 5.67 per cent of the faculty members were positive about the statement that the orientation helped them in improving the interdisciplinary subject knowledge. Khadilkar (2016) also reported that out of total sampled faculty members from Maharashtra, 11.33 per cent of the faculty members strongly disagree, 8.67 per cent of the faculty members disagree, 4 per cent of the faculty members are neutral, 26 per cent of the faculty members agree and 50 per cent of the faculty members strongly agree about the orientation program helped them in improving social awareness.

## Conclusion

It can be concluded from the present study that Orientation Programmes helped the teachers to improve their knowledge and practice of teaching skills and methodology, attitude of towards students, research aptitude and skills, ICT skills in imparting education, life skills and knowledge of social, economical and environmental issues. The improvement in all domains was found to be significantly (p=0.000) "very high" in likert scale in all the domains. Imparting knowledge, and skills through Orientation Programme may go a long way in improving the quality education through well trained teachers.

## References

1. Dhawan Rani, (2000). Impact of Academic Staff College's programmes on Teachers and Students, *University News*, 38 (16) April 17, 2000.
2. Guidelines for Academic Staff Colleges, University Grants Commission (2002-2007) X Plan.
3. Guidelines for Academic Staff Colleges (2007-12) XI Plan.
4. Guidelines for Regional Centre for Capacity Building (RCCB) & Human Resource Development Centre (HRDC) (Implementable from 01 February, 2015) .
5. Guidelines Human Resource Development Centre (HRDC), (2019).
6. Hénard, Fabrice (2010). Learning our lesson. *Review of Quality Teaching in Higher Education.* https://www.researchgate.net/publication/44841258_Learning_our_lesson_Review_of_quality_teaching_in_higher_education
7. Joshi Suresh and Pareek Sushila, (2006). Impact of Orientation Courses on teachers in higher education. *Indian Journal of Adult Education*, New Delhi, Jan-June 2006.
8. Khadilkar Sujay Madhukar, (2016). Role of Faculty Development Program, *Scholarly Research Journal for Interdisciplinary Studies*. 3(22), 1655-1671
9. Pawar I Anand and Mouli S Chandra, (2008). Impact of training on university and college teachers: An Empirical Study. *University News*, 46 (49), 08-14, 2008.
10. Rastogi Savita (2001). Teachers Development in Higher Education in Academic Staff Colleges in India, *www. Google.co.in*. September 2009.
11. Sachin Sadashiv Surve and Dhananjay Bagul, (2015). The Orientation Programmes - Challenges Ahead. *Scholarly Research Journal for Interdisciplinary Studies*. 3(19), *375-39.*
12. Satsangi Falguni, Bhatnagar Sanjeev and Kaushik S P, (2012). An Evaluative Study of Functioning of Academic Staff College in India and Its Impact, Ph.D. thesis**,** Department of Management, Faculty of Social Sciences, Dayalbagh Educational Institute, Dayalbagh, Agra, https://shodhganga.inflibnet.ac.in/handle/10603/14183
13. Sheikh Younis Ahmad, (2017). Higher Education in India: Challenges and Opportunities. *Journal of Education and Practice*. 8(1), 39 - 42.
14. Sinha, Manoj (2008). Information Communication Technology (ICT) and Internet Awareness amongst the College and University Teachers. 6th International CALIBER-2008, University of Allahabad, Allahabad, February 28-29 & March1, 2008 © INFLIBNET Centre, Ahmedabad .https://www.researchgate.net/publication/269334809
15. **S**onawane Sanjeev A, and Surve Sachin Sadashiv, (2015). Professional Development of Academic Staff in Higher Education: Impact of Orientation Programmes, *Scholarly Research Journal for Interdisciplinary Studies*, 3(20), 1149-1157. ❏

# Good Practices in Virtual Presentations for Higher Education

**Pranita Gopal\***

The COVID pandemic has forced educators tap into the potential of technology. On the face of it, technology appears to be quite useful in breaking the barriers of location and time but it steals away the infectious enthusiasm that one experiences in a live classroom. Educators today are relying heavily on virtual modes of presentation to help students and colleagues around move past these strange times. This paper attempts to understand virtual presentations and how educators can benefit from delivering engaging virtual presentations for their students.

## Purpose of a Presentation

All presentations fall into three categories:

- *Inspirational:* The best example to illustrate an inspirational presentation is to think of TED Talks (www.ted.com). The inspirational presentations focus on certain problems and thereafter leave the audience with ideas and questions to think and ponder about. Using the audience's emotions and intellect, inspirational presentations put forth viewpoints that have the ability to inspire.

- *Informative:* Informative presentations on the other hand aim at sharing information – they are expected to communicate instructions, or deliver a point or share a research or simply educate the audience regarding areas of interest to either the organization (business or institution) or the audience. Educative presentations, training presentations could fall under this category.

- *Influential:* These presentations could also be called persuasive presentations where the presenter expects to the audience to accept the proposal or idea at hand or accept the solution presented to a particular problem. Sales pitch or business proposals could be an example of an influential presentation.

In education, the presentations draw heavily from the genres of inspirational to the informative presentation.

In higher education we have another lens to view a presentation. Presentations could be considered as opportunities:

---
*\*Instructional Coach & Educational Consultant, O 1090 Devender Vihar, Sector 56, Gurgaon, Haryana. Email: pranitagopal@gmail.com*

- *to contribute*: where the presenter has the ability to contribute towards a discussion or a problem-solving process or the learning journey of a fellow learner.

- *to connect*: where the presenter has the ability to make connections with others present. It helps the presenter network with like-minded people and grow in their respective fields.

- *to change*: the perception of the audience towards issues or problems.

## Face to Face Presentations Vs Virtual Presentations

Gendelman (2010) explains the difference between face to face presentations and virtual presentations under the following four heads:

- *Location & Time*: In face to face presentation, the location and time are fixed and the audience and the presenter are expected to be at a certain physical location at the same time, while in the case of a virtual presentation there are opportunities for the presentation to be happening synchronously (where the audience and the presenter are present virtually at the same virtual place & at the same time (irrespective of the time zones) or asynchronously (where the audience and the presenter can break away from the barriers of time and place).

- *Size of the audience*: Face to face presentations have a physical limitation with regard to the size of the audience and the logistics involved thereafter. In virtual presentations, the size of the audience is not gauged by the physical constraints of space but that of the internet bandwidth and technological platform.

- *Content delivery tools*: Often in face to face presentation, presenters are limited by the tools they can use to deliver the content (projector, LCD, video projector) as often it is difficult to create a complete multimedia experience in all presentation venues. With virtual presentations the choice of content delivery tools increases with options of screen sharing and using the internet simultaneously within the presentation. Using break-out rooms within the presentation framework allows for short group discussions without disturbing the entire group.

- *Modes of Communication*: In face to face presentation, the mode of communication is mostly audio, that can create accessibility issues. Using closed captions in a virtual presentation can help break down the accessibility barriers.

## Challenges in a Virtual Presentation in Higher Education

In spite of having advantages like, inclusion of large number of participants, lower economic costs for organizers, virtual presentations come with their own challenges. Gendelman (2010) list down the following challenges:

- *Absence of visual/ facial cues*: As a face to face presenter, we all rely on facial cues to give us reinforcements while we are presenting. In the world of virtual presentation, there is generally a lack of visual cues with regard to the audiences' mood and receptivity and these effects the enthusiasm of the presenter.

- *Struggle in building rapport with the audience:* Virtual presenters often struggle in building rapport with their audience due to internet bandwidth issues visible via the poor-quality audio or video transmission.

- *Internal distractions:* As virtual presentations are conducted using the laptop or mobile device, the presenters are always facing challenges of participants getting distracted by the emails or chats or other websites.

- *External distractions:* The audience of virtual presentations could be either logging in from their homes or office spaces where simultaneously other activities could created is tractions for the presenter and the audience. Also, another example of an external distraction could stem from the unmuting of the audio function in the device leading to distractions from the barking of pets to squabbles amongst family members.

- *Struggle in encouraging students:* In face to face presentations, the presenter can use visual cues and facial expressions to create a rapport with the participants. In a virtual world, often the audience has the ability to login to a presentation and switch off the video feed, leaving very little room for the presenter to engage with such participants.

## Minimizing the Challenges while Presenting Virtually

These challenges could affect the communication channel, but with a bit of planning and conscious efforts, one can overcome the challenges, like for example:

- *Keeping the presentation short*: Unlike face to face presentations that could go on for an hour or more, virtual presentations need to be short with ample room for interaction. Although there is no fixed formula to ensure the distribution of presentation time vis a vis the question-and- answer time, a general rule of thumb followed by good presenters is to use only 60 per cent of the allotted time for presenting and the rest 40 per cent of the time for questions.

- *Using a brisk pace*: Unlike face to face presentations, in the virtual presentation, maintaining a brisk pace ensures the presentation reflects the enthusiasm of the presenter. A brisk pace doesn't mean to speak fast, instead it means that the presenter should be so well versed with the content that the presentation flows like an oft repeated story.

- *Keeping the interaction alive during presentation*: Interactivity is a key element to create memorable virtual presentations. Interaction keeps the audience actively engaged away from the various distractions.

- *Using more visuals than texts*: Using more visuals than texts helps keep the attention of the students. They ensure the presentation doesn't become dull. Free copy right images and images licensed under the creative commons can be found in sites like Unsplash, Pixabay, Wikicommons.

- *Add FIRES to the presentation:* Virtual presentations that have the necessary FIRES (F-Fresh, I – Informative, R- Relevant, E – Enthusiastic, S-Story) have the ability to engage the participants. In the case of higher education, the presenter can mix and match audio and visual clips to add freshness to the topics.

