



KUMARAGURU
college of technology
character is life

Institutional Best Practices

1. Title of the Practice: ProtoSem – Prototype Semester

2. Objectives of the Practice

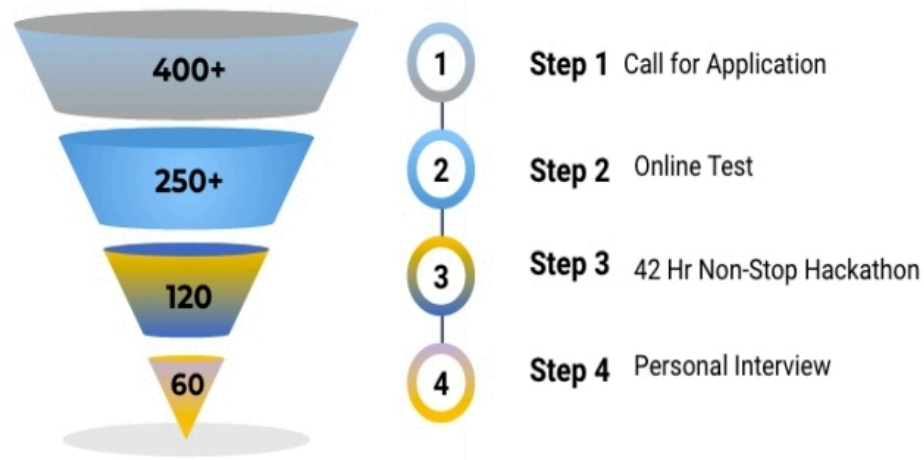
ProtoSem is an Open Innovation Fellowship Program, designed and developed by KCT-Forge Academy embedding an innovation-centred approach to engineering education. The program enables students with the necessary skills and competencies to solve real-world problems and develop tech-enabled solutions for the needs of industry, corporations, startups, and society.

3. The Context

ProtoSem imparts practical, conceptual knowledge through co-creation opportunities, which has proven to enhance the employability of students and sets towards an accelerated career path. Students spend 20 Weeks in the integrated Lab Ecosystem that enables them to develop solutions using 3D Printing, Embedded Systems, ML, Robotics, AR/VR, and IoT. Students are trained by Experts through training sessions & prototyping that gives hands-on exposure with Agile Methodologies and Product Management. Selection of students is carried out through a 3 step process, considers student's curiosity, learnability, drive, and attitude.

- Help students understand the importance of Innovation skills
- Learning from the traditional system for a transdisciplinary program
- Time consuming process of selection evaluates the student under various verticals of problem solving, mindset to team player

- Scholarships/Financial supports are given to outstanding meritorious students
- Leverage learning advanced technologies and build a Minimum Usable Prototype



4. The Practice

- **Learning by doing** is to learn the process of innovation by doing
- **Values & Ethics:** Innovation Engineers learn and implement agile practices to be self-sufficient to manage and impart right ethics
- **Product Innovations:** Students work in transdisciplinary teams go through a defined process for developing a product innovation
- **Skill building:** Rubrics showcase the key skill areas defined in various technologies to catalyse product innovations and to create innovation engineers
- **Co-create with Industry/Start-ups** - Teams interact with industry/start-ups on a regular basis, understand and align to product innovation with agile methods on a day-to-day basis
- **Curriculum** is built by the best practices used in industry, facilitated by industry experts

