REPORT July 2019 – May 2020

ANANTA- THE SCIENCE SOCIETY

INDRAPRASTHA COLLEGE FOR WOMEN

(UNIVERSITY OF DELHI)

ANANTA- The Science Society of Indraprastha College for Women is an academic society with the aim of providing a path to knowledge for the young budding minds to quench their thirst for learning and discovering new ideas. The society organized many events like workshops, exhibitions, presentations and online quiz with the help of cordial cooperation of all the students and faculty advisors.

Ananta focuses on building scientific temperament in each and every student and helping them realise their potential. The overall development of scientific attitude and methodology is the main work essence. The society launched its official website and magazine on the grand occasion of the investiture ceremony 2019-20. The society has organised many events that received full support and enthusiastic response by all. All the events are described as follows:

Hands-on Workshop on Arduino

Date and Time: 15 October 2019, 2:00 PM
Venue: Seminar Room

Arduino is an open-source electronics platform based on easy-to-use hardware and software that is used in making robotics projects. The workshop was presented by the society members and was intended for everyone who is interested in playing with electronics without knowing the complex electronics and programming skills. Workshop was conducted by staff members Ms Ritu Singhal, Mr. Harendra Pratap Singh, Mr. Varun Sharma and student team Harshika Singh, Parul Agarwal, Payal, Anmol Kaur, Ojasvi Gupta. The event began with an introductory video showing the use of Arduino in basic robotics projects such as a Robotic Arm, fingerprint scanner, motion-triggered light lamps followed by introduction of the basic hardware components of the Arduino such as USB connector, digital pins, breadboard etc., which was followed by an introduction to software components to which the audience responded with huge enthusiasm. For hands-on session, two practical implementations

namely, 'Blinking of LED' and the 'Working of sensors' whose main objective was to determine any obstacle within range using sensors were taught to the students. Further, students were guided about usage of Arduino followed by a hands-on session by the students. After explaining the code to the audience, all of them were divided into groups thus experimenting on their own. The students were also told about a model of garbage collector based on Arduino which was made by the society members the previous year. The workshop turned out immensely successful with the turnout of 72 students participating from various departments and showing positive feedback. Faculty members from computer science department also shown their interest in the hands-on session. The session ended successfully with a thank you note by the society president.

Workshop on Solar Panel Usage

Date and Time: 16 October 2019, 2:00 PM
Venue: Seminar Room

An interactive workshop was conducted by staff members Mr. Varun Sharma, Ms Ritu Singhal, and students team Shreya Sharma and Ojasvi Gupta. The event was started by addressing the very prevalent issue of climate change and why one should use renewable source of energy such as solar energy, which is a clean energy and has low maintenance cost with diverse applications. The workshop was open for students of all departments to introduce them to the concept of Solar Panels, and to explain how these panels can be beneficial for the people. The primary purpose of the workshop was to introduce the concept and use of Solar Panel to the students. This presentation was then followed by a hands-on session on how to make a Solar Mobile Charger. This workshop encouraged students to switch to the renewable sources of energy and contribute to the environment. Concept of energy generation using solar panels was introduced to the audience and elaboration on the components of the solar mobile charger was done. Mr. Varun Sharma proceeded the session by interacting with the students of various departments and explained the process of making the charger. For the demonstration, the students were divided into groups for the hands-on session of construction of the solar mobile charger. The organizing team were encouraging the students throughout the session. The workshop witnessed a turnout of around 59 students from diverse academic background and received good feedback from them. The accurate construction of the solar mobile chargers by various groups at the end marked the successful completion of the workshop.

“Towards Knowledge”- Exhibition and Presentations

Date and Time: 7 November 2019, 10:30 AM to 4:00 PM
Venue: Conference Room and Seminar Room

Curiosity is the basis of any discovery. It is one of those things which is infinite, the other being the universe. To provide students the right platform in order to turn their curiosity into geniuses, Ananta organized "Towards Knowledge- Exhibitions and Presentations" on 7 November 2019. The honorable Principal of college, Prof. Babli Moitra Saraf, graced the event with her presence. Mr. Amit Singh, a cyber-security expert at the Ministry of Electronics, Government of India was welcomed as the chief guest. The Principal appreciated the work of the society members.

