Birla Vishvakarma Mahavidyalaya

(An Autonomous Institution)

Managed by Charutar VIdyamandal

BVM Innovation & Entrepreneurship Cell (BIEC)

IDEATHON

10th February, 2018

What is Ideathon?

An Ideathon is generally defined as a short, intensive, workshop-like experience for people to address pressing issues and/or challenges. Brainstorming is a group creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its members. Whereas a think tank or policy institute, research institute, etc. is an organization that performs research and advocacy concerning topics such as social policy, political strategy, economics, military, technology, and culture.

How will it be beneficial for students?

1. Build a community of problem solvers
2. Identify unique ideas that can make a difference to the broader community
3. Provide a platform to develop an active community that will learn from each other and work toward a common goal to raise public awareness about research and reasons to participate in social trials

How will the problem statements be collected?

The problems were collected from various engineering sectors that had a big impact on the society. Sectors like Computer, Information technology, Mechanical, Production, Electrical, Electronics, ICT, Civil & Structure and Central Level Problems.

How will the Students participate?

Team registration would be via Google Forms or physical publicity where the Students need to register in a team of maximum 4 people for the Ideathon. The problem statements would be disclosed at a specific time when the actual Ideathon would commence. Students need to come up with a solution to the selected problem statement and need to pitch their ideas in front of the panel.

Jury Selection

Persons that are expert in their fields and those experts in the domain of the scrutinized sectors of problem statements were invited for judging the ideas of the student teams.

Jury Guidelines

1. Each team will be allotted a time of at most 5 minutes for presentation. Participants are requested to prepare the slides accordingly.
2. The presentation will be followed by 2 minutes of a Q & A session.
3. The ideas will be evaluated on the basis of the:
    a. Quality and originality of the idea
    b. Is it solving the problem or not?

c. It's likely impact on target group and market

4. Idea will be evaluated on the following main criteria:
   a. Innovation - How 'innovative' is the idea? Is this idea creative and progressive?
   b. Feasibility of Implementation - How feasible is the idea? How can it be executed within 6 months/one year on a defined budget?
   c. Sustainability - How sustainable is the idea? Is this idea cost-effective? Where does this have market potential and scalability?
   d. Impact - How does this idea raise awareness for diverse or vulnerable populations in a range of social conditions?

Total Participants: 263
Total Teams: 90

Report of the day:

On 10th of February 2018, the most awaited event IDEATHON was organized at BVM Engineering College. The event lasted the entire day from 9:00 AM to 6:00 PM where in students participated enthusiastically.

The event started with the inaugural ceremony in the presence of the Chief Guest – Mr. Harshit Lalpura, CEO HashMedia, and Principal of the college – Dr. I. N. Patel, Convener of BIEC – Dr. B. C. Goradiya, Convener of SSIP – Dr. R. C. Rana, heads of the various departments and other faculties. It started with a Prayer accompanied by the Lamp Lightening by the members on the dais, faculties and Student Leaders. Chief Guest of the function Mr. Harshit Lalpura was felicitated by the Principal.

Principal of our college, Dr. I. N. Patel sir gave an opening remark about IDEATHON. He enlightened the students by introducing the idea of startup in various fields. He aimed at motivating students to think out of the box with creativity. Further TEQIP Head, Dr. S. D. Dhiman briefed about TEQIP and its benefits to the students with the allocated funds. It was followed by the Convener of SSIP, Dr. R. C. Rana sir briefing about the establishment and working of the cell, its benefit to the students in future. Later on Convener of BIEC, Dr. B. C. Goradiya sir explained the thought behind the creation of a new body of BIEC, IDEATHON and various visits.

Chief Guest, Mr. Harshit Lalpura addressed the audience by introducing himself and gave a few words of motivation for the budding engineers. Following the end of the ceremony the vote of thanks was given by the General Secretary of the college, Mr. Jatan Patel. It ended with the National Anthem.

