



RABVIK
INNOVATIONS
<https://rabvik.com/>

SRI ACADEMY


<https://ssa.org.in/>

Tinker Times™

January 2022 Edition

- ★ Innovation to Entrepreneurship
by Mitadru Dasgupta
- ★ IoT in Industrial Automation
- ★ DIY CARS – Turning Trash into Treasure!
- ★ Future of Gaming and Opportunities
by Param Vashishtha

HAPPENINGS @ SSA

The Srians have participated in the National Coding Hackathon, organized by Codingal, where they had to upload their projects based on either an application (web/Android) or they had to build their own website. The topics were mentioned based on the age and group category based on which the projects were framed. Around 15 students participated in this challenge. However, the results are awaited.

Students across all levels have also participated in the “Chase your Dreams” where they were asked to create a 2-minute video based on either mimicry of famous personalities or gymnastics or speak about some innovation or do a match commentary.

However, the students of the Tinkering & Design club (formerly: ATL club and Design club) have planned and are coming up with some exciting workshops very soon.



INNOVATION TO ENTREPRENEURSHIP IN SCHOOL



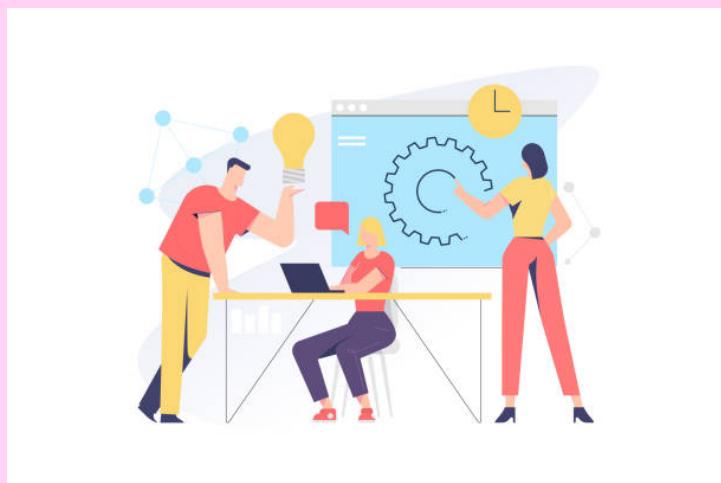
MITADRU DASGUPTA
Sri Sri Academy

Innovation can be defined as the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Innovation in simple terms can be regarded as finding solutions to problems of daily concern. Innovations can be as simple as something like garbage bags or something as advanced as an air conditioner.

The art of innovating was considered only an issue that was associated with adults, but with the rise of young innovators like Mark Zuckerberg on a global platform and Tilak Mehta on a National Platform, many kids were inspired by their stories and had started to tinker on ideas and solutions to problems they faced personally.

Slowly, as students and young adults, started to solve various problems faced by them it became a duty for the governments in various countries to come up with various school-induced schemes which could encourage school going students to tinker and innovate, along with which the schemes would also give some form of training and mentorship to the students for the same.

On the same note, I would like to mention schemes like the ATAL Tinkering Labs which was a subdivisional scheme introduced by the Niti Aayog body as a part of the student innovation scheme in the Government of India. To give an insight into the said scheme,



I would like to mention that even though the ATAL Tinkering Labs set up under the ATAL Innovation Mission was primarily set up by the NITI Aayog body of the Government of India, it is actually the vision of our former Prime Minister, Atal Vihari Vajpayee to make India more innovative and idealistic.

Atal Vihari Vajpayee thought that introducing students to subject combinations like STEM or Science Technology Engineering Mathematics, would make them more creative, innovative and expressive and thus, would lead to more ideas and thus, solving more problems as a whole.

Problem Solving is a key skill that was being focused on with the prevalence of such schemes, but Problem Solving is not enough to have an innovative and creative nation. After solving the problems one is facing, he/she needs to reach out to other people and help them to solve the problem too.

This means that solving one's own problem is good as far as personal concerns are asked, but to have a strong nation every innovator and problem solver will have to help their solutions get into the national and finally the global platform.

After the emergence of Student Innovators, it was very important to encourage and finally emerge Student Entrepreneurs so that they can take their ideas to a global platform. This led to the creation of schemes such as INSPIRE Manak Awards. Platforms like the Sharktank India are a very good opportunity for the students to showcase their talent in front of the world and thus make India an innovative and creative nation.

ACTIVITY TIME!

