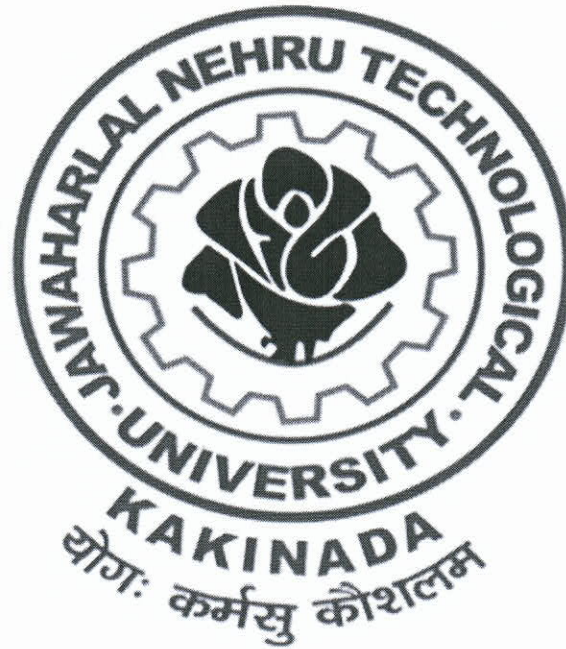


**7.2.1 – Describe at least two institutional best practices**



**Jawaharlal Nehru Technological University Kakinada  
Kakinada - 533 003, Andhra Pradesh, India**

## 1. Title of the Practice

### **Development of Innovation and Incubation Culture in University**

## 2. Objectives of the Practice


To develop Innovation and Incubation culture in university, an exclusive Design Innovation Centre and also an exclusive directorate for Incubation and IPR were established. Efforts are made to bring faculty and students from different domains together on a single platform to share ideas, help and learn from each other and provide solutions to Realtime societal sensitive problems.

### **Objectives:**

- Brings into light the innate creative thinking of students
- Facilitates an ecosystem for students and faculty to transform their innovative ideas into products.
- To offer technical competence to industries.
- In order to make the students of JNTUK as global citizens and to enhance their quality of life and employability by providing them exposure in cutting edge technologies such as data Analytics, mobility, AI, ML and cloud.
- To achieve this, they should be digitally trained using experiential learning, collaborative learning and learn by example strategies through e-learning platforms with industry networking.
- JNTUK incubation centre is working towards this goal by establishing a digital centre of excellence in collaboration with Wipro Ltd., India, Tetrasoft USA, TOOOPLE, Singapore, Missouri state university and Chicago state university of USA.

## 3. The Context

Students may not have required exposure to directly implement the specific industrial project. It requires additional training beyond the college hours by industry experts, subject experts from University. To get the industrial experts beyond the institute working hours to a place like Kakinada is a challenging

  
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task. The Infrastructural facilities like installation of Hadoop cluster and bigdata setup needs the help of Industrial experts.

#### 4. The Practice

In order to implement any of the projects the challenges are the same

- i) Real time problem definition: Approached Kakinada Municipal Corporation, Andhra Pradesh state Government Police and Revenue departments for obtaining the real time societal problems. The real time societal problems of Government will have problems with high data volumes and logical complexity.
- ii) Capacity Building Challenge: Availability of Industrial expert to a location like Kakinada is a major challenge. Getting them beyond the working hours of the Institute and on holidays. The exercise may be an extra Burden on the Students apart from regular curriculum. The students can be motivated only with a few success stories.

**Uniqueness:** - This kind of challenge is unique in Indian Higher Education. As the institute is handling the Government related problems a few organizations have come forward under CSR activity and trained the students online during the weekends.

#### The projects have the following merits.

- i) Involvement of Advanced technologies like Blockchain, Big Data and Cyber Security and Collaboration with premier institute like University of Missouri, Colombia.
- ii) Societal Impact of the Project:
- iii) Student engagement and providing equal opportunity for women with 50% occupancy in the team.
- iv) Involving small Industries and corporate sectors for capacity Building and project Implementation and attracting CSR funding.
- v) Supporting the enhancement of employability and quality of employment and inculcating start up culture and proving earn while learning concept.