The event started at 10:00 AM with the distribution of problem statements. At 11:00 AM students started working on the problem they chose. They were given a break 1:00 to 2:00 PM. Then the second session of Ideathon started. 3:00 PM onwards the presentation of the ideas started in respective sectors. After all the presentations were done, results were declared and the winners were awarded with a certificate and prize money of Rs. 2000.

Outcome of the event:

The students showed a nice inter-disciplinary approach to solve the various problems of different sectors. The jury were happy that such event was conducted at such huge scale in the campus for students. Moreover, the participation of students was really appreciated.

Chief Guest of the event:
Mr. Harshit Lalpura, CEO, HashMedia
Alumni of BVM Engineering College

Problem Statements:

Sector A-Civil & Structural

1. **Solid waste management in the college campus.** Generation of garden waste is more in our college campus. Currently we are just burning it. Sustainable solution is required for the green campus. If we manage the waste 100% at campus itself then we can make our institute campus better & cleaner.
2. **Water conservation techniques, Water leakages:** At our institute, problem of water leakage/wastage is more often. Water timings are such that the taps remain open and often wastage of water occurs.
3. **Energy Consumption:** The use of electricity, consumption is to be reduced for the benefit of society. The sustainable/Renewable energy sources can be utilized for energy saving.
4. **Housing Problem for the dwellers affected by flood:** It is observed that many times houses in flood prone area are destroyed. It needs to give attention to help poor village people by providing protected houses against flood.
5. **Portable low cost Water filter:** Water borne disease and other problems due to impure water is major in Health Problems. This project will help for village people to safeguard their health.
6. **Plastic waste in Bituminous Road utilization construction:** Plastic waste is problematic in destroy. It can be used in bituminous road construction where it makes water repellent layer. Roads also having little or no effect due water logging on the roads.

Sector B-Central Level

7. **Smart Digital Library System:** Every school and institute has library but there is an issue to manage the data of every student that use library books. The primitive idea of 'library' connoted a storehouse of written document mainly based on clay tablets, palm leaves, waved wooden boards, papyrus role, etc. but with the advancement of knowledge in the human civilizations, the library has become the nerve centre of the civilized society.
8. **Smart Institute information display system:** The general notice and information regarding the institute or premises or staff members or exam hall information is sometime not mentioned or circulated properly. So many a times, students or visitors face difficulty locating a place within the premise or finding particular person's office and precious time is lost in doing so. A lot of paperwork is also needed to circulate the notice every time an event or seminars are scheduled in educational institutes.
9. **Online Hostel Admission (Hostel Management System-HMS):** Hostel seen as a home for students when staying away from their home. It has large well ventilated dormitories and single rooms and is situated in the college premises. Providing clean and calm hostel accommodation is one of the key responsible of management. To manage the hostel facilities, a lot of data need to be maintained such as number of student hostel can accommodate, hostel rules and regulation, hostel fee, hostel in and out of student, guest and visitor record

and so on. So, this needs the system which has an ability to capture all kind of data and information and analyze it properly for smooth functioning of the hostel.

10. **Digital India – Digital BVM:** Traditional offices have paper-based filing systems, which may include filing cabinets, folders, shelves, microfiche systems, and drawing cabinets, all of which require maintenance, equipment, considerable space, and are resource-intensive.Once computer data is printed on paper, it becomes out-of-sync with computer database updates. Paper is difficult to search and arrange in multiple sort arrangements, and similar paper data stored in multiple locations is often difficult and costly to track and update.A paperless office/Institute would have a single-source collection point for distributed database updates and a publish-subscribe system.
11. **Mass notification:** The various notification of the college will be sent to the students via some medium so that they can have the access to the information

