THE ROBOTICS SOCIETY

STUDENT'S CHAPTER

Reg.no.: TRS-SC/20/007

BIRLA VISHVAKARMA MAHAVIDYALAYA

[AN AUTONOMOUS INSTITUTION]

Managed by Charutar Vidyamandal

ENGINEERING COLLEGE, VALLABH VIDYANAGAR: 388120

Report on

BOOT CAMP ON 3D PRINTING

The Robotics Society (TRS) Student Chapter of Birla Vishvakarma Mahavidyalaya had organized a two-day Boot Camp on 3D Printing on 3rd September 2021 and 4th September 2021. Around 30 enthusiastic disciplines from different domains were benefitted by the series of lectures through MS Team Live interaction online platform.

DAY-1

The evening started with the very warm welcome by Prof. (Dr.) Vinay J. Patel, Faculty Advisor, TRS Student chapter, BVM. Students were introduced to the session and he praised the initiative taken by TRS. The expert for the session Dr. Guruprasad Rao was invited and students were told about his early career and life achievements.

Followed by him, respected principal Dr. Indrajit Patel gave his presidential speech, acknowledging the effort made by the organizers and welcomed the expert. Also, the achievements made by the TRS community were greatly appreciated.

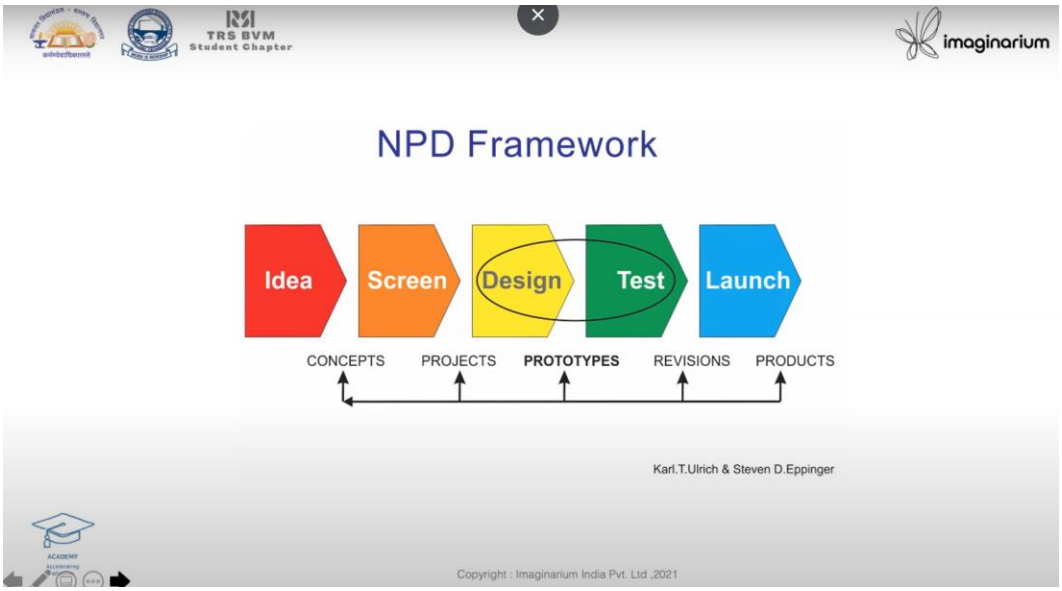
The platform was then given to the expert, Dr. Guruprasad Rao, he appreciated the initiative taken by TRS BVM and started the session. He told the importance of 3D printing in this coming up world and how we as students can build the future with it. He explained how in the history, people use to design different artifacts, how the different designs were made in the iron age, mentioning the Indian culture in the places like Mohenjo Daro. Moving forward he talked about the industry revolution and how the environment was affected because of it. And on the other hand, how 3D printing was a greener and environment friendly option to revolutionize the world.

He told the students how production can be done in 3 ways:

1. Subtractive
2. Additive
3. Formative

3D printing comes in the additive method. He gave the brief about the “NPD Framework” which contains,

- Idea generation, so that the problem taken by us can be solved
- Filtering those ideas using a screen
- Then comes the design making and testing the theory. The first design which is made is called a “prototype”
- After that, there comes the final design and launching it.