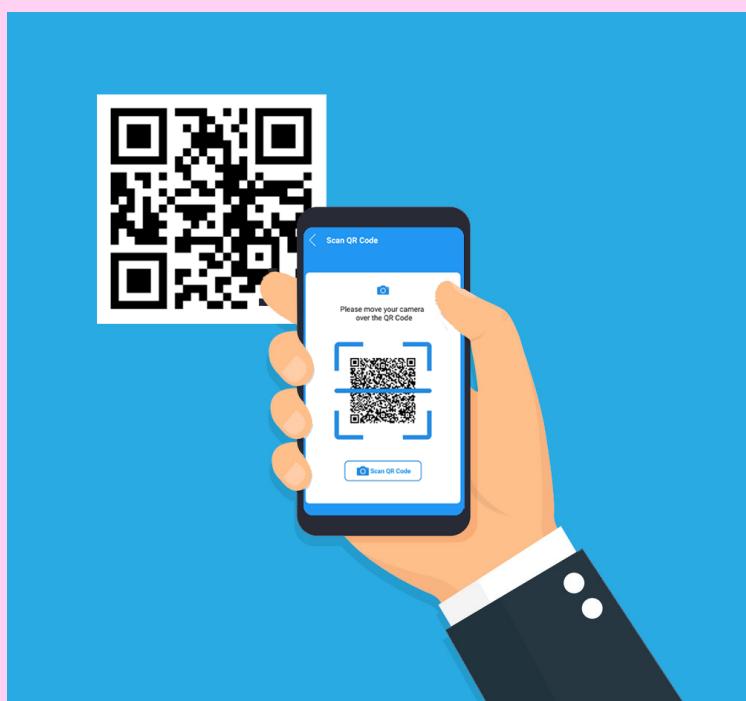
You all must have seen/used the QR codes. Not going into the depth of its origination, here are some of the uses or applications of the QR codes-

- Payments (G-pay/Paytm/Amazon pay)
- Social accounts (WhatsApp/Instagram)
- Form links
- Product information
- Video links

But you ever wondered if you can make/create your own QR Code. Let's learn how to create a QR code for a Google form. Go with the following steps:

- Open email inbox and on the right corner from the Google apps click on the "Forms".
- Select any type of form as per your requirement.
- Modify the parameters save the form and copy the link of the form.
- Click on the link: www.qr-code-generator.com
- On the left-hand side select "URL" in the box and paste the link of the form created before.

- Voila! Your QR Code for your google form is generated on the right-hand side.
- You can customize your QR Code by changing its colour, shape and appearance.
- Then download your QR Code and share it amongst your peers and friends.



- Scan using your mobile's camera and check once the QR Code gets downloaded.
- In a similar way, you can create QR codes for your videos, photos, pdfs, YouTube channels and many more.

Keep Exploring!

IOT IN INDUSTRIAL AUTOMATION

Industrial IoT is a system that includes smart sensors, machines, tools, software platforms, cloud servers and applications. Smart sensors are deployed at every stage of the manufacturing floor for specific applications. These sensor networks continuously send data to the IoT gateway (act as a hub between IoT devices and cloud) which receive and transmit the data to the cloud application server for processing and analysis.

Sophisticated application programs are developed to handle large amounts of data within a secure network and it is accessible using Smartphone applications.

APPLICATION

Industrial automation is one of the most significant and common applications of the Internet of Things. Automation of machines and tools enables companies to operate in an efficient way with sophisticated software tools to monitor and make improvements for the next process iterations. The accuracy of process stages can be improved to a greater level using machine automation.

Automation tools like PLC (Programmable Logic Control) and PAC (Programmable Automation Control) are used with smart sensor networks connected to a central cloud system that collect huge amounts of data. Specially designed software and applications are used to analyse the data and its behaviour for improvements.

Industrial automation improves accuracy, efficiency; reduces errors, is easy to control and remotely accessible via applications. Machines can operate in harsh environments than humans; automation of machines and tools reduces manpower requirements for specific tasks.

Smart Robotics

Many companies are developing intelligent robotics systems for IoT-enabled factories. Smart robotics ensures the smooth handling of tools and materials in the manufacturing line with precise accuracy and efficiency.

Predefined specifications can be set for maximum precision (up to a few nanometers scale for some applications) using intelligent robotic arms. The man-machine interface design concept will reduce the complexity of the operation and it will reflect in future IoT enabled manufacturing as improved productivity.

Robots can be programmed to perform complex tasks with high end embedded sensors for real-time analysis. These robotics networks are connected to a secure cloud for monitoring and controlling. The engineering team can access and analyze this data to take quick actions for product improvements or prevent an unexpected failure due to machine fault.