## Planning & Delivering a Virtual Presentation

Every presentation has a certain purpose and that purpose is built on understanding the elements of a good presentation. Research has shown there are four elements to effective presentation:

- *Understanding the audience*: Concepts across disciplines and grade levels often overlap. Understanding the audience – both students and teachers- includes understanding the age, the role of the audience, socio-economic background, linguistic diversity, technological capability, accessibility issues etc. Understanding the audience provides the presenter a perspective to deal with the content and leads to the next important element of the presentation.

- *Preparing the content*: If we wish that our presentation is interesting and our audience is attentive during our presentation, the content needs to mirror audience needs and interests, along with the coherence of content. Students have access to all material that is available on the internet, what they lack is the ability to string the content into a tapestry that is meaningful and age appropriate.

- \*Delivering confidently*: Confidently delivered presentation have "hooks" that engage the participants and create room for inter activity between the students and the teacher. One of the hallmarks of a confidently delivered presentation is linking what is being discussed to the larger context of the subject and demonstrating how small pieces of concepts have shaped the domain knowledge.

- *Controlling the environment*: Creating ground rules for the presentation, giving clear instructions on acceptable behaviors in an online environment, letting the participants know when their questions would be answered are some ways in which the presenter can control the presenting environment.

Durate (2012) describes three phases of planning and delivering a presentation. This holds true for even virtual presentations.

*Phase I: Conceiving the presentation*: Conceiving a presentation includes finding answers to the following questions:

- Who is the audience?

- What do I want the audience to know after hearing the presentation?

- What do I want the audience to do after hearing the presentation?

- What do I want the audience to feel after hearing the presentation?

- How does the presentation answer the question of "*WIFM – What's in it for me*?" for the audience?

- How does the presentation organize the content? Does it follow a chronological order or causal-effect or does it build on research or does it present a logical argument?

- Does the presentation flow like a story?

- What are the media modes that have been chosen for communicating the message?

- Are there alternatives for images so that accessibility issues in the audience is catered for?

*Phase II: Visualizing the presentation*: It is in this stage the presentation takes the form of a narrative with the help of slides or any presentation modes. While visualizing the presentation it is useful to plan answer the following questions:

- Are the visuals used free from cultural, gender or socio-economic barriers?

- Are the visuals such that they easily convey the point that the presenter is trying to make?

- Does the image help to make the presentation memorable?

- Does the image supplement the content and the topic that is being presented?

- Are the visuals too bulky in terms of their size?

It is important to remember that unlike face to face presentations, in virtual presentations, the presenter has to plan for more slides so as to keep the audience engaged.

*Phase III: Delivering the presentation*: There are two aspects that Durate (2012) suggests we consider at this stage – one pertains to delivery and the second pertains to the impact of the presentation. It is important to consider the following points while delivering the presentation:

- Is there enthusiasm in the presentation?

- Is the voice modulated for driving the maximum impact?

- Depending on the content and audience is the presenter's voice communicating assertiveness or caution or is it critical or is it motivational?

- Is there a way to measure the impact of the presentation?

**Virtual Presentation-Good Practices for Higher Education**

There is an analogy that one often reads about when a presenter's face to face and virtual presentation skills are compared. The analogy comes from the world of aviation – where pilots are not only trained but expected to have dual proficiency – first is the proficiency to fly with sight and what is visible in front of them (akin to face to face presentations where the audience is visible) and the second is the proficiency to fly with just the instruments in the cockpit – that is without any visibility of the world outside (akin to virtual presentations – where the presenter is facing just a camera and the computer screen). And therefore, like how pilots gain competency and dual proficiency following certain good practices can help a presenter gain proficiency in presenting virtually as well as in face to face environments.

- *Have a wingman*: A wingman is a supporter; a person who will assist the presenter in many ways – like to present the introduction, to monitor the chat, to monitor the questions, to steer the flow of questions to the presenter, to be have a copy of the presentation. The wingman can also keep providing useful summaries at the end of each section, giving the presenter a break from continuous speaking. If the planned presentation is of a longer duration, then the wingman can help break the monotony of a single presenter.

- Giving students the opportunity to be a wingman during the presentation, helps boost the student's confidence and creates a sense of responsibility within the student towards her learning.

- *Understand the audience*: A good practice to deliver effective virtual presentations revolves around understanding the audience composition – which institutes they belong to, what is their educational background, what is their work experience – all this information can be obtained when the audience registers for the presentation. This information also helps the presenter plan and share specific examples pertaining to certain specific areas of interests of the audience – automatically increasing the interaction amongst the participants.

- *Create a presentation title & description that will intrigue/ appeal the audience*: Presenters need to plan their topic to center around areas of interest of the audience or current need. Like for example, in today's pandemic times, any presentation that helps final year students increase their chances of getting employed will automatically appeal to a large majority of the students. In the same manner, presentations that deal with the mental health issues that students undergo due to lockdown will help students cope better as human beings.

- *Understand the presenting environment*: Virtual presenting environments have the following common features: a *presentation area* (where the presentation is available for display to the audience) , a *picture area* (where the presenter's video feed is available), a *chat area (*where the audience can chat either with the presenter or amongst themselves), a *break-out room (*where the larger groups can be broken into smaller groups for small group interactions), a *polling area (*where the presenter can create polls to understand the audience), a *screensharing area* (where the presenter can share the computer screen – this area could be overlapping with the presentation area), a *whiteboard* ( which can be used during the presentation), the *audio/ video controller (*which is used to control the audio levels and the video clarity of the presentation.) With so many areas under one screen, it is important to understand the presentation environment as all apps and products have the same functions in different areas of the screen. \

- *Test the platform once before going live*: As presentation environments could vary across operating systems and amongst themselves, it is a good practice to test the presentation on any new platform before the final presentation. Also, when the presentation is tested before the final presentation, the presenter is able to gauge how the presentation fonts and images will be visible when the final presentation is screened across devices. When a presenter tests the presentation before delivering, it displays professionalism and behaviors that we wish the next generation imbibes.

- *Remember -Lag time*: Due to the internet bandwidth issues a virtual presenter needs to be aware of the lag time that could occur while presenting. The lag time is often witnessed by the audience as a slow-motion picture.

- *Avoid scroll quickly*: As many times, a lag time occurs during virtual presentations, it is important to remember that while viewing websites or programs via screen sharing, one must not scroll through the page quickly.

- *Avoid Animations*: In face to face presentations, animations if used correctly can help hold the attention of the audience. In a virtual presentation, they generally do not provide the same assistance as they could add to the lag during the presentation. Animations during virtual presentations could create unwanted distractions while moving between slides.

- *Present information in short logical chunks*: Presenting information in short logical chunks will help the presenter maintain the momentum of the presentation. It will assist the presenter move from one topic to another with confidence and agility that are hallmarks of a good presentation.

- *Using visuals*: The visuals in the presentations act as anchors that help the presenter and the audience. In a virtual world, the images help carry the talk forward. Visuals are great tools for creating transitions within the presentation topic and help the presenter support learners with diverse learning styles.

- *Promote interaction*: Polls are very useful tools to promote interaction. Polling tools can also transform into tools for checking the perception of the audience, understand the conceptual clarity of a topic. These questions can then be used as hooks to grab the attention of the audience.

  The wing man can also play an important role in adding to the interaction of the presentation by asking planned questions that help propel the discussion/ presentation ahead.

  Integrating live results or direct poling sites within a presentation can also help add to the inter activity within the presentation.

  The polling option can also be used as a tool to see the perception of the audience before and after the presentation.

- *Answer questions*: A good practice is to clearly set the stage as to when the questions would be answered. Many presenters prefer the questions are answered at the end of the presentation. Also, another good practice is to repeat the question and the name of the person who asked the question to help others understand the question in perspective. At times to add to the interactivity within the presentation, a good idea could also to be ask leading / investigative questions to the audience and then break them into smaller groups to think about the answer.

- *Keep a glass of water handy*: Like all presentations, when the speaker speaks for a longer duration, having a sip of water helps maintain the clarity of speech.

- *Do some vocal exercises*: In Julian Treasure's TED Talk ( How to speak so that people want to listen) there are some exercises that help the speaker warm up her voice. These simple exercises add to the clarity of speech that helps the speaker keep the attention of the listener.

- *Reboot the computer*: Often we do not realize the number of background activities that take place in the computer and many at times the computer could update itself and start rebooting right when the presentation is on. Therefore, it is generally suggested that the computer/laptop be rebooted once before a presentation.

- *Upload supporting material*: It is also recommended not to share the presentation handouts before the presentation, instead the material shared once the presentation is over. Many presenters also share the presentation handouts/ supporting material once the presentation is over but the question and answer session is still on, giving the audience and students an opportunity to ask their questions before the event is wrapped up.

- *Gather feedback*: In the face to face situations, one is able to gather feedback based on the interaction after the presentation is over. In virtual presentations, the presenter has the provision to solicit specific feedback via forms and questionnaires. The feedback always assists the presenter in either collaborating with other like-minded colleagues or helps improve on their own presentation.

**To Sum Up**

In the UGC Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown, issued in April 2020 a case for blended learning model has been put forward. The guideline also emphasizes that the responsibility of the teacher doesn't end by just sharing the e-content, instead it lays emphasis for interaction with the students.

Presenting in the virtual world and working with students and colleagues via a virtual medium necessitates that interactivity and engagement are deeply rooted within all presentations and discussions. With adequate planning and following the good practices from world over virtual presentations can be a great scaffold for in the learning journey of individuals.

**References**

1. Campbell, G M, (2002). Bulletproof Presentations. Career Press. New Jersey.

2. Duarte, N (2012). HBR Guide to Persuasive Presentations. Harvard Business Review Press.

3. Duarte, N (2019). Data Story: Explain Data and Inspire Action Through Story. Ideapress Publishing.

4. Gendelman, J, (2010).Virtual Presentations That Work, McGraw-Hill Education, New York.

5. Reynold, Garr (2012). Presentation Zen: Simple Ideas on Presentation Design & Delivery. 2nd Edition. Peachpit.

6. Reynold, Garr (2011). Naked Presenter. Peachpit. California.

7. Treasure, Julian (2013). TED Talk - https://www.ted.com/talks/julian_treasure_how_to_speak_so_that_people_want_to_listen.

8. University Grants Commission, (2020). UGC Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown. From: https://www.ugc.ac.in/pdfnews/5369929_Letter-regarding-UGC-Guidelines-on-Examinations-and-Academic-Calendar.pdf.   ❑

# Transformations through Innovative Technological Interventions

M Venkaiah Naidu, Hon'ble Vice President of India delivered the Convocation Address at the First Convocation of National Institute of Technology, Tadepalligudem, Andhra Pradesh on December 24, 2019. He said, "The challenge I place before all of you as young technocrats today, as you embark on the next phase of your life, is to find technological solutions to combat the pressing problems. Incremental improvements and frugal innovations can be carried out constantly to bring about advancements. By solving these problems, you will create a virtuous cycle which will help pull millions out of poverty and improve the quality of their lives. Please remember that that the ultimate aim of science and technology is to make lives of the people comfortable and happy." Excerpts

I am delighted to be with all of you today at the first convocation ceremony of NIT Andhra Pradesh, a young and promising institution nestled in the pristine land of Tadepalligudem. A visit to Andhra Pradesh is like a homecoming to me. I was born here and was nurtured and nourished by this great land.

National Institutes of Technology (NITs) that have evolved from Regional Engineering Colleges (RECs) have been at the forefront of technical education in the nation. NIT AP had the privilege of being mentored by NIT Warangal, the first REC in the country. I am happy to know that NIT Andhra Pradesh is the 31st NIT in the nation. I am told that it started functioning with the support of its mentor institute, NIT Warangal, in Sri Vasavi Engineering College Campus, Tadepalligudem. I fondly remember the foundation laying ceremony of NIT Andhra Pradesh which was held on 20 August 2015 when I was the Union Minister for Urban Development and Parliamentary Affairs. It is truly noteworthy that the construction work of the campus which started in October 2018, was completed in thirteen months. The transformation of an erstwhile runway to an awe-inspiring campus of an institution of national importance is indeed remarkable. It is clear from the report presented by the Director that the youngest NIT of the country has made great strides in all areas.

My Dear Young Students, let me take this opportunity to congratulate each and every one of you for this tremendous accomplishment. You have the proud privilege of being the first batch of students to graduate from NIT, Andhra Pradesh. NIT Andhra Pradesh was born with you and will grow with you and prosper with you. As you leave the portals of this Institution today, please remember that you are amongst the brightest young minds of our country. You live in a very exciting era of scientific and technological disruptions.

Technological breakthroughs in the form of Automation, Artificial Intelligence, Internet of Things, Big Data and analytics have truly transformed the way we live and work. The existing frontiers of science are being constantly challenged through interaction between various disciplines ranging from arts to humanities to engineering to Biotechnology. Young engineers like yourself have the never-before opportunity to further revolutionize these technologies and find new ways to use them for the benefit of humanity. Let me stress that the ultimate aim of all these technological advances must be the betterment of the life of the common man. They must lead to the discovery of solutions to the most pressing problems of our time.

There is no doubt in my mind that innovation is the watchword for the 21st Century. Institutions such as the IITs and the NITs must become hubs of innovation. They must recognize potential and nurture it to bring out the best in each student. The curricula and teaching methods in these institutions must never be set in stone. They must constantly evolve to suit the times. Institutes that render technical education must never hesitate to teach and experiment with the latest of technologies. They must allow the free flow of ideas and must never stifle innovative thinking through rigid protocols. Let me focus on a few areas that I think can be transformed through innovative technological interventions.

The first is agriculture. There is a vast scope to introduce new and innovative technologies to spur agriculture growth and improve the lot of the farmers. This is the time for young engineers to come up with out-of-box solutions to the problems faced by agriculturists from climate change to increasing crop productivity. I urge young technocrats to understand the real problems faced by Indian agriculture, including fragmented land holdings and insufficient market access.

I want you to think:

- Can we understand soil better?
- Can we carry out more efficient irrigation by overcoming shortages and avoiding surpluses?
- Indian agriculture is greatly dependent on weather. Keeping the changing climate and precipitation change in mind, can we create better weather prediction systems and make agriculture become more resilient?
- Can we facilitate better price discovery and market access to farmers?

It is of paramount importance that we boost our food production to overcome hunger and feed a billion people. I have always maintained that imported food security is never a solution. The second is the arena of clean and renewable energy. Our climate patterns and weather systems are changing. Global Warming is a reality and it is happening now. We cannot be in denial anymore.

India is one of the most carbon-efficient economies in the world today. The government of India under the leadership of our visionary Prime Minister is all set to surpass the target we had set for ourselves of 175 GW of renewable energy by 2022. Our Solar capacity has increased by eight times between FY14-18 and we have spearheaded the International Solar Alliance (ISA), a testimony to India's commitment to the development of 'zero emission sources'. I want engineers and technocrats like you to champion the cause of clean energy.

I strongly believe that a balance between environment and development can be achieved through good technology. It is essential that we strike that balance. Our development has to be sustainable. Let conservation be the cornerstone of every single one of your innovations.

The third is urban development. India's urban population is expected to rise to 517 million by 2020 and will cross the 700 million mark by 2050. Our urban spaces are our engines of growth. Unfortunately, our towns and cities have exceeded their carrying capacity and are choking. Our most prosperous cities are also home to large slums. Our cities must grow inclusively and sustainably. We must find solutions for sustainable housing, drinking water, mass mobility and provide economic opportunities to bridge the huge income gaps in cities. We must address concerns of pollution and congestion and create sustainable waste management solutions and waste-to-wealth initiatives. We must make our urban spaces safe for women and children and accessible to the differently-abled.

We must check distress migration by providing quality healthcare, education, other amenities, and economic opportunities in rural areas as well. Urban development is possible only if we achieve rural development, a cause that is very close to my heart.

Mahatma Gandhi also believed that self-sufficient villages are necessary if we are to build a prosperous nation. Our rural areas too need technological interventions that are tailor-made to suit their unique requirements. I also urge you to find solutions to challenges of water management. Many parts of India are facing an acute water crisis. This crisis will only worsen in the time to come.

According to the Composite Water Management Index (CWMI) report released by the Niti Aayog in 2018, 21 major cities might reach zero groundwater levels by 2020. The Union government recently formed a new Jal Shakti (water) ministry, which aims at tackling water issues with a holistic and integrated perspective. The ministry has announced an ambitious plan to provide piped water connections to every household in India by 2024. The government alone will not be able to solve the entire problem. We must augment the efforts of the government.

We must use technology for better rainwater harvesting and to improve water use efficiency. We must urgently transit from this 'supply-and-supply-more water' provision to measures which lead towards improving water use efficiency. The challenge I place before all of you as young technocrats today, as you embark on the next phase of your life, is to find technological solutions to combat these pressing problems. I am hopeful that you will come up with solutions to these challenges through hard work and creative thinking. You do not have to wait for big-ticket innovations. Incremental improvements and frugal innovations can be carried out constantly to bring about advancements. By solving these problems, you will create a virtuous cycle which will help pull millions out of poverty and improve the quality of their lives. Please remember that that the ultimate aim of science and technology is to make lives of the people comfortable and happy.

My Dear Youngsters, In spite of temporary global slowdown, the Indian economy has the potential to become a $ 5 economy in the coming years as the macroeconomic fundamentals are strong and resilient. Government is also taking various reforms from time to time to improve GDP growth, cut down red tape and attract more investments.

A bright future awaits all of you. All the stakeholders in the country, particularly youngsters like you, must strive to transform the nation and the lives of the people in tune with the three-word mantra of the Prime Minister, Shri Narendra Bhai Modi to *'Reform. Perform and Transform'*.

Even as our technical education institutions such as NITs equip young technocrats with such skills, also take care to nurture life skills and moral values in them. Always remember the words of Mahatma Gandhi. He said that education without character is a sin. Every graduate passing out of the portals of this institution must not only be academically proficient, they must also be ethical, compassionate and honest individuals.

Before I conclude, I must raise one more issue. I read with mounting concern reports about young students resorting to extreme measures because of the inability to handle stress and cope with challenges. Our campuses must be the safest spaces in our nation, for in our campuses, our future is cast. I urge our higher educational institutions to take extra care to teach our youngsters to manage stress. I understand that the curriculum is heavy. But students must be taught to take time out. We must make sure that our students are physically fit and mentally happy.

My Dear Young Friends, never hesitate to reach out to your friends, teachers or loved ones when you are in need of help or support. Be optimistic and embrace the challenges that await you in your life and career with a balanced mind. The practice of Yoga and meditation will greatly help you to deal with stressful situations with poise and equanimity. I am confident that you will make the impossible possible with your grit and determination.

Let me congratulate all of you once again. Go forth and create a bright, beautiful future for you, our nation and the world. ❑

---

# COMMUNICATION

# Innovative Initiatives Taken for Reforming Conduct of Education During COVID-19 Pandemic Lockdown Period

**Sajal Dasgupta\***

We are going through a very difficult situation now due to this Corona virus invasion, COVID 19 pandemic. Regular traditional teaching learning process ( face to face ) has been completely halted. We do not know when things will normalize. Fortunately, we had taken lots of exemplary initiatives in last two years to go digital in line with Digital India Initiatives launched by Government of India. In the month of Feb end 2020 when we realized the seriousness of the situation and anticipated a nationwide preventive drive is going to be implemented shortly to encounter the outbreak , our statutory bodies decided to confront the threat, crisis and panic created due to COVID pandemic with a positive attitude of transformational leadership to avail its opportunities and become self reliant through a paradigm shift from offline to online mode of education in such a manner so that there is no loss of available academic hours as per our academic calendar being followed strictly before the pandemic period. The very objective of these initiatives taken was not to reinvent education but to continue it uninterruptedly with a different methodology.

As per the directive of the Government we had notified to suspend all face to face classes from 16th March 2020 and closed down the University on and from 23rd March 2020. Since then all our employees including faculty are locked down in home as per the decision of the govt. to protect against Covid-19 pandemic. We firmly believed that if we delay the teaching learning process and examination and declaring results, enormous damage will be done to the families who are waiting for their child to financially supplement family income. About 90 percent of our final year students have got job offers. Families of these students are looking forward eagerly for time when their ward will start supplementing family income. Employer company will not wait further.

_____
*\*Sajal Dasgupta, Vice Chancellor, University of Engineering and Management, Kolkata, West Bengal- 700160, E-mail: dasguptasajal@yahoo.com.*

In order to maintain our academic calendar unaffected and to protect the career of our students, we decided to continue our teaching learning process through digital platform. Around 2000 lectures done by our teachers were videotaped. Our teachers and students collectively practiced mock examinations on digital platforms. University authority was committed to ensure no students loose time due to corona virus invasions.

Accordingly, since 16th March 2020 all our faculty were sincerely engaged in classroom teaching online and session / lab classes in virtual mode following our daily academic class routine. The syllabi for even semester in 2019 -20 academic session completed satisfactorily. The daily attendance of faculty, progress of syllabi and % attendance of students were monitored daily through online mode. An academic audit was conducted online by the IQAC of our university to oversee the quality of online education and timely completion of courses which was found to be satisfactory in nature. We were confident to come out of the crisis period with complete victory.

During  this lockdown period all over India due to COVID-19 pandemic, our group of institutions have taken lot of innovative initiatives to continue academic as well as students/ faculty development activities through digital platform. Some of the initiatives are mentioned hereunder

- Digital Attendance of Faculty- Online morning and afternoon meeting daily with all faculty( which is one of the good practice being followed in all our group of institutions since inception ) through youtube live, Goto Webinar- Everyday all faculty meet via Youtube Live, Goto Webinar in the morning and afternoon, comprising of all 500+ members of the group and everyday departmental meetings and faculty assignments reported via Google meet are monitored and considered as a part of compliance for virtual attendance of all faculty and officers.

- Online classes through Google Hangout meet, YouTube live , every day as per routine were held. The digital tools used are - Youtube Live, Google Classroom, IEMCRP (our proprietary educational ERP software), Simulators, like, MATLAB, NS-2, GridSim, Cloud Sim etc., Online Coding platforms like, Hacker Rank, Code Chef, Hacker Earth etc.

- Online Labs by virtual mode using MATLab, Hacker Rank - online coding platform

- Online lecture by corporate experts- With the continuous persuasion and strong initiatives of various departments corporate connect programme are being conducted through online sessions in the evening for our students, thereby not hampering their everyday WFH schedule, and much to our delight, many of them have responded spontaneously and a good number of sessions have been done which are immensely beneficial for students making them aware and ready for the upcoming battle in their career.

- University have conducted online mid-term exam for students as a part of continuous assessment and prepared for end semester exam. These exams were held where students sitting in their home with pen and paper answered the. descriptive questions sent to them digitally . This was not an open book system of examination. Questions taken from question banks were framed in such a manner so that no two question papers were identical. Answer scripts were scanned by the students with mobile phone and uploaded digitally for evaluation. Teachers took help of zoom and later google meet for proctoring (a group of students under one mentor) so that students cannot take help of others during examination. This hybrid on line system with 4500 students during our 2nd term online exam was introduced and found to be very effective . Almost 95 percent students attended the examination without any problem. Students will later submit the hard copies of answer script for keeping record.

- With this hybrid on line system of examinations tested and proven to be very effective , our university has recently completed end semester examinations using the same model for final year students successfully as per the approval of our statutory bodies and in accordance with UGC/ AICTE guidelines . Almost 100 percent students have appeared for the examination. Rest of the students will get another opportunity to appear for examination after the situation normalizes.

- University has facilitated development of faculty members during this testing time by organizing online FDPs, which are taken by eminent academicians of India.

- Online Admission- New batch admission process has been made completely online by making entrance test, IEMJEE online, followed by online counselling-cum-interview session.

- Online Placement- Many recruiters have resorted to online recruitment process and our current final year students have coped up with those opportunities well and grabbed the job offers.  ❑

# CAMPUS NEWS

**N**ational Webinar on Education in Post-pandemic Era

A ten-day National Webinar on 'Education in Post-pandemic Era **:** Challenges and Opportunities' was organized by the School of Education, Ravenshaw University, Cuttack during June 4-13, 2020. A total of 2452 participants registered from almost all the states and Union territories of the country and from more than 100 universities. The nature of participants was PG/UG/B.Ed. students, research scholars, school teachers, NGO officials, Government officials, faculty members, *etc.*

In the inaugural session, Dr. Sudarshan Mishra, Head, Department of Education and Organizing Secretary of the Webinar read the theme of the seminar and introduced the guest. Prof. Ishan K Patro, Vice Chancellor, Ravenshaw University, in his inaugural address deliberated upon the problems and opportunities during post-pandemic context. He encouraged participants to rely on self-study which will help in developing higher order thinking skills. He also encouraged the faculty members to motivate the students for self-study. He said that during this pandemic context, the role of the teacher has been changed from mere instructor to a facilitator who will play supportive role for motivating students for self-study. He also emphasized upon continuous assessment of learners which will also help the learners for self-study as well as self-assessment. He cited some practical examples which the universities will going to face during post-pandemic time such as, sanitization of hostel, university campus, departments, maintaining social distancing norms, resuming teaching and examination, *etc.*

Every day one resource person is invited to deliberate upon a topic related to the theme of the webinar. Dr. Sudarshan Mishra delivered a talk on 'Open Educational Resources, Its Need, History and Development, Advantages and Challenges'. Dr. Manas Ranjan Panigrahi, Sr. Programme Officer, Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi delivered a talk on 'SWAYAM MOOCs: An Opportunities for Self-Learning' who focused on teaching-learning through SWAYAM, development of course proposal for SWAYAM, *etc.* Prof. G C Nanda, Senior ICSSR Fellow, Department of Education, Ravenshaw University delivered a talk on 'Autonomy and Accountability in Higher Education'

who emphasized upon levels of autonomy, how to promote autonomy and ensure accountability. Prof. Dhaneswar Harichandan, Former Professor cum Director, Institute of Distance and Open Learning, University of Mumbai, Mumbai delivered a talk on 'ICT and MOOCs through SWAYAM'. He gave a conceptual orientation about ICT and step by step procedure for development of MOOCs on SWAYAM. Dr. Amita Puri, Director, Optimus Centre for Wellbeing, Citizen Hospital and De addiction Centre, Gurgaon delivered a talk on 'Developing Resilience and Positive Mental Health during COVID Times'. She discussed about stress and practicing skills in developing unique styles of reacting to stress. Prof. Bharti Dogra, School of Education, Indira Gandhi National Open University, New Delhi delivered a talk on 'Blended Learning and UGC Guidelines, Blending Models, Credit Equivalency, Online Activities in Blended Learning', and how to adopt blended learning. Prof. C P Nanda, Department of History, Ravenshaw University delivered a talk on 'State, People, and Technology: A Regime of New Normality in Post-COVID World Order'. He said that the crisis that neoliberalism faces as a result of COVID-19 is much more deep rooted. He said it is time to reset the certitudes of neoliberalism, including that being pedaled in education. While technology is an important component of life today, the larger issues of life and life world must be through by educationist today. This requires planetary rather than an anthropogenic perspective, a reset of view from body and matter to perhaps soul, vitality and joy. Dr. T K Pany, Associate Professor, Department of Commerce, Ravenshaw University delivered a talk on 'Challenges of Services Sectors with Reference to Higher Education'. Prof. Sanjay Satapathy, Dean, School of Commerce and Business Studies, Ravenshaw University delivered a talk on 'Nourishing Personality'. He highlighted on effective time management, study skills and future classroom.

In the valedictory session, Dr. Sudarshan Mishra read the webinar Report. Prof. Nityananda Pradhan, Principal, Regional Institute of Education, Bhopal delivered the valedictory speech on 'Pedagogy 2.0 in the Era of Education 4.0'. In his talk, he highlighted about history of Revolution in Education, Framework of Pedagogy 2.0, key pedagogical practices, flipped classroom, critical pedagogy, and capacity building of

teachers. In Valedictory Address, Prof. C B Sharma, School of Education, IGNOU, New Delhi said that digital medium can only change the Post-COVID-19 education system. He said that we could not use the technology optimally in education in the first twenty years of twenty-first century. This is the right time to use digital technology in education. In future, teachers will be the most celebrated personality in the media and they will be the highest paid professionals. The world will listen to them. Prof CP Nanda, Department of History, Ravenshaw University, in his presidential address recognized the challenges and opportunities that come with the future education system and hoped for a rapid change in the model of education reform and the distribution of educational processes in the coming days.

## Conference on Creativity, Innovation and New Business Models

A two-day Conference on 'Creativity, Innovation and New Business Models for Reviving the Economy' is being organised by TAPMI School of Business, Faculty of Management and Commerce, Manipal University Jaipur in association with Manipal Instituite of Management, Manipal Academy of Higher Education, Manipal and Atal Incubation Centre, Manipal University, Jaipur during August 27-28, 2020 at Jaipur.