Sector C-Computer

12. **Disaster management using IoT:** Develop a system it automatically start fire extinguisher in case of fire in lab. It also inform Principal or lab assistant about event and location. In case of flood situation and earthquake also it also take necessary precautions. A system of interconnected smart modules is developed as a way to enable centralized data acquisition as well as provide an interlinked network for transmission of data in absence of any existing infrastructure. Ensuring efficient mechanism for identification, assessment and monitoring of disaster risks. Develop contemporary forecasting and early warning system.
13. **Suggestive Histogram based grading for effective grading:** Histogram of Students marks are generated, sometimes due to lack of clear boundary marks of students are graded in a way that can be improved. We need to generate a system, which suggest effective way of grading students.
14. **Plenty of machine gets down and it's difficult to install manually all software:** As we are aware of current scenario in our labs that machines gets frequently down due to OS and software problems and its becomes headache for network admin and lab assistant to install all software and OS again and again manually.
15. **Resource Management (Issue, Handling, Tracking, Utilization):** Sector is issuing Hardware to students and faculty members for their use in project or research work. The problems, faced by the sector are, Tracking of the issued hardware, Pending (Late Return, etc.). Utilization report (Hardware usage (more or less), working condition of hardware, purpose of usage, etc.)

Sector D- Communication Technology

16. **Digital – Automatic Attendance System for education campus:** Attendance in education system is very important and having directly proportional to performance of the students in most of the cases. As the technology enhances day by day, it is imperative to have such system which can reduce the time of entire class for taking manual attendance and at the same time avoiding the problems of proxy.
17. **Indigenous vending Machine for Tea/Coffee.:** It is always observed that most of the time; a person needs refreshment after working for 3 to 4 hours on continuous basis. Tea/Coffee does the task of refreshing the mind but to do that person needs to go out and it takes on an

average around 30 precious minutes. Indigenous Vending Machine should be placed at one part of every building where people can come and have a sip of Tea/Coffee.

18. **Overloaded Garbage bins: Effect on health and ecosystems:** In the present scenario, we see the garbage bins or Dumpster being overloaded and all the garbage spills out resulting in pollution and .The detection, monitoring and management of wastes is one of the major problem of the present era. Overflowing waste causes air pollution and respiratory diseases. Garbage contaminates surface waters which affects environment.
19. **Virtual and Remote Labs in Education:** Laboratory experimentation plays an essential role in engineering and scientific education. Virtual and remote labs reduce the costs associated with conventional hands-on labs due to their required equipment, space, and maintenance staff. Furthermore, they provide additional benefits such as supporting distance learning, improving lab accessibility to handicapped people, and increasing safety for dangerous experimentation. Virtual and Remote Labs (VRLs) not only enable reducing costs, but they provide other important benefits
20. **Low Cost Night Vision System for Intruder Detection:** The growth in production of Android devices has resulted in greater functionalities as well as lower costs. This has made previously more expensive systems such as night vision affordable for more businesses and end users. As the security is the key to safe life, there is a crucial need of design and implementation of a robust and low cost night vision systems. The system should detect the human intruders under low light conditions (such as indoor, outdoor, night time) from CCTV footage and should detect the intruders successfully.

Sector E-Electrical

21. **Cost effective Energy savings of Corridor/Class rooms/Laboratory/Staff Cabin Lighting System for Electrical Dept. using microcontroller / PLC.** During daytime it has been observed that some of the Corridor/ Class rooms/Laboratory/Staff Cabin lighting systems are running unnecessarily and consumes energy. It is possible to switch off the lights automatically which would result in saving of energy.
22. **User friendly smart Driver assistance:** Operate through gestures and movement through which Smart Phone connected automatically while Driver is Busy and Reply by Just Speaking without touching or typing.
23. **Automatic Cloth Pressing and Folding Machine:** For big cloth and saree showrooms.
24. **Design and Simulation of Passive/Active Filter to Mitigate Harmonic in Power System:** Electricity becomes one of the most important necessities for industry and domestic application. Power electronic devices find tremendous applications in industry as well as in domestic appliances. The excessive use of these devices causes major problems in the power system due to generate the harmonics. These harmonics pollute the power system and produce many adverse effect like malfunction of sensitive equipment, reduced power factor, overloading of capacitor, flickering lights, overheated equipment's, reduced system capacity etc.
25. **Economical Design of Street light DC grid for energy savings at BVM Engineering College:** Street lights are the important load in the premises of any industrial or commercial areas. Lot of solar street lights are available, but due to solar radiations problem it is not possible to install solar street lights everywhere.