Uniqueness

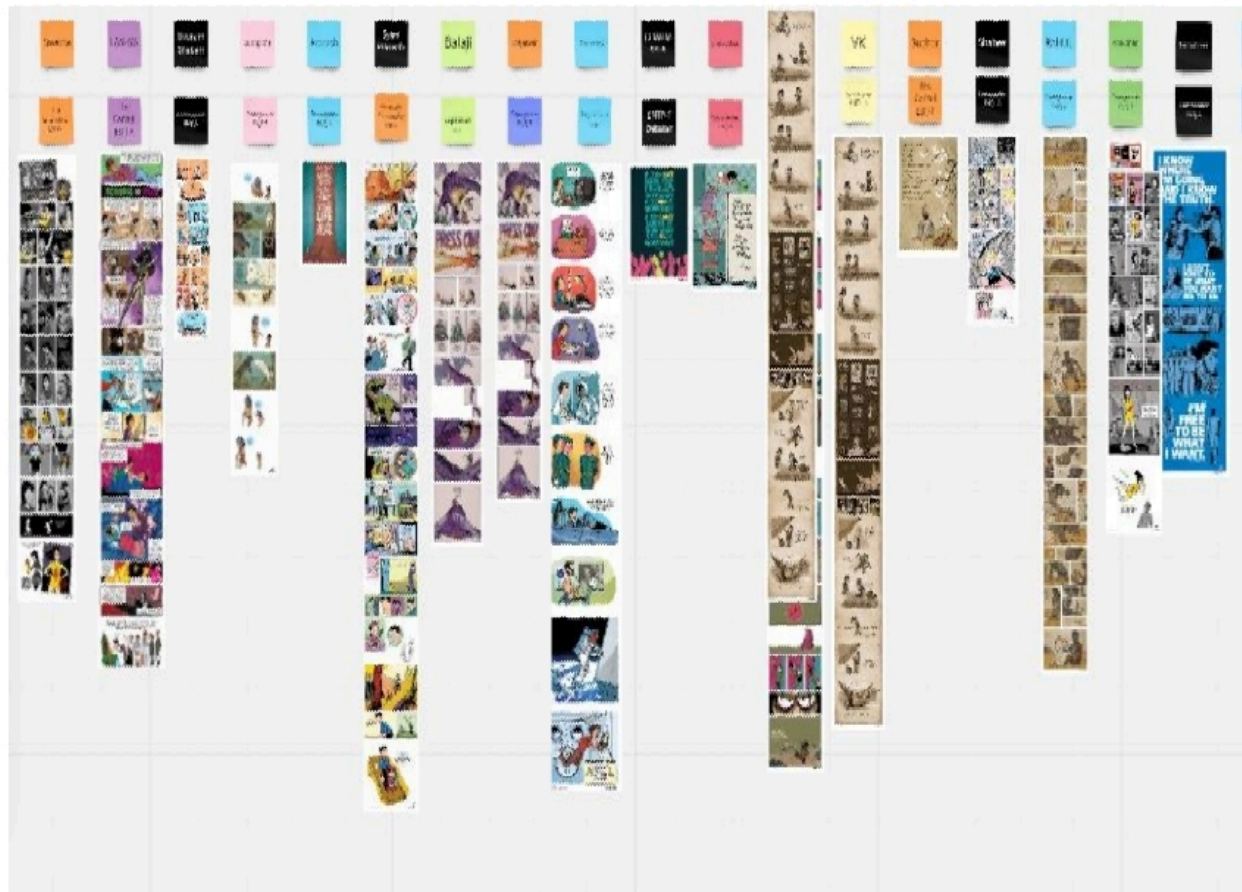
Market Place - Challenge statements are shared to select the challenge. Team identifies Visionary - who leads the team, Hacker - does technical job to outcomes, Designer - brings a creative approach to solutions.

Step2
Interviews and Discussions -
Create your name card in the same color as the role you chose to play. Against your name list the top three skills you can contribute to the team in the given roles perspective

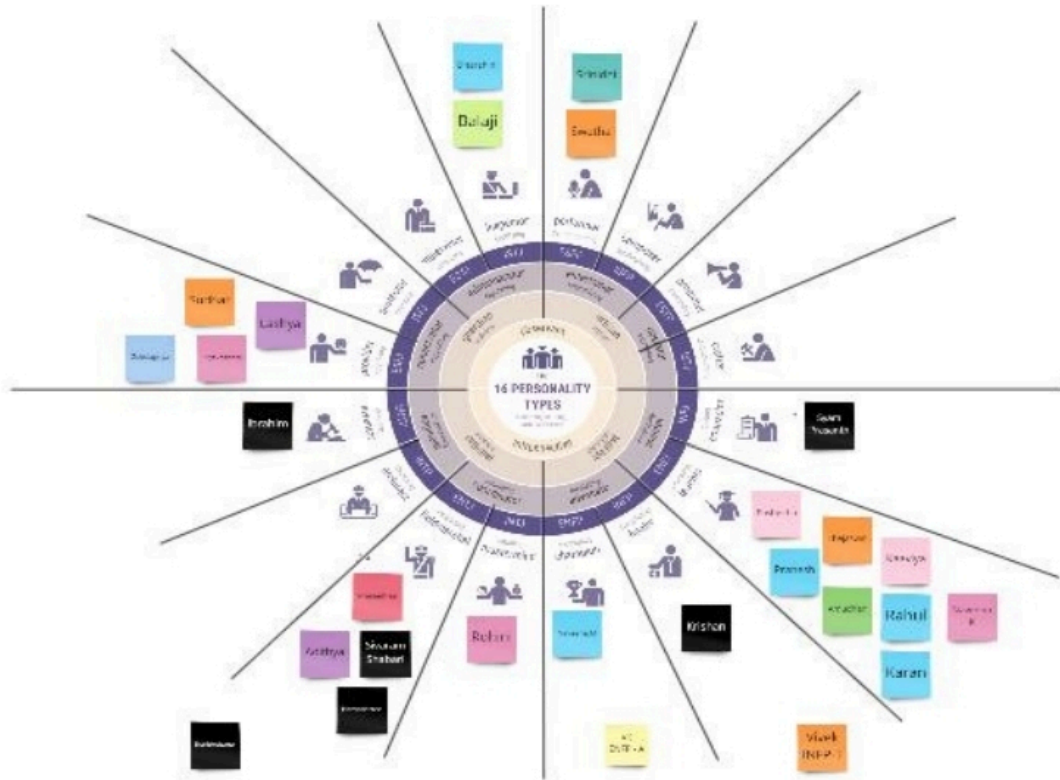
Gokulapriya (IT) Team management Research and analysis Motivation and encouragement	M Naveen Kumar (MECH) Team management Research and analysis Motivation and encouragement	Ibrahim (CSE) Full stack developer Machine learning Research and analysis	Narmadha (CSE) Back end developer Worked with natural language processing
Lashya (CSE) Working and gathering team in a good manner Good in coding Dedication to work	Kavin Kumar R (Prod) Team management CAD designer Strategic thinking	RAHUL (EEE) Controllers C programming Simulation	Sneha (CSE) Web developer Good amount of experience in Java programming and C
Narmadha (CSE) Full stack developer Research and analysis Motivation and encouragement	Sivaram Shubani (CSE) Team management Research and analysis Motivation and encouragement	Balaji (ECE) Worked with Embedded systems Know how to program using MATLAB and CCS Good in coding	Priya (CSE) Full stack developer Good at programming in Java, C
Pranesh (CSE) Goal oriented and good at decision making Good in coding Dedication to work	Thejaswini (CSE) Strategic planning Team player Emotional intelligence	Rohini (CSE) Full stack developer Back end developer Intermediate level in Java and Python	Amudhan (CSE) Full stack developer Good at programming in Java, C
Indravarshi (IT) Managing and leading team Team leadership and management Motivation and encouragement	KARAN AUE Team management Research and analysis Motivation and encouragement	Adithya (CSE) Highly adaptive Python, C++, ROS, OpenCV, Rust, Prolog Data Science, SD and IoT experience	Very adaptable team player
Krishani Team player first Ability to handle high pressure Motivation and encouragement	Team management Research and analysis Motivation and encouragement		

Values and Corporate Practices - Students are trained on project management tools to Plan, Organise, Review, Meet and discuss day to day action plans and execute the work in the most effective manner.

Zen Pencils is an online showcase to feature illustrations taking on famous quotations and making a visual style to create a story. Students choose a comic strip that suits/inspire enough to pursue their life dreams. This activity helped to understand, identify individual's goals and aspirations.



16 - Personalities Circle is a psychometric test to learn what drives, inspires, and worries different personality types, helping to build meaningful relationships within cohort. It helps to make the best possible combination of people in a team. This activity is carried out at the start and end of *ProtoSem* to show them how their personality has improved and showcase how awesome they are.



Collaborative Cohort aims to break stereotypic behaviours of individuals and process to look for new friends, new people, new ideas and accept newer ones with open-mindedness to achieve team outcomes.

Beta Team 2					
Team 1	VK	Balaji R	Rahul	Chandrasekhar	Aravindhan
Team 2	Deepa	Ibrahim	Krishan	Rohini	Priya S
Team 3	Vick	Chandrasekhar	Aravindhan	Pranesh	Aravindhan
Team 4	Aravindhan	Sivaram Shabari	Chandrasekhar	Aravindhan	Aravindhan
Team 5	Aravindhan	Aravindhan	Naveena K	Aravindhan	Srinidhi
Team 6	Vick	Aravindhan	Syam Prasad	Aravindhan	Aravindhan
Team 7	VK	Deepa	Aravindhan	Aravindhan	Aravindhan
Team 8	Aravindhan	Naveena R	Aravindhan	Karan	Kavin Kumar R

Movie Time is a part of ProtoSem, imparting some important lessons by on-screen performances. Movie titles include Spare Parts starring George Lopez, which sets the life at ProtoSem and expectations. Coach Carter, Remember the Titans, Internet's Boy and Ted Talks are other screenings that happen.

Game Nights are introduced to international board games to build stronger relationships with fellow teammates and resilient cohort. This helps in identifying key personality traits of individuals and Four major games include RISK - Game of Global Domination, Pandemic, Resistance and Scotland Yard.



Agile Game



Marshmallow Challenge



Longest Floating Paper Flight

- **Drawsaurus** opens up the minds and getting adapted to ProtoSem culture. With learning & fun, students break boundaries of emotional barriers and increase productivity.

5. Evidence of Success

From 9 batches of ProtoSem, there were 345 Innovation engineers trained to develop 81 product innovations. From these, 4 teams have filed patent applications and 4 teams have registered to be a start-ups. Around 30 Lakh investment was raised from Corporate and Government Organisations. 86 innovation mentors from various domains, mentored to develop their MUP.



345 Innovation Engineers



4 Patents Published



81 Product Innovations



4 Startups



27 Industry Partnership



30L Investment Raised from
Corporate / Govt organizations



86 Innovation Mentors

Product Innovations

Smart Glove for Assisted Physiotherapy



iSpecs [Intelligent Spectacles]