It was followed by the launch of the official website and the magazine of ANANTA, drawing applause and cheers from the audience. It was followed by the investiture ceremony. The Core Team of Ananta for the session 2019-20 comprises of Ojasvi Gupta as the President, Shreya Sharma as the Vice President, Neeha Rawat and Shweta Bhardwaj as the Technical Head and Anushka Bonia as the General Secretary. The audience was enthralled while taking the glimpse of the work done by the society in the previous year. The official website of the society was launched by the Principal madam. A video on the work done by that time in the society was also presented. Ananta came up with glimpses of workshops on Arduino and Solar panel on 15 and 16 October respectively.

The chief guest talked about cyber security, current trends and counter measures by providing the examples of a case study on cosmos bank to the students. He further enlightened the audience to ensure safe browsing and be aware of the sites that they visit. Fun activities and quizzes were organized in order to engage with the audience. The Presentations scheduled for the day were started afterwards.

❖ Presentations:

1) Safety Measures

The students of B.A Programme, Aditi Anand, Kriti Misra, Tanushree Sehrawat, Priya Kumari, came up with a presentation on “Safety Measures”. They started with a video on Air pollution taking Delhi as an example emphasizing the causes of Air pollution and what precautions should be taken in order to minimize it and then they proceeded to Water Safety, in which they guided on what should an individual do when somebody is drowning and explained the road safety measures and the need for helmet. The next topic

was on gas leakage wherein they explained what to do and what not to do during a gas leakage. The presentation ended with an explanation on measures to be taken during a panic attack and showed an informative video on the procedure of CPR.

2) Consumption Expenditure of Students

The students of Economics Department, Nehal and Aditi, gave a presentation on the Consumption expenditure of students. The presentation was focused on Nudge Theory and an experiment on the students of Economics Department to analyze the Students' change in Expenditure pattern on the application of a Nudge; they shared the observations of the experiment with the audience. The nudge in the study was "Expense Manager App" and the daily reminder messages circulated to the students. They also gave a gist of their observations through this study and pointed out on the consumption pattern recorded which truly argues that the "NUDGE WORKED". They ended by suggesting the students to control their expenditure.

3) Earthquake Alarm System

The students of Department of Geography, Anamika, Swastika, Muskan and Neha, gave a presentation on Earthquake Alarm System. They began with the introduction about earthquake frequency and its intensity in Delhi, which was provided the required information to understand the Alarm Model. They explained the history of earthquakes in Delhi through lineament, liquefaction, and micro zonation map of Delhi. The students also gave a brief on the equipment used, the working principle and the drawbacks of the model. They ended by explaining the need of preparedness, equipping, training and exercises as well as Emergency Action Plan.

4) Solar Panel for IPCW

The students of Department of Geography, Riya Rana, Akshita and Mansi, gave a presentation on Solar Panel for IPCW. The presentation began with the introduction on how IPCW has been open to various ideas for using the resources at its best. The main focus was on to produce the energy of our own without depending on other electricity producing institutions. They used the map of the IPCW to display the shadow free zone where the solar panels can be installed and evaluation of the total cost which will be saved by the college and the cost which would be incurred by the college to install the panels. They ended by giving a brief note on how youth can contribute in its usage.

5) "Rubaroo" – An Exercise on Self-Reflection

The students were given a relaxing presentation, "Rubaroo"-An Exercise on Self-Reflection exercise by the Department of Psychology.

It began with an ice breaker exercise in which the audience including the teachers were asked to stand at their comfortable places and were asked to dance to the music swiftly. It was followed by an exercise namely 'tapping into our emotions', in which everybody was asked to identify and realize positive and negative day-to-day feelings using different colors, associating each color to a particular mood or feeling. The session was followed by a video on emotions and the brain. The third activity was a sway and dance activity

where participants with their eyes closed had to move according to the music as the music changed followed by a video on the effect laid by music on human mood and mind. After that the benefits of the activities performed were told. The last activity was a walk on a beach asking the audience to close their eyes with soothing background music and had to imagine themselves walking on a beach. The activity was greatly appreciated by everybody and observed huge participation of students along with the faculty.

6) Climate Change Cognizance

A presentation entitled "Climate Change Cognizance" was given by Anushka and Neeha, from the department of Geography and Mathematics respectively. The objective was to spread awareness amongst the audience about the impact of Climate Change and urge them to extend their helping hand towards saving our Mother Earth. Recent issues like- Pollution in Delhi during Diwali, Deforestation in Array forest for metro construction and Amazon forest fires grabbed the attention of the audience. Presenters also enlightened about the initiatives taken by the leaders and common people around the world. Emphasis was given on the steps that can be taken to retard the rate of climate change at an individual stratum. A video about how an impact can be left just by changing lifestyles at an individual level was also showcased. The presentation ended with a discussion on how students can contribute to spread awareness.