Sector F-Electronics

26. **Automatic gardening system in college.** Our college is spending a lot of money on a regular basis for the maintenances of the college lawn and garden but all the efforts are in vain. Which causes for a lot wastage of water, money, time and man power. And we as a student of BVM wants to solve this problem of our college and hence we developed the under said idea for the solution of fore said problem.
27. **Virtual switches for classroom:** In our college, there is problem of switch boards, either they are too high or the switches are not in working condition which causes for the creation of problem for the students. And if new switches are provided then they due to continuous usage they wear out or get damaged again.
28. **Energy Wastage & Poor Safety Measures On College Campus:** The utmost problem for any large campus is energy management. This problem is often neglected by the students which lead to major wastage of energy resources. With employment of IOT in energy conversation and a centralized control unit, SMART systems can be developed to overcome this problem.
29. **Answer Sheet Checking system using neural network and image processing/Computer Vision:** All the Faculties Face problems in checking the answer sheets of various students and sometimes it becomes a tedious task.
30. **Advance PA system for sector (Improved projectors and digital notice boards):** In our class we have rs232 connector to connect it to the projector. RS232 is outdated and faculties face problems in connecting their laptop with projector and which is time consuming. Not only facilities but other outside person coming for seminar also finds it difficult to connect his/her laptop. Paperwork becomes tedious and also has many loopholes like old notices are not updated or removed after the deadline. College websites cannot be accessed without internet connection which can be overcome by this digital notice board. The paper work for summarizing the data of each sector at the end of a semester becomes very difficult and time consuming and requires a lot man power which can be solved by using a digital notice and newsfeed board that will collect the data automatically for the record of the college. Student achievements are not conveyed to every part of the college effectively, this can also be helped with the digital notice board.

Sector G-Information Technology

31. **Android App on Student Portal: Counselling, feedback, Result Analysis:** Students are not submitting result in every semester. Student achievement and higher study details are not properly given by students. Student's attendance in every counselling is paper based. Training certificate need to submit in every semester (For autonomous students) are not manage.
32. **Sector Library:** Not managing Allocate token or id to the students for verification. (enter time and exit time also not maintain) Students are Checking availability of books in list available in notice board.
33. **Project Monitoring System:** Paper based Registration (team and guide). Request send to guide for approval of team is not done properly. PPR (Periodic Progress report should be generated) not manage. PSAR (Patent Search and Analysis Report) not manage. Final Certificate generated after everything is properly done by student

34. **Student Attendance:** Paper based Registration of student, faculty and time table should be abolished
35. **Online fees payment (Web application):** Students are facing problem to manage fee receipt. There can be chances of losing of pay cheque or cash.

Sector H-Mechanical

36. **Stair climbing trolley:** In the modern world though there are many developments in the field of engineering. Still there are difficulties to carry heavy loads over stairs. Development of lift simplifies the effort of carrying heavy loads over stairs, it is not possible to use lift in all places like schools, college's constructional areas. This problem aims at developing a mechanism for easy transportation of heavy loads over stairs.
37. **Wall Climbing Robot:** A wall climbing robot is a robot with the capability of climbing vertical surfaces. It is required to design and create a wall climbing robot which uses suction as a means of sticking to the wall. The robot will be controlled using Basic Stamp and the movement of its legs will generated by two servo motors. Each servo motor will control legs which are located on the left and right side of the robot.
38. **Floor Cleaning Robot:** Automatic floor cleaner is a system that enables cleaning of the floor by the help of highly stabilized and rapidly functionalized electronic and mechanical control system. The cleaning purpose is specifically carried out by continuous relative motion between a scrubber and the floor surface.
39. **Thermoelectric refrigeration:** Thermoelectric refrigeration is new alternative because it can convert waste electricity into useful cooling, is expected to play an important role in meeting todays' and future energy challenges. Therefore, thermoelectric refrigeration is greatly needed, particularly for developing countries where long life and low maintenance are needed.