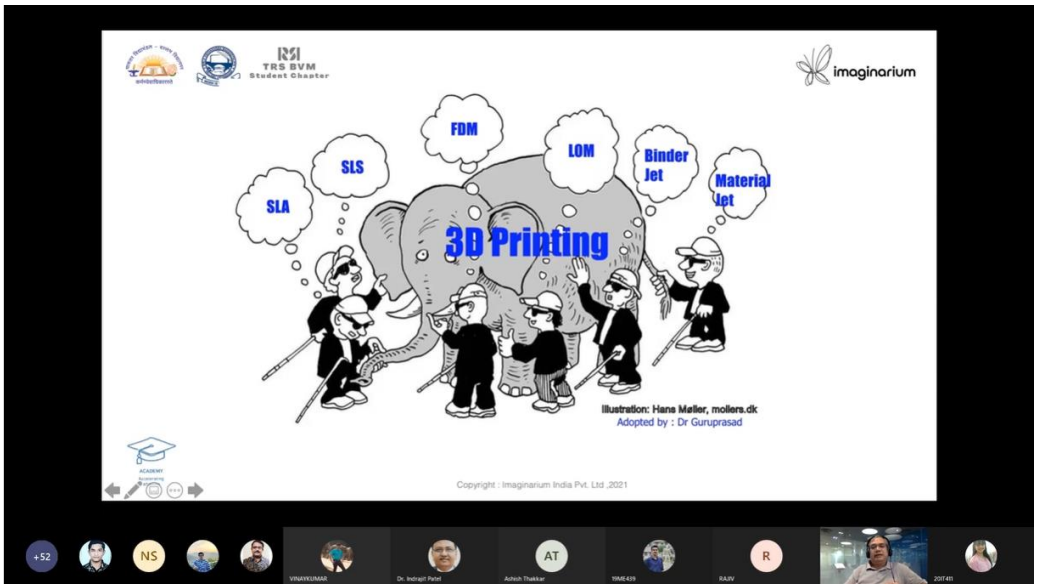
Prototyping is done throughout the development process. Moving further to the session he gave different prototype examples and told us about how because of the technology today, every design can be made virtually. Just by stimulating how everything can be checked. (Collision, heat transfer, kinematics, etc.)

He gave the audience a brief on how computer technology is affecting positively to 3D printing. He then elaborated the subtractive production type and moved towards how a 3d printed model can be made, starting from the general sketch to the 3D CAD model and to the fully fledged 3D printed model. Then he talked about the different types of 3D printers and what are the substances they use and made up of.

3D printing refers to a set of technologies which help to fabricate 3D objects layer by layer from digital input data. The inputs could be a 3D model/Medical Image slice data/Point cloud from a scan. Continuing from this he elaborated the different technologies by which 3D printing is done, they were:

1. Stereolithography (SLA)
2. Selective Laser Sintering (SLS), this is the greatest technology.
3. Fused Deposition Modelling (FDM), most popular in the market.
4. Binder Jetting

5. Polyjet - Multijet
6. Electron Beam Melting



He gave different examples of 3D models and examples of 3D model of a robot. He concluded the session by telling us how 3D printing has come a long way since 1986, and how designing is easier and environmentally friendly now-a-days.

The session was concluded by remarks by Dr; P. M. George, Head of Mechanical Engineering Department. Further the vote of thanks was given by Prof. Ashish M Thakkar, Faculty member, TRS student chapter & assistant Professor from Mechanical Department who expressed his gratitude towards all the respected faculty members and everyone who joined the session.

DAY-2

The second day of the event started with the expert and faculty members exchanging greetings. Prof. (Dr.) Vinay J. Patel introduced Dr P M George, Head of Mechanical Engineering Department and Dr T D Pawar, Head of Electronics Engineering Department.

The platform was given to the speaker. The respected speaker Dr. Guruprasad Rao, director and mentor at Imaginarium; addressed the second day as “Nuts and bolts of 3D printing”. The session emphasized on the robotics and mechatronics fusion with 3D printing. First of all, the 3d printing concept circumscribing the mechatronics were discussed and was clarified how 3d printing helps in this applied branch of mechanical, electronics and electrical amalgamate. Then it was headed towards the collaboration of 3d printing with the robotics and its related branches. The session was headed towards the deep concept of the 3d printing with its integral uses and working. The laminar flow of session was maintained focusing on the each and every concept of 3d printing and also additive manufacturing.

At last Dr. Rao gave a tour of magnificent workplace Imaginarium Pvt. Ltd. That small virtual tour made the session livelier along with some marvels made in Imaginarium, a notable design was of the black lady of filmfare. Then the session was headed towards the Q n A part. Dr. Rao addressed the question very efficiently and gave satisfactory response. Moreover, he showed some designed masterpieces like finger which was 3D printed along with working stage completely printed in one go and many more.

The session was concluded with him sharing his views and ideas about 3D printing and future prospects in the same field. Also, the TRS community was encouraged to keep on working on new projects and keep on exploring new horizons. The Bootcamp was concluded by Dr. P.M. George, with his ending remarks.

With a total of 150 registrations, TRS BVM successfully organized this 2-days Bootcamp on 3D printing.