  
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## 5. Evidence of Success

- JNTUK was granted a Prestigious project, “National Initiative for Design Innovation”, from MHRD, New Delhi with a Financial grant of Rs.10 Crores to facilitate design-focused research.
- An MOU was made on 23<sup>rd</sup> March 2016 between the Registrar of JNTUK and the then president of the India acting through the Joint Secretary, Ministry of Human Resource Development, Govt. of India.
- JNTUK is among the top 20 institutes across India to get this prestigious project.
- The project has the funding of Rs.10 crores and gets continued till March, 2020.
- The following are a few of innovative prototypes developed by Design Innovation Centre:


|  |   |
|--|---|
| Shrimp feeding machine and novel aerator for aquaculture | Corn deseeding machine  |
| Hydraulic ram pump for pumping water in hilly areas      | Groundnut shelling machine                                    |
| Bike ambulance for tribal people                         | Bluetooth operated screw jack                                 |
| Smart robotic device for rescuing baby in bore well      | Automatic pineapple peeling machine                           |
| Weed detecting device for crops                          | Jack fruit processing machine                                 |
| Pipe line inspection robot                               | Electricity from speed breakers and solar bird scaring device |
| Automatic rain sensing window                            | Dehusking coconut machine                                     |

  
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- There are 3 collaborators for the Design Innovation project, viz.,
  - Acharya Nagarjuna University (ANU), Guntur
  - IIIT, Nuzivid and
  - IIIT, RK Valley, Pulivendula
- Given below are the working areas of the individual institutes under DIC:

| Name                                    | Working area                 |
|---|------------------------------|
| Hub – JNTU K                            | Development of Cutting tools |
| Acharya Nagarjuna University,<br>Guntur | Biodegradable polymers       |
| IIIT, Nuzivid                           | Biosensors                   |
| IIIT, RK Valley                         | Bio-mass Gas stoves          |

- The project titled “Establishing a Blockchain-based Financial Information Sharing Ecosystem with Intelligent Automation” submitted in collaboration with University of Missouri and Tetrasoft Ltd., as industry partner was awarded US \$44,862 by US Government under “Partnership 2020” grant.
- A prototype for clustering the crime data for predictive analysis is done for AP Police and tested on road accidents data for East Godavari district.
- Worked with Kakinada Smart City and East Godavari Police and developed a program for real time traffic management. This software estimates traffic load from CC TV camera images. The green signal will be provided in any directions proportional to the traffic density.
- Established a 9 node, 8TB Hadoop cluster with the technical support from Tetrasoft Inc. USA, (incubation centre partner)

  
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## 6. Problems Encountered and Resources Required

### Problems encountered

Students may not have required exposure to directly implement the specific industrial project. It requires additional training beyond the college hours by industry experts. To get the industrial experts beyond the institute working hours to a place like Kakinada is a challenging task. The Infrastructural facilities like installation of Hadoop cluster and bigdata setup needs the help of Industrial experts.

### Resources Required:

- SQL Server Big Data Cluster
- AngularJS toolset for building the framework most suited to your application development.
- Apache Hadoop
- Advanced fabrication lab
- Product design lab

## 7. Notes (Optional)

  
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## 1. Title of the Practice

### **Capacity Building of Faculty in University**

## 2. Objectives of the Practice

JNTUK established an exclusive Directorate for Capacity Building of Faculty in the University. The University has thousands of faculty members contributing to student development leading to overall growth of the region. University has a responsibility of helping faculty to upgrade concepts in line with the technological developments worldwide and also enhance teaching methodologies.