Sector I-Production

40. **Design of Potato Harvesting Machine.** Potato is cash crop that provides significant income to the farmers. Farmers are using manual harvesting method for harvesting. Potato harvesters are machines that harvest potatoes. They work by lifting the potatoes from the bed using a share. The soil conditions, the weather, irrigation pattern, the small size agricultural field, the lower amount of automation and availability of maintenance of agricultural tools at rural level in India is the challenge that needs to be addressed in the existing designs..
41. **"Design a conveyor for material handling by using Geneva mechanism":** The Geneva mechanism is a system to convert continuous circular motion into fixed step circular motion. Geneva mechanism requires a rising circular connector extending above the rotating disc to lock between slots in the Geneva wheel and drive it. So here we propose a conveyer belt that moves products at regular time intervals, as needed by many automation lines. Our system uses a motorized disc to drive the Geneva wheel. The Geneva wheel is thus driven at regular time intervals. The wheel is connected to rollers mounted with conveyer belt.
42. **Gearless Transmission Using Elbow Mechanism:** The lab-size working model for the efficient gearless transmission of power at right angles are not available. Furthermore, higher visibility is the need for the understanding of kinematics of motion. As gearless transmission saves gear manufacturing time and costs along with teeth matching and gear placement issues, such alternates needs to be explored..

43. **Design and making of All Terrain Vehicle for BAJA competition:** The College has planned to develop all-terrain vehicle – ATV for BAJA event. This involves large challenges and interdisciplinary interactions from varied student groups.
44. **Surface finish improvement in EDM:** Electrical discharge machining (EDM) is material removal process by a series of rapid recurring electrical discharges between the cutting tool (electrode) and the work piece in the presence of dielectric fluid. Productivity improvement is challenging task for industries. To achieve higher productivity during machining of hard materials higher range process parameters leads to poor finish of the products. Maximum material removal rate leading high productivity with less surface roughness needs optimization of process parameters and investigation of newer technologies. To have better economy of industries and low cost of products, optimum combination of process parameters and indigenous process technological strategies is needed.
45. **Quick-Return Mechanism Design:** A quick return mechanism is an apparatus that converts circular motion (rotating motion following a circular path) into reciprocating motion (repetitive back-and- forth linear motion) in presses and shaping machines, which are utilized to shape stocks of metal into flat surfaces, throughout mechanical engineering. The quick return mechanism is the foundation behind the energy of these machines.

Jury List:

Sr. No.	Sector Name	External Jury	Company Name
1	Electronics	Mr. Anand Shah	Raj Innomation
2	Electrical	Mr. Prakash Makhijani	Ohm Encon Pvt. Ltd.
3	Information Technology	Mr. Maulesh Kanani	Sanatan Technovation, LLP
4	Computer	Mr. Nilesh Vaghela	Electromach
5	Communication & Technology	Mr. Meet Shah	Einfochip
6	Production	Mr. Amrut Patel	Engg. Consultant
7	Civil & Structure	Mr. Bhrajishnu Vyas	Harita Environmental Services
8	Mechanical	Mr. Nimesh Pandya	Elecon Industries
9	Central	Mr. Harshit Lalpura	HashMedia

Winners:

Sr. No.	Team Number	Member	Problem Sector
1	A030	Rushi Sheth	B-08
		Praharsh Patel	
		Mahek Katariya	
		Ravi Nandasana	
2	B005	Fardeen Khan	G-31
		Gokul Agrawal	
		Priyank Vashiyar	
		Shreya Singh	
3	A044	Bhavik Rathod	E-21
		Jaydeep Tank	
4	A047	Abdulkadir Kharodawala	A-01
		Niyati Korat	

		Hiral Parmar	
5	D020	Jay Suthar	D-16
		Mudit Batra	
6	A005	Ankur Varma	F-27
		Niharika Modi	
		Aarya Brahmane	
7	A028	Jay Vaghani	C-15
		Vivek Baraiya	
		Yogen Prajapati	
8	A055	Jill Patel	H-37
		Mahim Vohra	
		Harshil Patel	
9	D001	Haresh Pateliya	I-43
		Ravi Devmurari	
		Loh Jayeshkumar	
		Amit Sorthiya	

Pictures: