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Innovations galore at IIT-Gn

Students Use Creative Ideas To Solve Real-Life Problems

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If movies like '3-idiots' and books like Chetan Bhagat's 'Five Point Someone' led you to believe that IITs are all about rigid curriculums with no space for innovative ideas, then read on. You might want to change your belief.

It is not just that innovative ideas are mushrooming in the minds of students at Indian Institute of Technology Gandhinagar (IIT-Gn), but the students are also materializing them into actual prototypes through their academic projects. A machine that can simultaneously cut sugarcanes and extract juice, a wheelchair that climbs stairs, a luggage bag integrated with seat for comfort during long waits at railway stations and airports, a gadget to extract oil from fried food, garbage bins that can compress trash for maximum space utilization, hand-powered shoe polishing machine, machine for cleaning paint brush, device to peel and extract grains from a pomegranates - these are some of the latest innovative ideas that the students have redeveloped to prototypes at IIT-Gn.

The students have developed these designs as part of laboratory sessions of a course called 'Kinematics and Dynamics of Ma-

chines' (KDM). "We have a vision: it is to connect our students to society and expose them to the various problems existing in society. With this, we aim to encourage the students to solve these issues using their creativity, skills and knowledge. For this, we give them the freedom to think out of the box and to experiment on it. Such initiatives, taken together, aim at unleashing the imagination and energy of both faculties and students to follow their interest and do what they feel should be done," said IIT-Gn director Sudhir Jain.

Jain says that efforts to nurture the innovative ideas among the students and evoke interest among them towards designing for social issues begin from the first day when they join the institute. The fresh students entering the institute are taken to villages around the institute.

"Though ours is an engineering institute, we encourage the students to study various papers on arts and literature. From Sanskrit to poems, we have a range of options from which the students can choose and study.

So apart from scientists and engineers, we rope in many visitors who are eminent in various areas like social work, literature, poetry and others," said Jain.

Extracting oil from fried food

Designed by two students - Chetan Dhande and Shashank Pandey, this device to extract oil from fried food items will give a win-win situation to both the roadside vendors and their customers. While the health-conscious customer gets to enjoy the food with lesser oil, the vendors can reuse the oil extracted from the fried food. "The idea struck us when we visited roadside vendors and saw the fried food items drenched with oil even after they are taken out of the frying pan," said Pandey.

The electric motor-operated device has an outer cylinder and an inner cylinder. The fried food which is just taken out of the frying pan is put inside the inner cylinder. The motor spins the cylinder at a speed of around 1,300 revolutions per minute (RPM). Because



of the centrifugal force, the oil seeps through the perforations of the cylinder. This excess oil is collected in the outer cylinder.

The cost price for mass production of the device will be around Rs 3,000.

Pomegranate seed remover

On seeing the time-consuming process of peeling large amounts of pomegranates by people selling juice, three students came up with the idea for a device that will help vendors in saving time and serving more customers, thereby helping them make more profit.

Prashant Patel, Shubham Chauhan and Rohit Chouksey were told to do a classroom project as part of their course. The students saw it as the right opportunity to execute their idea into a working prototype. The students have now come up with a design in which pomegranates are dropped into the container of the device and the seeds come out from the bottom of the device in around a minute.



Stair-climbing wheelchair



Borrowing the idea from big-wheeled off-road vehicles, Himanshu Dewangan, Ravi Agarwal and Tarun Rai have designed this three-wheeled chair for the differently-abled, which has a larger-than-usual front wheel and suspensions. With these features, the wheelchair can be pushed up or down the stairs.

"We have successfully tried and tested the wheelchair at stairs with an inclination of up to 40 degrees. It works well. We are, however, looking for better quality tyres which can provide better grip to ensure that the wheelchairs don't slip at the stairs," said Rai. The wheelchair can also move on rough roads smoothly because of the large wheels and shock-absorbers. "The prototype cost us a bit over Rs 5,000. However, mass production can bring down the price," said Rai.

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Sugarcane cutter-cum-

Three students of third year mechanical engineering - Vrushiket Patil, Suresh Ramasamy and Himanshu Dewangan have designed a device for cutting sugarcane simultaneously extracting the juice. The device is attached towards the front of a tractor and drives along the lines of sugarcane. A spinning blade will cut the canes in such a way that the plants will fall towards a conveyor belt. The will pull the sugarcanes towards a set of rollers that will crush the canes. The canes will pass through different sets of rollers that will crush the canes and extract the maximum amount of juice towards a tank, the filtered juice is disposed of.

They have named the device as 'In-Situ Cutter and Juice Extractor'. Said Vijay, "The sugarcane cutting machines available but of any such machine that extracts juice sir. Extracting the juice will save a lot of money for farmers for transportation as the juice contains fourth of the amount of the space that the canes consume." The students have made a scale working prototype of the machine.

