An Autonomous Institute
(Approved by AICTE, New Delhi; Affiliated to VTU, Belagavi;
Recognized By UGC under 2(f) & 12(B); Accredited by NBA & NAAC)

7.2 Provide the weblink on the Institutional website regarding the Best Practices, as per the prescribed format of NAAC:

Provide web link to:
- Best practices in the Institutional website
- Any other relevant information

Response:

Best Practice 1
Title of the Practice: Tinkering Lab in MVJCE

Objectives of the Practice: The aim of installing Tinkering Lab in MVJCE is to promote innovation and entrepreneurship among students. Tinkering Lab has been established in MVJCE for encouraging students to innovate, and discover the joy of creation. The Lab motivates students to build large engineering devices and develop complex systems. It facilitates the participation of our students at various national and international competitions, representing MVJCE. It also aims to help the inventors and entrepreneurs among our students, to build prototypes of their ideas and generally 'tinker' around, exploring new ideas.

The Context: The mission and vision of engineering education should continuously change its focus to satisfy customers' requirements - the industry and the students as future employees. The students should create something new, the institution should provide the space for innovating and providing solutions for problems faced by individuals and communities. The terms 'hands-on', 'minds-on' learning are used in connection with student-centered or active learning, and also for educational activities that are dynamic, relevant, and applied. These types of hands-on activities contribute to students' engagement and will better prepare engineering graduates to compete in a demanding market. The hands-on activities can foster in students, the development of knowledge and skills in both the cognitive and affective domains: design, creativity, communication, models and team work.

The Practice: The Tinkering Lab is a dedicated space on campus that enables students to explore ideas and experience the process of creation of technology, from ideation to prototyping. The Lab provides basic machinery, materials, tools and instruments for students to bring form to their imagination. The Tinkering Lab is open to students across all departments of MVJCE, to access at their convenience. The Lab also helps students in learning to work with a team, as it is an essential skill for any career. It provides networking opportunities through student-meetings across various programs of the college. It is a good platform for interdisciplinary research and development. The Tinkering Lab organizes programs, events, and meetings throughout the academic year and it is open to all students from every Engineering discipline.

A one-day Workshop on 'Readying Students for Industry 4.0' was held at MVJ College of Engineering on 24[th]August 2019, to mark the 'College Academia-Industry Day'. The Chief Guest

for the Workshop was Dr. Anil D Sahasrabudhe, Chairman – All India Council for Technical Education (AICTE). Dr. BN Suresh, Chairman – Governing Council of MVJCE, presided over the Workshop. Many eminent speakers from academia and industry addressed the gathering comprising guests from Industries, DRDO Labs, PSUs, ISRO, CSIR Labs, invitees from statutory bodies, VGST, VTU etc., Alumni, parents of current students and the students of the college.

Around 60 teams from various departments participated in the event and developed prototype models addressing real-life problems. Students from various departments and faculty members visited the Exhibition Stalls. Braile book, Low-cost biotic semipermeable membrane using fruit peel waste, Smart Helmet and Boco.aid were among the significant projects that were exhibited**.**

Evidence of Success:
Four provisional patents have been applied, for some innovative ideas that were born out of Tinkering Lab projects. Our students have presented and published these projects in various conferences and journals. Many student innovations were featured in newspapers, too.

List of completed projects 2019-20:
1. Design and development of robotic arm with camera for crack detection, using image processing
2. Design and development of automatic pneumatic car bumper
3. Foldable camping hammock to travel light and easy set up
4. Design and fabrication of methanol extraction plant
5. Multi-functional AI assisted drone, for emergencies
6. 3-axis pneumatic Tiller
7. Alternative fuels using plastics
8. Design and fabrication of dirt bike
9. Pedal operated power generator
10. Fuel tank impact safety system
11. Hydraulic chair
12. Waste separation using smart dustbin
13. Cleaning machine
14. Hybrid motor cycle
15. Hydraulic parking using scissor lift mechanism
16. Road Hump and pothole detection, by using ultrasonic sensors

17. Smart Shelves

18. Smart, wearable reading assistance system

19. Automatic number plate recognition, using Machine Learning

20. Voice-based notice board using Android

21. Snake robot for all-terrain surveillance

22. LIDAR embedded hexacopter

23. IOT monitored hydrophonics system

24. Rainfall detection in City

25. Malware Detection Using Machine Learning
26. Selection of University based on the student's performance, by using Deep Learning and Tensor flow Artificial Intelligence Engine
27. Gesture-controlled Computing and Recognition
28. Electoral Voting System using Block Chain Technology
29. Dynamic bus scheduling and routing system
30. Detection of driver drowsiness or alcohol intoxication, and blind curve alert system using Raspberry pi
31. Design and Implementation of a Camouflage Army Robot
32. Deep Learning approaches for cyber security in detection of Network intrusion
33. Campus Spy - Attendance Management System using Face Recognition

Problems Encountered: NIL
Resources Required:
- Dedicated students who have creative ideas and share new developments in various technical fields to discover the joy of creation.
- A team of faculty members from different departments for promoting technical awareness among engineering students, to produce better quality engineers, facilitating the overall growth of engineers. They are helping the students in each and every stage of their project.
- Physical infrastructure such as laboratory and workshop facilities, computer lab with internet, and machinery, materials, tools and instruments that will enable students to bring form to their creativity.

Website link: https://www.mvjce.edu.in/dev/tinkering-lab/

Best Practice 2

Title of the Practice: Design of Innovative Curriculum in MVJCE

Objectives of the Practice: MVJ College of Engineering has designed a new and very contemporary curriculum, made possible on account of our autonomous status, to make a shift from rote learning to experimental learning, in order to meet the moto of OBE and NEP. In this curriculum, we have introduced an experimental study and its analysis for every theoretical concept, so that students will understand the concept thoroughly.

The Context: The traditional learning methods in India have been focusing far too much on rote learning and memorization. This would allow students with a good memory to potentially score more, even if the concepts were not clear to them. On the other hand, a pattern which encourages understanding at a conceptual level, can help students build on the foundation of what they already know and help them to create new and more meaningful connections between new and old concepts. By encouraging students to think critically, experiential learning helps them to discover new connections and acquire problem-solving skills, rather than relying on quick fix solutions.

The Practice: The main advantage of academic autonomy is to offer continuous learning and evaluation, and to have the freedom to design a curriculum. Academic autonomy facilitates a shift from examination centric learning to student centric learning. MVJCE Governing Council is responsible for the overall general and academic administration of the Institute. Academic Council is responsible for the overall academic regulations, curricula, scheme of syllabi and

evaluation and approval of results. Joint Board of Studies, Board of Studies, Board of Examiners, and Internal Quality Assurance Cell of MVJCE facilitates the creation of a learner centric environment conductive to quality education. It also fosters faculty maturation to adopt the required knowledge and technology for a participatory teaching and learning process.

A course is divided into five modules and every module has laboratory sessions for the implementation of experimental learning. And to bridge the gap between the academic and industry needs, Value Added Courses are also included in the curriculum.

The curriculum was developed by a strong and robust team of faculty members, and it then underwent a series of revisions by the BoS, which comprises of industry and academic experts in the respective stream. After the approval of BoS members, it was sent to the Overview Committee which includes experts from premier institutes. The suggestions given by the Overview Committee were discussed in the Academic Council review meeting with experts for final approval, and then incorporated into the curriculum.

Evidence of Success: MVJCE has designed the curriculum in such a way that it meets global requirements, adopting a teaching-learning process that brings out innovation and creativity that is latent in students; it enhances the rational, logical and objective thinking ability of students. Students are prompted to figure out what to do with the knowledge acquired, with the focus changing from 'what you know' to 'how you know'. It is a proud moment for the Institution that our students are actively participating and winning in many Hackathons and various state level and national level competitions.

Problems Encountered: Nil

Resources Required: Board of Studies, Board of Examiners and a team of dedicated faculty members under the supervision of IQAC, MVJ College of Engineering.
Website: https://www.mvjce.edu.in/autonomous-scheme-syllabus/

https://www.mvjce.edu.in/category/achievements/featured-student-achievements/