❖ Projects:

1) Air Quality Index

The Air Quality Index Device is made by Parul Agarwal and Harshika from the department of Mathematics. The Objective of this project was to know the air quality of the area. It was prepared well and the scope of this project lies in knowing the air quality in the area so as to enable people to take steps that can improve the Air Quality. The project was applauded by all as it was economical and portable.

2) LED Matrix

The LED Matrix is designed by Parul Agarwal from the department of Mathematics. It was an attractive model with the objective to display characters through LEDs. The model can be used to make a notice board by increasing the size of the Matrix. Also, using a similar technique various decorative items can be made.

3) Solar Mobile Charger

The Solar Mobile Charger is prepared by Shreya Sharma from the department of Computer Science. The objective of the project is to charge mobile phones using solar energy. The idea was appreciated by all, and it was also suggested that it be made it in a way such that it can be used to charge other smaller devices or cells. The scope of the project is that a battery can be attached to it so that it can store the energy that can later be used in the absence of sunlight.

4) Solar Panel for IPCW

The Solar Panel Project for the campus of Indraprastha College for Women is prepared by Mansi Dixit, Riya Rana, Ananya, Akshita, Ruchika, Sapna and Sangeeta from the department of Geography. The objective of the model is to understand the importance of the solar panels and to use the model as a future reference for installation of solar panels at IPCW. The model and the concept were appreciated by all. The Scope of the project is to look forward to propose the installation of the solar panels in our college so as to gain absolute benefits by saving Lakhs of Rupees, of the electricity bill, per year.

5) Earthquake Alarm System

The students of Department of Geography, Anamika, Swastika, Muskan and Neha prepared a prototype of Earthquake Alarm System. The objective of the Earthquake Alarm System is to produce an early warning for an earthquake. The demonstrators were asked intriguing questions about it. The scope of the project lies in its capability of detecting earthquakes of high magnitudes that occur Hundreds of miles away. It can also detect moderate to minor earthquakes occurring within few miles around one's local area. An advantage of the Earthquake Alarm is that it can wake a person up and can alert one, the moment the earthquake starts so that immediately cover can be taken which can save lives.

6) Solar Panel from E-Waste

A Solar Panel is made from e-wastes by Aditi, Anmol and Swati from the department of Mathematics. The objective of the model is to bring to people the concept of homemade solar panel using the discarded waste and eradicate the myth of solar panel being synonymous to expensive. The materials required are CDs, Copper wires and Zener Diode thus making the project cost efficient. The concept of trapping sunlight in order to produce electricity is the very essence of the model. The energy can be stored in a battery thus making it useful even when the weather is cloudy. Moreover, the project contributes to the environment by lowering the carbon footprint and generation of e-waste.

7) Smart Assistance Glove

A Smart Assistance Glove is prepared by Varsha and Aastha from the department of Computer Science. The objective of the project is to make a glove that provides assistance to Hearing and Speech impaired people so that they can convey their messages easily, anytime and anywhere, to those who do not have the knowledge of the sign language that they use. The project received overwhelming responses which encouraged the demonstrators to take this project to the next level. In future, sign languages from different countries would be incorporated in the gadgets and data sets from English alphabet would be embedded in order to recognize complete words.

8) Automatic Street Lights

Automatic Street Lights are being designed by Rashi Sharma and Sonal Pandey from the department of Computer Science. The objective of this project is to make an automatic street lights system that provides an automated system of street lights to get turned on and off. Automatic Street Light works according to the light intensity in the surrounding since, when there is low light intensity during night or bad weather, these lights with the help of LDR automatically turns ON; and during day having high light intensity, the lights automatically turn OFF.

9) Distance Measuring Device using Arduino

A Distance Measuring Device is made by Ojasvi Gupta and Shreya Sharma from the department of Computer Science using Arduino. The objective of this project was to make a device that can measure the distance between the device and an obstacle or an object in its front. This device can be used best in limiting the number of accidents occurring on the road by detecting the distance between the adjacent vehicles.

10) Air Purifier

An Air Purifier model is made by Surbhi, Nikita, Archana and Deepti from the department of Computer Science. The objective of this project is to make a device that can remove pollutants from the air, which improves the indoor air quality. The air filter present in the device can be used to purify the particles which are 5 to 6 microns in size and larger, (generally PM10), along with 80 to 90 percent of the particles down to a couple microns in size.