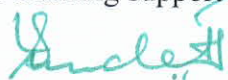
### **Objectives:**

- The Faculty Development Centre facilitates up-gradation of knowledge, skill and intends to provide opportunities for induction training to teachers employed in various disciplines of Engineering & Technology, Pharmacy and management.
- Conduct Faculty Development Programmes (FDP) in the areas such as technical education policy, new concepts, methods and techniques, theory and skills development and upgradation of pedagogy educational technology, motivation, communication skills, management and other relevant issues to keep pace with the changing scenario in Technical Education.
- The directorate is established to enhance the teaching and other skills of the faculty and to make them aware about modern teaching tools and methodologies. It provides an opportunity to acquire knowledge about current technological developments in relevant fields. It will not only promote the professional practices relevant to technical education but also motivates the faculty to achieve competitive teaching and learning environment, thus channelizing development with respect to academic qualifications and personal matters.

## 3. The Context

The context that led to the development of Faculty development Centre is to include the four possible types of development:

1. To Develop Interpersonal and life skills of Faculty members
2. To Develop course design and development, and instructional technology Capabilities of Faculty members.
3. To improve the institutional environment for better teaching support

  
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4.To support faculty members so that they can excel in teaching, research and service.

#### 4. The Practice

The professional development initiative for the faculty by JNTUK started soon after the establishment of university. JNTUK established an exclusive directorate of Faculty Development Centre with a senior professor as Director. The Directorate plans and organizes the Faculty Development workshops and training programmes for all the faculty of constituent and affiliated colleges of the University in advanced technologies and industry oriented courses.

- Sponsorship for the development programs and participation in national and international conferences.
- Supporting IQAC in Performance evaluation of faculty through API scores of Career Advancement Scheme to promote faculty to higher post.
- Realizing the need for effective teaching, and with a view to enhance the knowledge and skills of faculty members in latest technologies and advanced topics, Faculty development programmes by eminent resource persons from Institutions of Higher learning like IITs, NITs and Industry.

#### 5. Evidence of Success

- **Indo-US 21st Century Knowledge Initiatives Grant:** Indo-US 21st Century Knowledge Initiatives Grant formerly known as Obama-Singh 21st Century Knowledge Initiatives Grant has been announced by United States-India Educational Foundation. This grant was awarded to JNTUK and Chicago State University, USA (CSU) in 2015 for promoting University-Industrial cooperation, creativity, diversity and entrepreneurship in computer science under theme education and educational reforms. Under this programme, an amount of Rs 1,25,00,000 has been sanctioned as a grant. **The programme facilitates exchange of faculty of the University. As a part of this programme, faculty members of JNTUK, Visited Chicago State University during 2019 for International Training and Study Networking.** Tour for starting joint M.S Program exploring the possible collaborating with local industries in United States of America and University College of Engineering Kakinada

  
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- Faculty members have visited Stanford University, USA under University Innovation Fellows program(UIF) which helped the capacity building for the faculty.
- Conducted a series of Summer Faculty Development Programme with eminent faculty drawn from premiere institutions to assist faculty in Constituent and Affiliated Engineering colleges for improving their performance in important subjects to enhance basic concepts with exposure based on Outcome Based Education (OBE) in phased manner from 8 semesters of 4 Engineering Faculties (Civil, EEE, ECE, CSE) in 2019.
- Conducted number of Faculty Development programmes for the benefit of the Faculty members of the constituent and affiliated engineering colleges in 8 districts of Andhra Pradesh State.
- Student exit feedback on faculty members indicates their enhanced level of confidence.
- The training programmes have resulted in effective Curriculum development through Outcome based Education and the impact can be clearly visible in POs, PEOs and Cos. Also the training programmes improved the personal communication and inclination to research. The same is reflected in students' performance.

## 6. Problems Encountered and Resources Required

### Problems encountered

- To bring all the faculty members teaching skills and knowledge to the same level through the training modules.
- Arranging experienced, eminent and highly qualified resource persons from premiere institutes and Industries.
- Assessments of effectiveness and impact of the faculty development programmes

  
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**Resources Required:**

- At present, the entire expenditure for conduct of Faculty development programmes is being met from the grant sanctioned by the University.
- Registration fee is not being charged for the Faculty Development programmes conducted by the University.
- All the resources required for successful conduct of the faculty development programmes are acquired by the Centre through the timely grant received from the University.

**7. Notes (Optional)**

  
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