Individual Protection System with built-in sensors



BoT for Solar Panel Cleaning and Monitoring



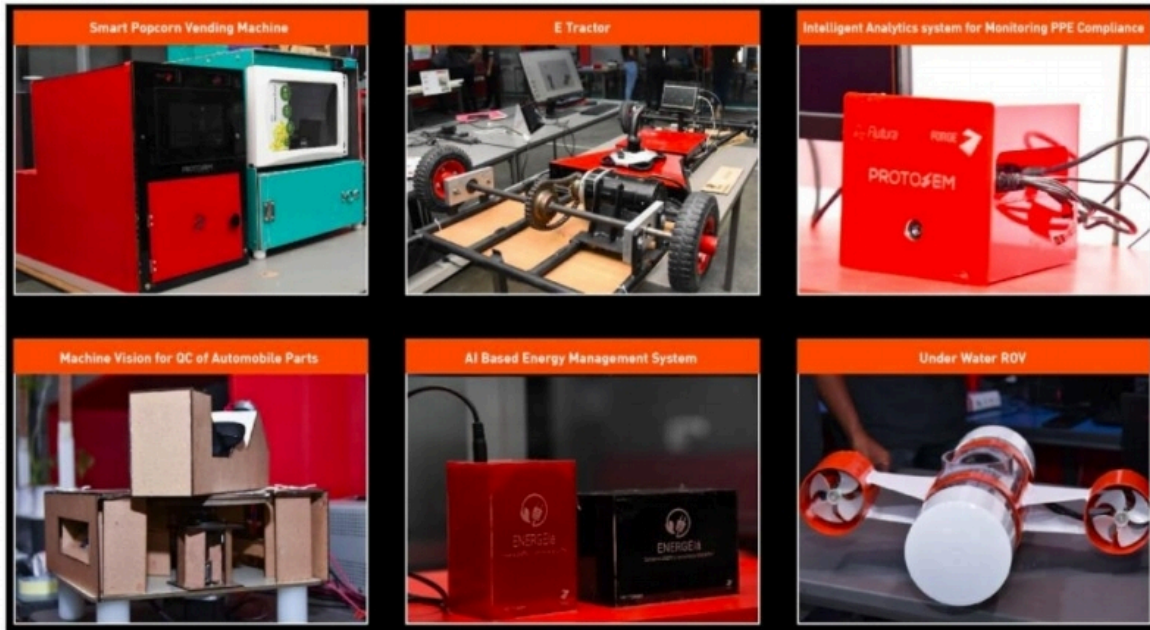
Automated Rail Monitoring for NDT Fault Detection



Battery Swapping BoT for Drones



Funded Startups/Innovations



Corporate-sponsored Innovation Fellowship

10 Innovation Engineers bagged employment at ThoughtWorks after a rigorous internship and interview. To identify potential candidates from the current Cohort, students across various academic institutions underwent Innovation Bootcamp. During the Boot Camp various workshops, organized to upskill and competencies required for selection were supported by the ThoughtWorks.

Based on expert suggestions, selected students underwent rigorous training on specific skills and competency development on the best practices and processes. It was practised under the mentorship of experts and developers. ThoughtWorks acquires potential interns/employees based on their exceptional performance during their internship.



Innovation Engineers placed at ThoughtWorks through Fellowship

Differential Employability

With network of start-ups and industrial connections spanning across different sectors, ProtoSem provides visibility and access to employability opportunities. This network shares technology discussions, events notifications and others in the context of engineering and product.

6. Problems Encountered and Resources Required.

- Most of the courses are handled by industry professionals where session planning is important
- Requirements of Program Interns is mandatory in order to support the teams for their product innovations
- High end hardware labs and work tables required for MUP development
- During pandemic, *ProtoSem* Experience Kit was developed to learn, play and execute their learning outcomes



PROTOSEM
INNOVATION ENGINEERS



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1. Title of the Practice

The Huddle – Forum for Senior Leadership Meet

2. Objectives of the Practice

Need for discussions among the senior leaders was felt to discuss various issues during start of pandemic, take decisions and disseminate the best practices. It was decided to meet daily between 10.00 to 10.30 am through online platform. Objectives of the Huddle are to

- Establish a platform for Institutional Leadership, academic and administrative, to discuss contemporary issues, best practices, and actionable ideas
- Discuss and Disseminate vital information required for making decisions at Institutional / Departmental / Support Systems-levels
- Promote Participative Style of Management and systematically plan empowerment of internal stakeholders for implementing various initiatives

3. The Context

COVID-19 pandemic posed an unprecedented challenge and difficulty in executing various activities related, and digitalization has seen a major surge. Due to the effects of the pandemic, the need for remote discussions has substantially increased and is expected to continue in the future. Huddle discussions have gained a lot of attention in all the working systems. They are popular because they bring together a small group of people to meet on a regular schedule for discussion.

“Huddle” refers to a strategic gathering where players determine the next play on the field during an American football game. Currently, this is also becoming a trend as a space to produce active discussions and new ideas in various organizations. In Kumaraguru, Huddle was originally proposed to discuss the Government guidelines, University Notifications and take appropriate decisions for implementing the best practices to mitigate COVID impact and support the local community.