Economies all over the world are witnessing prolonged slowdown beset by structural, global, and cyclical factors resulting in of job losses; trade wars and the subsequent reduction in trade flows across the international borders, record-high unemployment rates, liquidity crisis, crashing demand for consumer goods, and pessimistic investor sentiments. A large chunk of businesses is coming under severe stress and strain to sustain or stay afloat in the market. It even requires sustainable business innovations and reforms to withstand the economic storm. Economic revival in developing countries would undoubtedly require pro-growth initiatives, evolving business models and development initiatives to boost the economy. The role of creativity and innovation in recognizing hitherto unexplored opportunities for the introduction of new techniques, new products, and new services needs no emphasis on rejuvenating entrepreneurs are critical components of society which take calculated risks, manage uncertainty and engage in revamping economic activities in explored terrains. Sustainable growth combined with a progressive distribution of income is achievable through inclusive and innovative business models. The themes of the event are:

- Finance and Accounting.
- Economics and Health Care.
- Marketing.
- Human Resource Management.
- Operation Management.

For further details contact, Organising Secretary, TAPMI School of Business, Manipal University Jaipur-303007, Rajasthan, Phone: 0141-3999100 Ext.: 317, 868, 378, E-mail: samita.sharma@jaipur.manipal.edu. For updates, log on to: www. jaipur.manipal.edu

## Online Workshop on Basics of C and C++ Programming

A five-day Online Workshop on 'Basics of C and C++ Programming' is being organized by the Department of Mathematics, Rajiv Gandhi University Arunachal Pradesh in collaboration with Spoken Tutorial Project, IIT Bombay during July 15-19, 2020. The students of universities/colleges, research scholars, and academicians may participate in the event.

C is middle level programming language which combines the features of both high level and low level languages. It was developed by Dennis Ritchie during the early 1970s while working at AT&T Bell Labs in USA. The need to redesign the UNIX operating system to enable it to be used on multiple computers led to the development of C. C is a highly portable structured general-purpose programming language which is used for scripting system applications which form a major part of Windows, UNIX and Linux operating system. It also efficiently works on enterprise applications, games, graphics, and applications requiring calculations. C++ is a highly portable language and is often the language of choice for multi-device, multi-platform app development. In fact, C++ is an extended object-oriented programming language which includes classes, inheritance, polymorphism, data abstraction and encapsulation. C++ also allows exception handling, and function overloading which are not possible in C. Being a powerful, efficient and fast language, it finds a wide range of applications - from GUI applications to 3D graphics for games to real-time mathematical simulations. On account of the wide significance of C and C++ programming languages, it has become an integral part of course syllabus in most of the higher educational institutions around the world. Now a day, it helps a great deal in research oriented works in the field of mathematics, Physics, Computer Science, *etc.*

For further details, contact Convener, Dr. Nipen Saikia, Assistant Professor, Department of Mathematics,

Rajiv Gandhi University, Arunachal Pradesh-791112, Mobile: +91 9435507484, E-mail: nipen.saikia@rgu.ac.in.

### International Web Lecture Series on Qualitative Research Methodology

A Ten-day Online Faculty Development Programme on 'Crafting Qualitative Research: How can We Study the World as it is Lived?' is being organised by the University of Science and Technology, Meghalaya from July 15-24, 2020. The Programme is particularly for faculties, research scholars especially interested to know about qualitative research. Independent researchers and senior master degree students may also participate in the event.

For further details, contact Convenor, Amit Choudhury, Professor and Dean, School of Business Sciences, University of Science  and Technology, Meghalaya-793101, Mobile: +918761007133/ + 919854453170, E-mail: sbuswebls@gmail.com.  For updates, log on to: www.ustm.ac.in.

# *AIU NEWS*

### West Zone Vice Chancellors' Meet–2019-20
### on
### Internationalization of Higher Education and Global Rankings

The West Zone Vice Chancellors Meet (2019-20) of the Association of Indian Universities (AIU), was hosted by IIS University, Jaipur on December 11th-12th, 2019. Shri Kalraj Mishra, Hon'ble Governor of Rajasthan graced the Inaugural Session as Chief Guest. Prof. Bhushan Patwardhan, Vice Chairman, UGC was the Guest of Honour and Prof. M M Salunkhe, President AIU, presided over the Meet. Dr. Pankaj Mittal, Secretary General, AIU Convened the Meet. Prof. Ashok Gupta, Vice Chancellor of the IIS University was the Co-convener of the Meet. Dr Alok Mishra, Joint Secretary, AIU was the Nodal Officer of the Meet and Mr Vijendra Kumar took care of logistics and coordination. Dr S Rama Devi Pani, Editor University News was the Nodal Officer for Academics. Dr. Raakhi Gupta, Registrar IIS University was the Nodal Officer of the Meet at host University. The Meet was attended by 80 Vice Chancellors from Gujarat, Maharashtra and Rajasthan apart from international experts from World Bank, Shastri Indo-Canadian Institute, Times Higher Education, British Council, South Asian University & IIM Ahmadabad. Main theme of the Meet was *'Internationalization Of Higher Education  and Global Rankings'*. Under the main theme, following three technical sessions were conducted in the Meet: **'***Promoting Indian Higher Education Abroad and Building International Collaborations***'**; *'Improving International Rankings of Indian Universities through Internationalization'; 'Attracting International Students and Faculty to India--Issues and Challenges'*. In addition to Inaugural Session, Valedictory Session and three Technical Sessions, the Meet had AIU Business Session and newly induced Session on Interaction with Apex Bodies. The University had arranged Cultural Evening.

The Chief Guest; Hon'ble Governor of Rajasthan, Shri Kalraj Mishra initiated his in his inaugural address reminded the audience of their constitutional duties and appealed for taking pledge to abide by them. In his peech, he highlighted the role of academia in sensitizing students towards constitutional duties. Teachers should inculcate in students strong value system and must ensure that students not only understand their fundamental duties but also perform them religiously. He emphasised that concerted efforts are required by the Indian universities to be competitive in this era of globalization. Higher education should be more employment oriented and steps should be taken to prevent brain drain from India, he said. Chief Guest released the Special Issue of the University News edited by Dr S Rama Devi Pani was released to commemorate the occasion.

Prof. Bhushan Patwardhan stressed on the pressing need for internationalization of Indian HEIs to survive in this globalized world. He deliberated on various initiatives taken by UGC and AIU to give impetus to internationalization of higher education. He recommended an indispensable shift in Indian Higher Education System; to be student-centric rather than teacher-centric. Prof. M M Salunkhe, in his presidential address focused upon the need for internationalization of education. He envisioned the transformation of Indian higher education through

"Study in India" programme of MHRD.Dr. Pankaj Mittal, Secretary General, AIU, New Delhi outlined AIU's accomplishments in providing value added services to the member universities, apart from bringing visibility to AIU by creating Twitter handle, digitization of the AIU Library, creating portals for admissions, jobs for the students, and also facilitating collaboration with the overseas universities to encourage global partnerships. Dr. Ashok Gupta expressed confidence that the deliberations during the meet will go a long way in redefining operational strategies in Indian higher education within the national boundaries and beyond.

### Session on Interface with Apex bodies

The Interface with officers from Apex bodies was chaired by Dr. Bhushan Patwardhan, Vice Chairman, UGC and Dr. Pankaj Mittal, Secretary General, AIU was the Co-Chair. Prof. Amiya Kumar Rath, Adviser represented NAAC. Discussing about the roles AIU, UGC and other apex bodies of education, Dr. Patwardhan suggested that consistent communication between AIU and other apex bodies is very significant in maintain the relevance and standard of higher education. He also shared information about the proposed National Academic Credit Bank.

Prof. Rath during the discourse, shared success stories of NAAC focusing on two major aspects i.e. changes during more than two decades of NAAC's existence and Revised Accreditation Framework. He deliberated on the IIQA application process, SSR submission readiness guidelines, distribution of metrics, key indicators across each criterion, reforms such as data based qualitative indicator evaluation; data validation by external professional agencies, instituting key indicators on alumni engagement and student satisfaction survey. Dr. Mittal threw light on various schemes of UGC like ARPIT, IMPRESS, MOOC's and emphasized that community engagement programmes should be undertaken by the universities to fulfill their social responsibilities. The important take aways from the session are:

1. The universities should undertake curriculum revision based on learning outcomes as revised under the UGC guidelines. Focusing on relevant, updated and learning outcome-based curriculum will prepare the HEIs as well as students for futuristic roles and competing in an international system.

2. Expert committee should be appointed by the universities to assess the quality of research papers published by the faculty. Research profile of a faculty members should not be adjudged on the basis of number of research papers rather it should be based on the quality of research work.

3. NBA accredits only few selected programs; NAAC accredits all the programs but there is dichotomy in the mandates of accreditation agencies which creates confusion. There should be a single accrediting agency.

4. NAAC manuals should provide examples with reference benchmarks.

5. UGC search webpage should be more informative with detailed information about each scheme.

6. IIMs & IITs should handhold the general universities, including self-financing universities which are not having good grades in NAAC to enable them to learn and adopt their best practices. AIU may facilitate interactions and signing of MoUs between the aforesaid institutions.

7. Many rankings such as ICAR, NIRF provide well laid down and transparent benchmarking. Accordingly, NAAC benchmarks be made available to help in self-assessment of university, evaluate their SWOT and make directional efforts for improvement in their grading.

8. More international accreditations should be introduced in India.

9. The fees of some self financing universities is too high, causing financial hardship to parents. To ease this out, institutions may provide avenues to 'Earn-while-learn'. 'Earn-while-learn' should be introduced in all universities. The data of students' earning during degree programs should be one of the criteria for NAAC assessment. It should be essential for getting A+ grading.

### Session on Promoting Indian Higher Education Abroad and Building International Collaborations

The first Technical Session; on the theme 'Promoting Indian Higher Education Abroad and Building International Collaborations' was chaired by Prof. A. M. Pathan, former President, AIU and former Vice Chancellor, Maulana Azad

National Urdu University and Central University of Karnataka. The speakers of the session were Prof. Francisco Marmolejo, World Bank's Lead Tertiary Education Specialist, Prof. Manjula Rao, Director, Higher Education and Society, British Council and Dr. Ajit Motwani, Head, Development Office, IIM Ahmedabad, former Director EdCIL, and former India Director, Institute of International Education, IIIE, New York. Prof. Pathan introduced the topic, defining the concept of Internationalization of higher education and outlined the place that India holds in pan-national education.

Prof. Francisco emphasized that India's education system is extremely dynamic and increasingly getting complex. He discussed key trends prevalent in global higher education i.e. uneven expansion, relevance and internationalization of education. Speaking on the need for comprehensive Internationalization, he also conversed on the possible solutions, the most important of which was internationalization of the curriculum. He opined that India's position in terms of capacity, innovation and large contributions might help in making room for international collaborations. His presentation concluded by expressing need for universities to be future ready in terms of constantly changing focus and paradigms in accordance with the challenges being faced by entire tertiary education system in the years to come.

Prof. Manjula Rao discussed the practicalities of internationalization of higher education in India. She stressed on the need for universities to explore each other, forge partnerships and sustain these corporations for mutual benefits. Dr. Rao also emphasized the need for understanding the perception of international audience about the Indian education, brand building and accordingly universities being proactive. Dr. Ajit Motwani opined that collaborations cannot be over emphasized. He stated that the roadmap for internationalization must be different for each university / Institution. The recommendations of the session are:

1.  Regional Committees of universities located in an area should be formed to facilitate collaborative regional studies, universities' strengths, contribution, USP etc. and should explore; how their internationalization can be promoted with respect to mobility, course content, cultural exchange, projects and research.

2.  Universities must create international facilities in the campuses to ensure comfortable and harmonious stay of Indian and foreign students together.

3.  Universities should essentially invite experts from foreign universities for workshops, seminars, examinations and various other activities to promote Indian education.

4.  Government should ensure proper distribution of foreign students among universities.

5.  Government should invite and arrange some free trips to foreign students and faculty to India to promote Indian higher education.

6.  Dual degree at postgraduation level in collaboration with foreign universities other than parent university should be facilitated. AIU should ensure equivalence of dual degrees.

7.  Regulatory authorities should act as facilitators instead of controllers or inspectors.

8.  Internationalization requires a lot of support from the Government and embassies for visa & FRRO with police department. Therefore, Government should make the process easy, fast and smooth.

9.  AIU should popularize the initiatives of the Government of India towards promoting Indian higher education abroad and international collaboration through workshops, seminars and University News.

10. Indian Government should create permanent country-wise platform involving Indian diaspora to promote Indian higher education abroad.

11. Government should launch promotional campaigns like 'Incredible India' to promote best Indian universities/institutes of higher education abroad.

12. Barriers/challenges need to be identified that hinder the inward mobility of foreign students to Indian universities.

13. The skills and perspectives of international students on campus need to be understood and shared with other students.

14. Alumni to be leveraged significantly so that Institute builds its brand in other countries; alumni being the spokesperson.

### Session on 'Improving International Rankings of Indian Universities through Internationalization'

The Technical Session on 'Improving International Rankings of Indian Universities

through Internationalization' was chaired by Prof. Sandeep Sancheti, former President of AIU and Vice Chancellor, SRM Institute of Science and Technology, Tamil Nadu. The panelists of the session were Mr. Ritin Malhotra, Regional Director (South Asia) Times Higher Education and Prof. Kamlesh Mishra, Vice Chancellor, Rishihood University, Bahalgarh. In his opening remarks, Prof. Sancheti enumerated various advantages and disadvantages of rankings.

Mr. Ritin Malhotra discussed the framework of Times Higher Education (THE) ranking and parameters for internationalization of colleges. He stated that the alumni are the goodwill ambassadors of academic excellence of an institution and the reputation of an institution is built by its alumni. Mr. Kamlesh Mishra shared his experience in evolution of ranking systems and the challenges faced by the system. Following recommendations emerged from the session:

1. Industry & Education sector are lacking in research activities. There is need to encourage the research initiatives in both the sectors which complement each other. Emphasis should be laid on research collaboration, academic reputation and citation impact

2. Yoga courses should be introduced in universities as a science with both theoretical & practical component and not just as a casual practice for international acceptance.

3. While trying to compete with other players in the world, we need to have an established system with defined guidelines, vision and mission. The standards, goals and priorities need to be set and be followed in principle accordingly.

4. Ranking and ratings do not necessarily indicate quality in real terms. More emphasis should be laid on quality of the professionals that are being produced in the universities. Balance should be done by universities on the priorities and strengths not only for ranking but to elevate the overall standards of institutions.

5. Universities should look at the changing education dynamics in international scenario and align their syllabus in line with emerging challenges with a definite industry interface.

6. In order to raise the standards of the universities, there is an urgent need to groom and mentor the skills of faculty members for their overall development through faculty exchange programmes and tie-ups with national and international universities. Student exchange programs within the country and with different nations also need to be organized.

7. There is a need to hire thinkers and innovators with enhanced skills at par with global standards. National programmes like 'Make in India' need to expand their horizons further, to engage indigenous professionals, provide employment and curb brain drain. Close collaboration with international media is also the need of the hour.

8. The mapping of expertise and expectations is very important. Students need to be equipped with proper resources of knowledge and skill. Universities should be proactive in communication, specifically involving research activities and research outputs.

9. The prime objective of the universities should be addressing local problems and align themselves with the development of surrounding areas and resident communities. The reputation of a university is largely impacted by their community outreach programme, wellbeing of neighboring area and its inhabitants. Internationally, universities should strengthen their public relations and media presence.

10. There should be well defined criteria on attracting international students to India. Serious and scaled efforts need to be made to help Indian Higher Education brand building and accelerate inward students' mobility.

11. HEIs must concentrate on quality research and low impact factor in research needs to be improved. HEIs need to focus on entrepreneurship and being job creators instead of job seekers.

### Session on Attracting International Students and Faculty to India: Issues and Challenges.

The third technical session on 'Attracting International Students and Faculty to India: Issues and Challenges' was chaired by Prof. A V S Ramesh Chandra, President, South Asian University, New Delhi. The speakers of the session were Dr R.L. Raina, VC, JKLU, Jaipur and Dr. Prachi Kaul, Director, Shastri Indo- Canadian Institute, New Delhi.

The session began with insightful observations from Prof. Chandra who remarked at the changing perceptions about Indians in foreign countries. He stated that Indians professionals represent values such as hard work, trust, teamwork and loyalty. He opined that comfortable and affordable campus life and universal acceptability of grades are some of the important factors that play a crucial role in attracting foreign students. He remarked that Indian institutions are striving hard to improve the quality of education. Prof. Raina reckoned multiple factors; playing vital role in improving the quality of education; for it to compete internationally. He opined that enriching classroom experience with focus on learning, pedagogy, curriculum, quality of faculty, evaluation process, and innovative courses can significantly improve the quality of Indian Higher Education.

Dr Prachi Kaul, Director, Shastri Indo Canadian Institute forwarded suggestions that can help the universities in attracting foreign students and faculties. She stressed on the need to outreach at a global level by marketing abroad. She reiterated that flexibility in grading, curricula and training can attract foreign students. She also recommended that HEIs need to work on employability factor and bring in required change in academic processes and systems. Major recommendations of the session are:

1. Internationalization of higher education can be augmented by creating Non-Resident Indians (NRI) and foreign students' quota on supernumerary basis in HEIs.

2. Academic credit exchange should be systematized and seamlessly aligned so that uniform standards of credit transfer can be developed among countries. This will facilitate International students' inward and outward mobility.

3. Research domains should be prioritized for international collaboration. The priority areas must be identified keeping in view the international trends of academic research.

4. Internationalization of higher education mandates developing world class infrastructure, amenable academic environment enabling exchange of students, teachers, academic programmes, high quality research projects and conducive research ambience.

5. Encouraging regulations are essential to facilitate cross border movement of academic stakeholders in higher education. The draft education policy must clearly spell out regulations covering all aspects of Internationalization.

6. There is an immediate need to inculcate cultural sensitivity among academia to seamlessly amalgamate international stakeholders. Adequate safety and security provisions should be ensured on the campus. Home Stay, involving international students in various cultural activities and familiarizing them with indigenous culture are some of the desirable steps to encourage inward mobility. The counseling bureaus of the universities must organising workshops and orientation programmes time to time for cultural orientation of foreign students.

7. Institutional arrangements are mandatory to address various concerns of out-bound and in-bound students. The policy must include standardized, tangible modalities; compulsory for all universities admitting international students. An effective and speedy grievance redressal mechanism must be in place to address the concerns of international students.

8. Internationalization of higher education can be achieved by striking a balance between indigenous and global knowledge systems. New academic programs must have international orientation without losing sight of the indigenous values. Existing programmes may be redesigned to accommodate both indigenous and international components.

9. Policies should be formulated to support institutional collaborations for comprehensive advancement of higher education as a universal public good.

10. Indianisation of higher education should be first step toward internationalization. Indianisation can only be feasible by removing regional barriers and state reservations in the country.

11. At present around, five lac students go out of India to study in foreign HEIs. As compared to this; only 54000 foreign students are admitted in Indian HEIs. The inflow of foreign students needs to be maximized by building world class infrastructure, simplifying visa rules, easy entry and exit provisions, good hostel

facilities, curricular revision and international orientation, etc.

12. There is a need to attract foreign faculty and incentivizing them not only financially but also stimulating their intellect by interacting with cross-cultural, bright students and colleagues.

13. It is high time for Indian higher education institutions to achieve desired credibility and visibility among national and global circles. Collective efforts need to be made by the Government, apex regulatory bodies and universities.

14. Enriching experiences by students and faculty inside as well as outside the classrooms are critical factors to attract foreign faculty and students to HEIs.

15. Apart from the educational infrastructure and faculty upgradation programs, India should consider sensitizing Indian diplomatic mission abroad to make concerted efforts to attract foreign students; looking for educational opportunity in India.

16. MHRD, apex regulatory bodies and other ministries should work in tandem for ease of policies, regulations, providing required support, infrastructure as well as human resource support to foreign students coming to study in Indian universities.

17. AIU should provide platform to the universities to share best practices and experiences; worth emulating from leading global universities. University News may have column of best practices in which every week best practices adopted by one best university can be brought out.

18. Universities should rope in and actively involve Indian embassies in highlighting strengths of Indian HE system.

19. It is evident that the number of students admitted in Indian HEIs and supported by Indian Government scholarships is not impressive. In fact, more than half the students come from Afghanistan. Entire foreign students' policy needs to be revised taking into consideration prevailing geopolitical scenario, availability of higher education system in the respective countries and India's relationship with different countries.

20. Nowadays, education has also become commercial entity. Hence, in order to compete in international market, role of policy makers is as important as that of universities. At university level, infrastructure, faculty, hostel facilities and research structure should be enriched to attract, adapt and sustain foreign students in Indian conditions. Cost of education should also be competitive.

21. Academic hubs should be developed in India to attract foreign students.

**Valedictory Session**

Dr. Subhash Garg, Minister of Technical Education, Rajasthan graced the valedictory session as the Chief Guest. The session was chaired by Prof. Sandeep Sancheti, former President AIU. Ms. Shuchi Sharma, Secretary Higher Education, Government of Rajasthan, Prof. Vivek Saoji, Vice Chancellor, KLE University, Belgam & Governing Council Member, AIU were the Guests of Honour. Dr Pankaj Mittal, Secretary General, AIU convened the Session and Dr. Ashok Gupta, Vice Chancellor, IIS University felicitated the Guests and Officers of AIU. Dr S Rama Devi Pani presented the Report of the Meet. The Meet ended with vote of thanks by Dr Alok Mishra, Joint Secretary, AIU.

.                                                    ❑

# *THESES OF THE MONTH*

## SCIENCE & TECHNOLOGY

### A List of doctoral theses accepted by Indian Universities
### (Notifications received in AIU during the month of Feb-March, 2020)

### AGRICULTURAL & VETERINARY SCIENCES

**Agricultural Economics**

1. Kausadikar, Harsha Hemant. **Economics of production and marketing of sweet orange in Marathwada Region of Maharashtra**. (Dr. S R Nagargoje), Department of Agricultural Economic, Vasantrao Naik Marathwada Agricultural University, Parbhani.

2. Srikanth, Bandi. **Econometric analysis of production and marketing of maize in Telangana State**. (Dr. K V Deshmukh), Department of Agricultural Economic, Vasantrao Naik Marathwada Agricultural University, Parbhani.

**Biotechnology**

1. Malik, Palvi. **Genome wide selection for rapid introgression of productivity traits from *Oryza rufipogon* into O sativa**. Department of Biotechnology, Punjab Agricultural University, Ludhiana.

2. Verma, Annu. **Gene networks involved in cold stress response in chickpea (Cicer arietinum L) anthers**. (Dr. H K Chaudhary), Department of Agricultural Biotechnology, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

**Entomology**

1. Bokan, Sanjog Chandrakant. **Seasonal incidence, crop loss assessment and bioefficacy of insecticides against major insect pests of soybean (*Glycine max* (L) Merrill)**. (Dr. P R Zanwar), Department of Agricultural Entomology, Vasantrao Naik Marathwada Agricultural University, Parbhani.

**Genetics & Plant Breeding**

1. Mohd Shamshad. **Genetic and physiological basis of nitrogen uptake and utilization in wheat (*Triticum aestivum* L)**. Department of Plant Breeding & Genetics, Punjab Agricultural University, Ludhiana.

**Horticulture**

1. Damodhar, Vijay Pundlik. **Effect of nutrients and plant growth regulators on yield, quality and post-harvest life of banana Cv grand naine**. (Dr. G M Waghmare), Department of Horticulture, Vasantrao Naik Marathwada Agricultural University, Parbhani.

2. Ingole, Revati Hemantrao. **Studies on nutrient management in response to growth, yield, quality, shelf life and value addition in papaya (*Carica papaya* L)**. (Dr. G M Waghmare), Department of Horticulture, Vasantrao Naik Marathwada Agricultural University, Parbhani.

3. Zoremtluangi, Jenny. **Nutrient management in Khasi mandarin (Citrus reticulata blanco) under subtropical agroclimatic condition in Mizoram**. (Dr. Debashis Mandal), Department of Horticulture, Mizoram University, Aizawl.

**Veterinary Science**

1. Kondampati, Kasturi. **Effect of different anaesthetic protocols on the plasma levels and disposition kinetics of ampicillin-cloxacillin combination in horses**. Department of Veterinary Pharmacology and Toxicology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

2. Mir, Insha. **Aflatoxin contamination in cattle feed value chain and its impact on milk quality in Punjab**. Department of Veterinary and Animal Husbandry Extension Education, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

3. Sharma, Deepti. **Ultrasonographic evaluation of canine liver and kidney with special reference to shear wave elastography in health and disease**. Department of Veterinary Surgery and Radiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

4. Srinu, B. **Epidemiological study on the anthropogenic disseminated environmental pollutants in the aquatic ecosystem and their association with antimicrobial resistance emergence**. Department of Veterinary Public Health & Epidemiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana.

### BIOLOGICAL SCIENCES

**Bioinformatics**

1. Tripathi, Swetakumari Pauharisharan. **Identification and characterization of potential drug targets for glioblastoma: An *in-silico* approach**. (Dr. Rakesh M Rawal), Department of Bioinformatics, Gujarat University, Ahmedabad.

**Biotechnology**

1. Gangadasu, Seetharavamma. **Development of monoclonal antibody based ELISA and Lateral Flow Strip (LFS) for detection of cry 1 Ac Bt protein in genetically modified cotton plants**. (Dr. P Sudhakar), Department of Biotechnology, Acharya Nagarjuna University, Nagarjuna Nagar.

**Botany**

1. Patel, Svetaben Bharatbhai. **Genetic diversity assessment of *Acmella paniculata* (Wall Ex Dc) R K Jansen collected from different regions**. (Dr. H A Solanki), Department of Botany, Gujarat University, Ahmedabad.

**Life Science**

1. Raval, Nidhi Pankaj. **Identification and validation of Y-sperm specific markers for semen sexing in dairy animals**. (Dr. Linz-Buoy George), Department of Life Science, Gujarat University, Ahmedabad.

2. Sharma, Bhagwati Sharan. **Comparison of Locus Control Regions (LCRs) and designing of a system to understand regulatory potential in complex gene expression**. (Dr. R J Verma), Department of Human Genetics, Gujarat University, Ahmedabad.

**Zoology**

1. Umrigar, Namrata Rajesh. **Biodiversity and ethological study of water birds in and around Surat City**. (Dr. Arunkumar H Dholakia), Department of Zoology, Veer Narmad South Gujarat University, Surat.

## EARTH SYSTEM SCIENCES

**Environmental Science**

1. Parmar, Payal Vinod. **Biodiversity analysis and habitat suitability studies of certain important wetlands of Gujarat using aquatic macroinvertebrates as the niche indicators**. (Dr. Rita N Kumar), Sophisticated Instrument Center for Applied Research and Testing, Sardar Patel University, Anand.

2. Shakti. **Preparation characteriazation and pharmacological evaluation of polyphenolic nanoformulations from camellia sinensis**. (Dr. Neeraj Dilbaghi and Dr. Dinesh Dhingra), Department of Bio and Nano Technology, Guru Jambheshwar University of Science & Technology, Hisar.

## ENGINEERING SCIENCES

**Civil Engineering**

1. Amitha, N R. **Some studies on strength behaviour of concrete due to improper casting sequence**. (Dr C Sashidhar), Department of Civil Engineering, Jawaharlal Nehru Technological University Anantapur, Ananthapuramu.

**Computer Science & Engineering**

1. Bhavsar, Shreyaben Bhupendrabhai. **Multilingual multimedia based crops disease management system using mobile technology**. (Dr. Dipti B Shah), P G Department of Computer Science & Technology, Sardar Patel University, Anand.

2. Naralasetti, Neelima. **Cost and profit analysis of web application deployment on cloud**. (Dr. Bobba Basaveswara Rao), Department of Computer Science & Engineering, Acharya Nagarjuna University, Nagarjuna Nagar.

3. Preeti. **Metaheuristic techniques for feature selection in face recognition**. (Prof. Dinesh Kumar), Department of Computer Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar.

**Electrical & Electronics Engineering**

1. Dhamecha, Vishal Dineshkumar. **Studies on compound semiconductor ($ZnGa_2Se_4$) thin film electronic devices**. (Dr. Basumati H Patel), P G Department of Electronics, Sardar Patel University, Anand.

**Electronics & Communication Engineering**

1. Kanna, T Venkatesh. **Analysis of wavelet extensions for epileptic seizure detection using support vector machine**. Department of Electronics & Communication Engineering, Hindustan Institute of Technology and Science, Chennai.

**Mechanical Engineering**

1. Mishra, Santosh Kumar. **Numerical studies on non-Newtonian fluid flow through pipe using CFD**. (Dr. Arun Arora and Dr. H S Chandra), Department of Mechanical Engineering, Chhattisgarh Swami Vivekanand Technical University, Bhilai.

## MATHEMATICAL SCIENCES

**Mathematics**

1. Rabish Kumar. **Spectral theory and Eigen functions expansions for a pair of second order matrix differential equations**. (Dr. Amar Kumar), Department of Mathematics, T M Bhagalpur University, Bhagalpur.

2. Sunita Rani. **Deformation of a stratified poroelastic media due to surface loads and buried sources**. (Prof. Sunita Rani), Department of Mathematics, Guru Jambheshwar University of Science & Technology, Hisar.

## MEDICAL SCIENCES

**Biotechnology**

1. Salappa, Arun Ramling. **Solubility enhancement of poorly water soluble simvastatin and fenofibrate**. (Dr. E Jayachandran), Department of Biotechnology, Acharya Nagarjuna University, Nagarjuna Nagar.

2. Zodinpuii, Doris. **Characterization of clinically significant mutations associated with breast cancer in Mizo population**. (Prof. N Senthil Kumar), Department of Biotechnology, Mizoram University, Aizawl.

**Nursing**

1. Kori, Asha Deepak. **Community Initiatives of corporate social responsibility in engineering organizations in Mumbai: A study of women beneficiaries**. (Prof. Vandana Chakrabarti), Department of Nursing, S.N.D.T. Women's University, Mumbai.

2. Waghe, Aakanksha Ashok. **Effect of planned teaching on KAP of mothers and nutritional status of infant/children**. (Dr. Shakuntala Prabu), Faculty of Science and Technology, S.N.D.T. Women's University, Mumbai.

**Pathology**

1. Panicker, Soumya Mohanan. **A study on liquid-based cytology-new possibilities in the diagnosis of cervical lesions in India**. (Dr. Menka H Shah), Department of Pathology, Sardar Patel University, Anand.

**Pharmaceutical Science**

1. Hadia, Jayeshkumar Jasubhai. **Development and evaluation of colloidal drug delivery system containing**

poorly water soluble drug. (Dr. Ashvin V Dudhrejiya), Department of Pharmacy, Saurashtra University, Rajkot.

2. Pandey, Ajit Kumar. **Synthesis and biological evaluation of some thiadiazole derivatives and validation by UV spectrophotometric method**. (Dr. Pranita Kashyap and Dr. Chanchal Deep Kaur), Faculty of Pharmacy, Biomedical Engineering and Biotechnology, Chhattisgarh Swami Vivekanand Technical University, Bhilai.

3. Samir Odhavajibhai, Rabadiya. **Effect of selective histone deacetylase inhibitors on cardiac and renal complications associated with typeI I diabetes mellitus in rats**. (Dr. Ashvin V Dudhrejiya), Department of Pharmacy, Saurashtra University, Rajkot.

4. Sawarkar, Hemant Arunrao. **Phytochemical and pharmacological investigation of traditionally used herbs for treatment of Buccal ulcer**. (Dr. Pranita Kashyap and Dr. Chanchal Deep Kaur), Faculty of Pharmacy, Biomedical Engineering and Biotechnology, Chhattisgarh Swami Vivekanand Technical University, Bhilai.

5. Sheokand, Sneha. **Development of nanocrystalline solid dispersion of hesperetin and its oral formulation, with enhanced oral bioavailability for prevention of breast cancer**. (Dr. Arvind K Bansal), Department of Pharmaceutics, National Institute of Pharmaceutical Education and Research, Mohali.

**Physiology**

1. Vaidya, Lopa Madhusudan. **A comparative study of audiogram in ear sound devices users and non-users in age group of 18-40 years**. (Dr. Nirupama J Shah), Department of Physiology, Gujarat University, Ahmedabad.

### PHYSICAL SCIENCES

**Chemistry**

1. Jasminder Singh. **Study on $CO_2$ capture using nanostructure carbon adsorbents**. (Dr. Soumen Basu and Dr. Haripada Bhunia), School of Chemistry and Bio-Chemistry, Thapar Institute of Engineering and Technology, Patiala.

2. Kamani, Ronakkumar Dhanjibhai. **Isatin and pyrazole clubbed heterocycles: Synthesis, characterization and biological studies**. (Dr. K H Patel and Dr. D K Raval), P G Department of Chemistry, Sardar Patel University, Anand.

3. Kanthecha, Darshana Natvarlal. **Synthesis, characterization and biological investigations of some novel gold (III) and ruthenium (III) complexes**. (Dr. M N Patel), P G Department of Chemistry, Sardar Patel University, Anand.

4. Prakash, Ajay. **Transition metal complexes of schiff bases and their biological studies**. (Prof. Rajesh Malhotra), Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar.

5. Savaliya, Ravikumar Bhagvanjibhai. **Synthesis, characterization and application of graft copolymers and its blends with thermoplastics polymers**. (Dr. M M Raj), P G Department of Chemistry, Sardar Patel University, Anand.

**Physics**

1. John, Jinya. **Study of cloud microphysical properties over the Indian Region using satellite data**. (Dr. V Sathiyamoorthy), Department of Physics, Gujarat University, Ahmedabad.

2. Patel, Hiral Timin. **A comprehensive study of physical properties of some simple and non-simple metals by using an effective and local pseudopotentials**. (Dr. P R Vyas), Department of Physics, Gujarat University, Ahmedabad.

3. Singh, Rachana. **AB-initio modeling and performance study of light emitting electro chemical cells**. (Dr. Mohan L Verma), Department of Applied Physics, Chhattisgarh Swami Vivekanand Technical University, Bhilai.

4. Tiwary, Prem Pyari. **Laser and plasma interaction at high power laser flux**. (Prof. Vibha Rani and Prof. R P Sharma), Department of Physics and Computer Science, Dayalbagh Educational Institute, Agra. ❑

# ASSOCIATION OF INDIAN UNIVERSITIES
## ADVERTISEMENT TARIFF
### UNIVERSITY NEWS JOURNAL

**GST AT PRESENT RATE OF 5% IS PAYABLE FOR PUBLICATION OF ALL TYPES OF ADVERTISEMENTS IN UNIVERSITY NEWS W.E.F. APRIL 01, 2020 IN ADDITION TO THE PAYABLE CHARGE FOR EACH CATEGORY AS GIVEN BELOW)**

**A. FOR EDUCATIONAL INSTITUTIONS, GOVT. ORGANIZATIONS, PUBLISHERS, BOOK SELLERS & DISTRIBUTORS DISPLAY**

**(Amount in Rupees)**

| Categories of Advertisement | 1 Insertion | 4 Insertions | 8 Insertions | 12 Insertions |
|---|---|---|---|---|
| Full Page | 15000 | 45000 | 85000 | 120000 |
| Half Page | 8000 | 28000 | 50000 | 68000 |
| Quarter Page | 5000 | 16000 | 28000 | 40000 |
| Cover (Inside) | 16000 | 55000 | 100000 | 144000 |
| Cover (Back) | 20000 | 65000 | 120000 | 165000 |

**B. TARIFF FOR SPECIAL NATURE OF MATTERS/ITEMS (DOUBLE THE RATES)**

**TARIFF FOR SUPPLIERS OF COMPUTERS, COMPUTER STATIONERY & PERIPHERALS, SCIENTIFIC & SURGICAL INSTRUMENTS, SPORTS GOODS AND OTHERS (*NOT COVERED IN ANY FORM OF THE TARIFF)* WILL BE AT DOUBLE THE RATES AND TARIFF CAN BE HAD ON REQUEST.**

**C. CONCESSIONAL TARIFF (For Publishers/Book Distributors- Exclusively for Books)**

| Per Square Cm (Display) | 1 Insertion | 4 Insertions | 8 Insertions | 12 Insertions |
|---|---|---|---|---|
| | 30.00 | 28.00 | 26.00 | 24.00 |

## MECHANICAL DATA OF JOURNAL

**Size of Page    21 cms x 27 cms**

### PRINT AREA

Full Page            23 cms (Height)   x   16.5 cms (Width)
Half Page            12 cms (Height)   x   16.5 cms (Width)
Quarter Page      11 cms (Height)   x       8 cms (Width)

**The Art Work/CRC IN PDF as per above Print Area (in BLACK & WHITE ONLY) or the OPEN FILE IN MS WORD may be sent accordingly. The text is required to be sent positively on E-Mail IDs as shown below. *MATTER FOR ADVERTISEMENT MUST REACH SEVEN (07) DAYS IN ADVANCE FROM THE DATE PUBLICATION OF EACH ISSUE OF UNIVERSITY NEWS*, WHICH IS EVERY MONDAY.**

**ADVERTISEMENT AGENCIES (INS ACCREDITED) ARE ALLOWED 15% DISCOUNT.**

Full advance payment could be sent by Demand Draft/At Par Cheque favouring "ASSOCIATION OF INDIAN UNIVERSITIES", payable at New Delhi. Also, the details for payment via NEFT/RTGS are available in AIU Website. Also, the required data could be provided on request.

*For further information write to :-*

**Publication & Sales Division**
**Association of Indian Universities**
**AIU House, 16, Comrade Indrajit Gupta Marg, New Delhi - 110 002**
**EPABX : 011-23230059 (Extn. 208/213), FAX : 011-23232131**
**E-mail IDs : advtun@aiu.ac.in /publicationsales@aiu.ac.in**
**Website : http://www.aiu.ac.in**