Predictive Maintenance

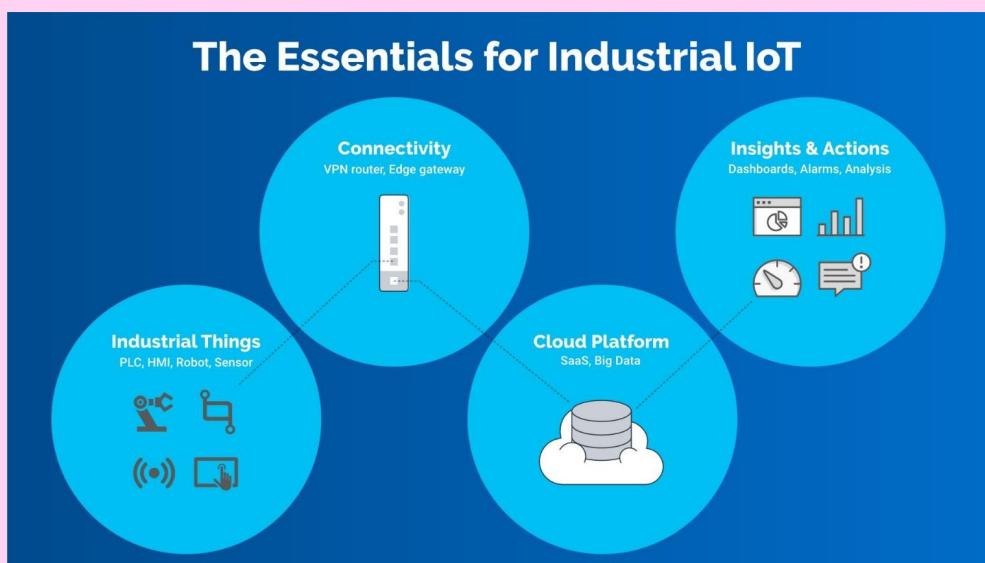
Modern industrial machines equipped with smart sensors continuously monitor the status of each major component and they can detect any critical issues before the system is completely down.

Smart sensors will trigger maintenance warnings to the centralized system and the alert messages will be delivered to responsible persons/groups. Maintenance engineers can analyze the data and plan for scheduled maintenance effectively without affecting routine tasks.

Predictive maintenance is an effective solution to avoid unnecessary downtime in the production line. The unexpected failure of machines could cause damage to products, delay in delivery and business loss for manufacturers.

The status of each machine is stored in a cloud system on a real-time basis. History of each machine, performance and next scheduled maintenance are easily accessible remotely (on PCs, via a web interface or via smartphone applications).

Performance improvements can be calculated and implemented for each machine and process stage of products using collected data analysis.



Integration of Smart Tools / Wearables

Integration of smart sensors to tools and machines enables the workforce to perform the task with improved accuracy and efficiency. Specially designed wearables and smart glass help employees to reduce error and improve safety in the working environments. Smart wearables can trigger instant warning messages to employees during emergency situations like gas leaks or fire.

Software integration for product optimization

Smart analytics solution is one of the most important components of any IoT system which further enhances the possibilities of the system for improvement and optimization.

Major companies are implementing customized software for the deep analysis of huge amounts of data collected from large sensor networks and machines. Detailed analysis of data and understanding the behaviour over time gives a much better overview of process improvement strategies for product optimization.

Improvement ideas could be directly related to product recipes or optimization of particular machinery for better performance and output. Cost-effective solutions can be achieved using the analysis of data and its behaviour patterns over a period of time. Analysis of a huge amount of data was a hard, inaccurate and time-consuming task before the introduction of these software tools.

Smart Package Management

Package management using IoT technology gives a lot of convenience and efficiency for manufacturing units. Smart sensors can monitor each stage of packing and update status in a real-time manner. Embedded sensors can detect vibrations, atmospheric conditions like temperature and humidity etc... and feedback if something goes wrong during transit or storage.

Advantages of Industrial Internet of Things



- Improved accuracy
- Product and process optimization
- Predictive maintenance and analysis
- Higher efficiency
- Remote accessibility and monitoring
- Enhanced security
- Scalability of network
- Reduced down time for machines and process
- Power savings
- Cost effectiveness

DIY CARS – TURNING TRASH INTO TREASURE!