4. The Practice

The series of discussions under the banner of the Huddle series kick-started on 08th April 2020, immediately after first lock-down. The initiative was envisioned by Mr Shankar Vanavarayar, Joint Correspondent to bring together the institutional leadership members to a forum to discuss ideas, brainstorm and share matters of importance. Through the pandemic that was emerging isolated people and spaces, the ideas and connections with the members of the institution were taken forward seamlessly through this initiative. with each discussion being moderated by a chairperson. The panel includes the members from the apex administration body as well as the program leads of various support systems. There have been nearly 758 topics discussed till August 2021 under diverse genres namely Teaching and Learning, Curriculum Development, R&D, Faculty Development, Student Support, Leadership & Governance and Facilities, Digital Transformation and General Information.

The information was curated and presented by the administrative members, faculty and the budding graduates of the four wings of Kumaraguru institutions including College of Technology (KCT), College of Liberal Arts and Science (KCLAS), KCT Business School (KCTBS) and Institute of Agriculture (KIA).

5. Evidence of Success

INSIGHTS

DIVISIONS



DIVERSITY

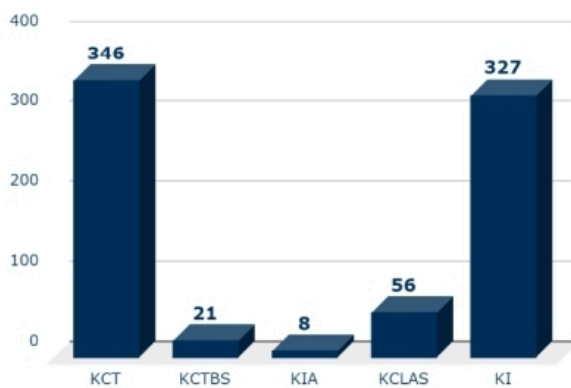


DURATION

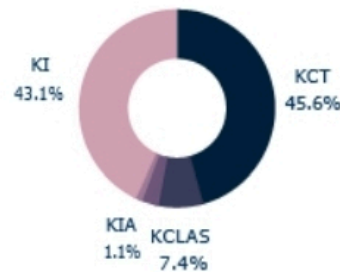


KEY STATISTICS

INSTITUTIONAL

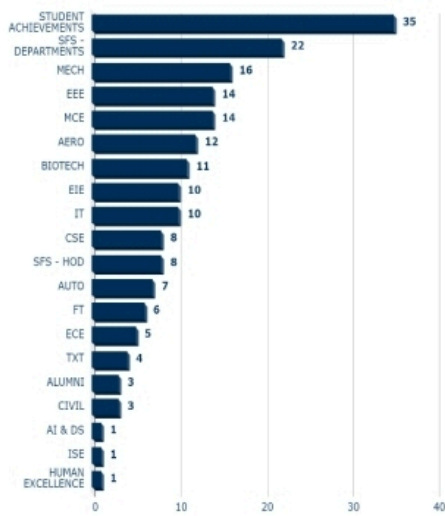


INSTITUTION WISE PRESENTATIONS



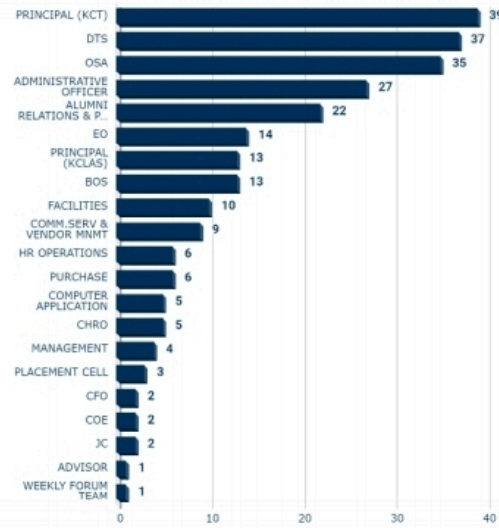
Sessions featured 758 agendas, out of them, 346 agendas were presented by students, faculty and administrative members of KCT, 21 presentations from KCTBS, 8 agendas from KIA and 327 presentations focussed holistically on Kumaraguru Institutions (KI). KCLAS put forth 37 presentations - student achievements and departments.

DEPARTMENTAL - ACADEMICS

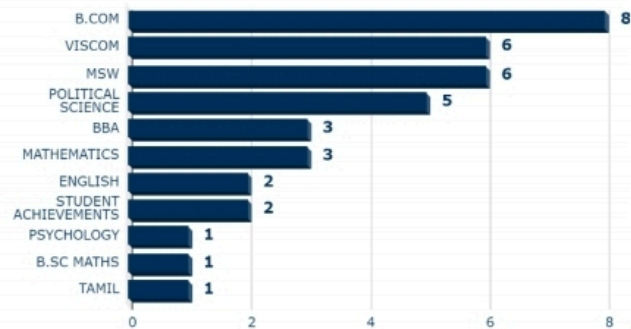


KCT DEPARTMENT-WISE PRESENTATIONS

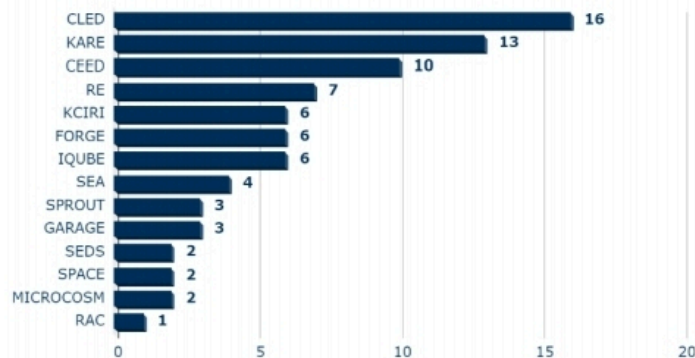
DEPARTMENTAL - ADMINISTRATION



ADMINISTRATIVE PRESENTATIONS



KCLAS - DEPARTMENT-WISE PRESENTATION



SUPPORT SYSTEMS PRESENTATIONS

IMPACT ON TEACHING LEARNING

Out of 209, 56 concepts developed and implemented, 67 information to stakeholders. Includes skills development and activities of clubs and forums.



IMPACT ON LEADERSHIP

176 informational presentations - 56 concepts developed, and 48 information. Included NIRF, GOs and exam notifications



RESEARCH & DEVELOPMENT

Of the 90 presentations on R&D, 24 implemented, 24 served as information. Includes projects, funding, publications.



IMPACT ON CURRICULUM DEVELOPMENT

48 presentations - 17 ideas implemented. Initiatives - Coursera updates, Clubs and Forums Report, YourDost partnership.



FACILITIES & INFRA ENHANCEMENT

24 presentations, 13 actions taken, 5 information to the stakeholders. Includes Campus maintenance, Campus entry portal, Security management, COVID Care Centre.



IMPACT ON FACULTY DEVELOPMENT

19 presentations - 13 provided information. Proposals - K-STEAR Demo, Training for SFS faculty, Weekly Forum debrief.



STUDENTS SUPPORT & ENGAGEMENT

48 presentations - 17 ideas were worked upon and implemented, 16 of them were information.



6. Problem Encountered and Resources Required

This deep analysis on the implementation of the Huddle series in Kumaraguru institutions has shown a positive impact in various aspects / functions of the institutions. This practice has also enabled multiple levels of networking among the various working groups of the institution.

- Training of Seniors on software platform was initial hiccup encountered during implementation
- Availability of Internet bandwidth at various locations deterred presentations and discussions
- Framing the agenda on daily basis, disseminating the decisions and information to relevant stakeholders during the pandemic posed serious problem.
- Reaching-out all the Members after lock-down seemed to be tiresome one due to physical routines and pre-committed engagements of the Members.



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