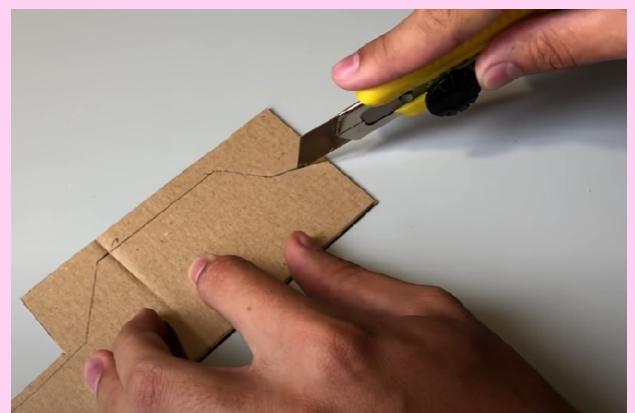
We all buy products online and often throw away the packaging boxes into the trash. However, we can always utilize them by creating something out of them. Here's how you can actually make a car and make it run using some basic science principles.

Materials Required

Cardboard, straws, plastic bottle caps, cutter, glue gun, balloon, coloured tapes.

Procedure

Step 1: Cut the board after drawing the parts in the shape of a car.

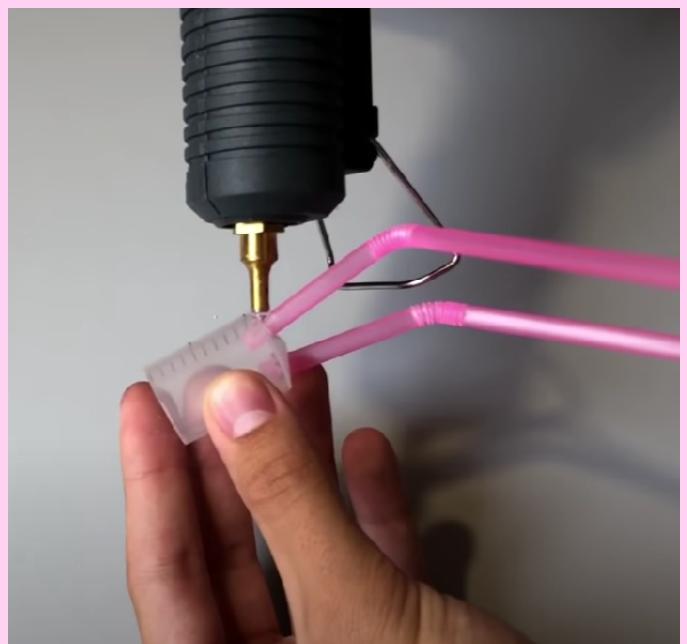


Step 2: Use a glue gun and paste the sides to achieve the model of the car.

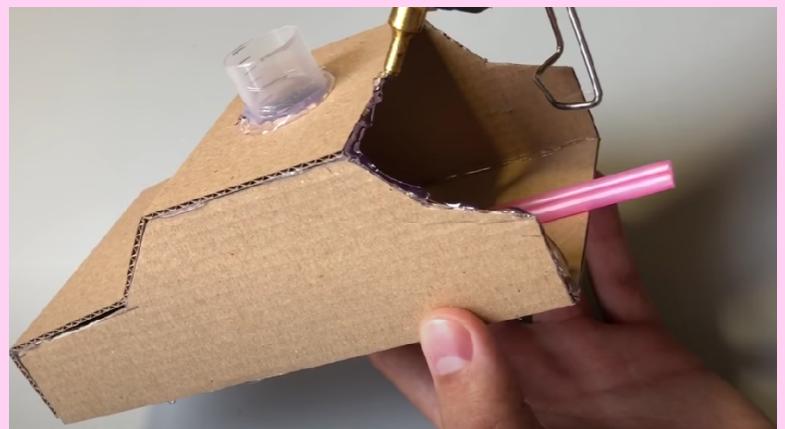


Step 3: Now take a plastic cap of Fevicol or any other product and create two holes in it such that two straws can be fixed to it.

Step 4: Fix the straws with a glue gun such that there's no air gap.



Step 5: Fix the straw arrangement in the manner as shown below :



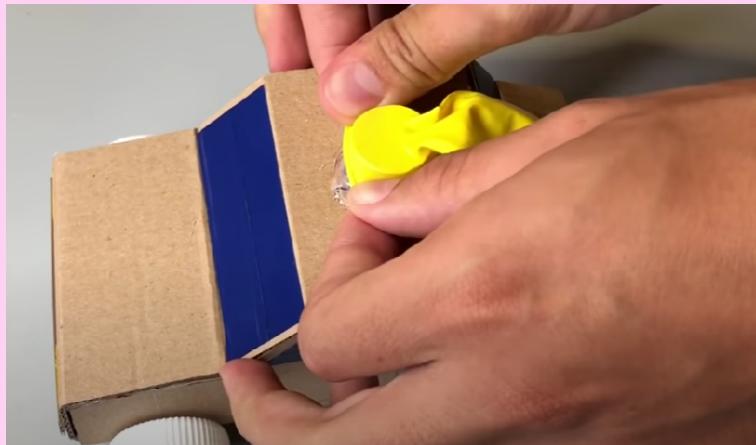
Step 6: Take plastic bottle caps and create holes in order to fix the wheels as below.



Step 7: Now use coloured tapes to give your car a nice look.



Step 8: Fix a balloon on top and inflate it using the straw outlets and then voila! The car starts to move forward at a certain speed.



The science behind this DIY balloon car is that the air pressure from the balloon forces the car to move forward. This gives you an idea as to create such useful toys with the available materials at home where we have not used any electrical or electronic instrument but simple science concepts. Hence, brainstorm and create more such toy-making stories share them with your ATL teacher and get a chance to participate in the National Toy making competition – Toycathon.

FUTURE OF GAMING AND OPPORTUNITIES IN IT

Gaming is the most in-demand sector in the world. It is now slowly replacing the music industry which was at the top sector in the Entertainment category for a very long period is now replaced with gaming.

As technology grows and even Internet Consumption is also growing at a very fast speed, music is now being replaced by Gaming is not a quite shock but it also brings many opportunities for the next entrepreneurs.

It is the most growing sector and even it estimates that in 2023, this Industry valuation will be 200 Billion \$. So, not just programmers but also any sectors like Animation, graphics, even the music sector are also involved in this sector.

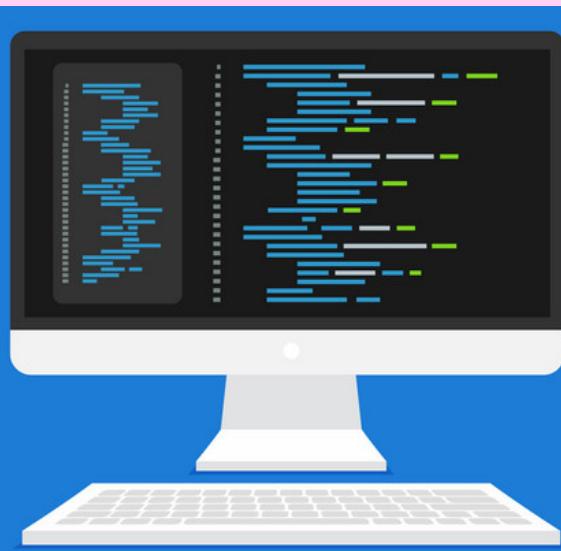
So, In this article, we will tell you about the opportunities that you will get as a Gaming Entrepreneur, and even if you do not know about programming, there are also other sectors that contribute to this sector.

Programming

If you know about Programming and mainly C or C++, then you can start making games from today from Gaming Engines like Unity. You can make very basic gaming with this and even you can make very advanced games also.

You cannot just make mobile games or PC games. There is also another mode known as VR and AR. Many people play games with VR technology and even they like to.

If I talk about the next 10 years, then Mobile games and PC games being replaced by VR and AR games because they are more realistic as well as enjoyable to play. So, you have to also explore this.



Animation

Without this, Gaming will not exist. It is the Backbone of the Gaming Industry. So, animation mainly 3d will be the leading animation type in the future. Not any 2d games will exist, so you can make a 3d animation studio that will help other Games studios to provide their service.

Also, many other animations like Stop Motion, Computer animation, and many others are being used in making games and will be in demand in the future.



Designers

You can be a game designer also. You can give them all of the things that are required to make a game. You have to make the concept of the game to develop it. You need to do all of the things.

This industry will be also called the Game studios but this job required lots of skills but it is the most profitable among them but you have to also invest in it a lot as well as you have to master many skills also.

Music

You can open your own music studio which helps other Gaming studios for making music tracks for their games. Which music will be suitable for shooting a gun?

You have to need many Sound Engineers for this or you can also master this skill it is time-consuming but it has very much scope.



Conclusion

So, this is all about the opportunities in this growing sector. You can also make your gaming studio-like Mojang but it takes much time. But you will get many profits as compared to others.

But there is a very vast competitor in it. So, if you make any other studio related to the gaming industry, you will dominate the market.

QUIZ TIME

Scan the QR code to take the quiz



ABOUT US

Rabvik Innovations aims to train and prepare the next generation of robotics, scientists, and engineers innovative enough to push the envelope and be creative enough to achieve the impossible. Rabvik Labs prepare the students for a toe-dip in the pool which will become an ocean in a few years and will also allow them to get real-life experience in the world of robotics, automation, AI and IoT.

FOR MORE DETAILS:

www.rabvik.com

+91 97333 81000



<https://www.instagram.com/rabvikinnovations/>



<https://www.facebook.com/rabvikinnovations>