After the presentations were conducted and projects were exhibited successfully, Prize Distribution ceremony was held in the auspicious presence of the Principal, Prof. Babli Moitra Saraf and Co-ordinator, Ms Ritu Singhal, awarded and motivated the students for their contributions to the society as well as to the College, followed by a photo session in the presence of all faculty advisors. The event ended successfully with a vote of thanks by the President of the Society.

The feedback received from the audience was huge and everyone appreciated the event heartily that encouraged the science society team to keep learning, working and by little steps achieving the goals by carrying forward the legacy of Ananta proceeding towards greater elevation with upcoming events.

Online Quiz

Team Ananta 2019-20 started online quiz series- "Inquizitors" on 11 October 2019, celebrating one-year anniversary of the society. This quiz was conducted by the core team via the official Instagram page of the society. This quiz series is a monthly series and the leaderboard is being maintained by the core team of the society. The questions asked in the quiz are based on basic science awareness, general science knowledge, current science news and many more interesting science facts. This online quiz is getting an overwhelming response from the students. The participation and constant support received has been great and ever-increasing. First quiz held on 11th October marked the presence of 46 students followed by 75 students in November and 63 in December. Theme based quiz started from January, themed "Global climate change" where 39 students participated. Theme for March was "Corona virus awareness" where 80 students have participated. Another online quiz on 16 May 2020 with the theme - "Science behind our Quarantine activities" has been conducted to reaching out people via online platform, 43 students have participated.

These online series has been a perfect blend of scientific temperament and technological usage combined with brilliant efforts to spread awareness among the masses.

Hands-on Workshop on Python

Date and Time: January 24, 2020, From 2:00 PM onwards
Venue: Seminar Room

ANANTA- The Science Society organized the Hands-On Workshop on Python. This workshop was open for all departments. The interactive workshop was organized by staff members Ms. Ritu Singhal, Mr. Harendra Pratap Singh and Mr. Varun Sharma and student team Palak Gambhir, Gunjan Verma, Kritika Tripathi, Shweta Bhardwaj and Shreya Sharma. The workshop started with an introductory session about Python, and how it can be used in different fields. Python is a general-purpose coding language, which includes back-end development, software development, data science and writing system scripts among other things. Apart from multinational companies, this easy-to-learn language is used in other fields

like Scientific, and Numeric Computing, Astronomical data analysis, Education, Business Applications, etc. An Introduction to the certification courses from Spoken Tutorials, NMEICT, MHRD, Govt. of India project which is a platform for learning different types of courses of different fields from IIT Bombay have been introduced to the students. The students were advised to use Google Colab, a cloud service from Google that can be used to write and execute Python programs in Python 3.x version, without installing any specific application for the same. The presenters of the workshop explained the basics of Python, which included topics like Data Types and Operators, Conditional Statements and Loops, Integers, Strings, Lists, Dictionaries, Tuples, some advanced modules like Numpy and Array, that is used in Data Science. It was further extended to the explanation of how to plot Graphs using advanced modules in Python. For the better understanding of these basic concepts, a worksheet was prepared by the presenters of the workshop, and was shared with all the students during the workshop, so that they can perform all the operations at the time of explanation of particular concepts, and can ask their queries at the same time. The workshop turned out immensely successful with the turnout of around 67 students participating from technical as well as non-technical background departments, and gave a very positive feedback. Faculty from various departments also participated. The workshop ended successfully with a thank-you note.

NATIONAL SCIENCE DAY

Date and Time: 28th February 2020, From 10:00-4pm

Venue: Conference Hall

ANANTA- the Science Society of Indraprastha College for Women celebrated the National Science Day on 28th February 2020. The theme for the day was “Women in Science”. Prof.

Babli Moitra Saraf, the honourable Principal of the Indraprastha College for Women, graced the event with her presence. Mr. Harshdeep Singh Marwah, a Chief Growth Officer at iValue Infosolutions Pvt Ltd, a passionate business and technology-driven leader with core strengths in management, team building as well as leadership development along with building high-performance teams was welcomed as the Chief Guest.

"Atomic Research in the world can lead to Cancer Treatment or World War. Science is a double-edged sword. It has pros and cons, it can lead to peace or disaster, it all depends on how we bring it to use", The Principal Prof. Babli Moitra Saraf quoted. She discussed the theme, as women's contribution to science has been marginalized in men's domain and many women scientists in our country need to be sung and celebrated. She also discussed the importance of the other disciplines that are on the cutting edge, such as Geography, Environment Studies, Economics, Psychology and many more.

The event was followed by a short documentary to highlight the contribution of women in different fields of Science. It included the work of seven women who had contributed to Science. Vera Florence Cooper is an astronomer who studied how galaxies move apart from each other and was rejected because of her gender. Burçin Mutlu Pakdil founded a new galaxy type named Burcin's Galaxy. Tu Youyou won the Lasker Award. Kiara Nirghin is known as the sole founder of her project titled: "No More Thirsty Crops". Kavya Kopparapu is the founder and CEO at Non-Profit Girls Computing League. Ritu Karidhal is also known as the "Rocket Woman of India". Muthayya Vanitha, who had a major role to play in Mars Orbiter Mission. The documentary ended with a quote: "Just look deeper, you might find the Science in yourself". The Chief Guest was invited to come up and address the students. He talked about "Data" and discussed how the world of information scarcity has transformed into a world of information overflow and how the invention of the internet has changed the way we work, live and play. He also compared the use of technology in the '90s and present. He further explained the good and bad use of data and how Cyber Technology, Cyber Law and Cyber Security are converging. Mr. Marwah also discussed the huge amount of careers in the Data Science space as there is a deficit in the field. There was a question-answer round, where the students and staff members asked their doubts and participated in the discussion. It was a very informative and interactive session with Mr. Marwah.

Project and Paper Presentations

Smart Assistance Glove

The project aims to bridge the communication gap between the deaf community and the common people who don't know sign language. The model they had proposed consists of a nano Arduino board connected with several other devices like accelerometer, Bluetooth module, and flex sensors. Five flex sensors have been used, each one of which will measure the amount of angle that the corresponding finger is bent to make the sign. All angles are reported to the Arduino. Using Arduino IDE, the program is fed into the Arduino board to analyze the angles and report the letter corresponding to the sign made. Through the Bluetooth module, the gadget can be connected to any android smartphone, The app compatible with the smartphone is made using Android Studio. The letter reported by the program code is displayed on the app. It also contains the audio of the letter. The future scopes of this project are:

i. It can be connected with fitness sensors and can also be used to monitor the health of the person wearing it.
ii. Flex sensors can be replaced with a motor that can be used to change the angle at which the fingers are bent.

Kandor

The Space Settlement: Kandor aimed to create a human settlement in the orbital region of the moon. It also mentioned that the advancement in space research has made the human species curious and we want to explore more every day. Every day thousands of people are born and the requirement of resources keeps increasing. So, the space settlement is a great plan to fulfil all the needs and it leads to discoveries. The scope of the project is the execution of the drafted plan, more research, and discoveries towards setting up Kandor.

Water Resources and Management in Delhi

The objective was to study the status of gray water treatment in Delhi and also to identify it as a potential resource. According to the project, the recycled water, i.e., the treated gray water can be used for non-potable purposes like irrigation and flushing, thereby cutting the use of freshwater for these purposes. The team members also think that the gray water recycler can be installed in our college to treat the water coming from the canteen sinks.

Personality test and learning experiment

The Department of Psychology conducted a personality test that went along with the presentations scheduled for the day.

1. Personality test: For the learning test, the scale called NEO FFI 3 given by Paul Costa and Robert McCrae was used. It assesses the personality of an individual based on 5 dimensions which are Neuroticism (the degree emotionally stable or emotionally unstable), Extraversion(sociable, talkative, energetic or optimistic), Openness(open to new

experiences), Agreeableness (fundamental altruistic, sympathetic or sceptical of others) and Conscientiousness(the extent to which an individual is purposeful, have a strong will, determined, take charge of their actions).

Learning experiment

The second experiment was a learning experiment. The mirror star tracing apparatus was used to understand bilateral transfer and the effectiveness of practice on learning of a sensory-motor task from one part of the body to another. It measures the ability of the individuals to apply the previous experience to newly related experience.

Inter College Quiz Competition

Date and Time: 28th February 2020, From 2pm to-4pm

Venue: Conference Hall

An Inter College Quiz Competition was organized that consisted of four rounds i.e. Round 1- Written Round, Round 2- Visual Round, Round 3- Treasure-Hint Round and Round 4- Genre Round. There were a total of 24 teams participated in the Quiz. Three teams who played “Inquizitors” and topped the leaderboard were given entry to Round 2 directly because of their persistence. The first position in the Quiz Competition was held by Akshaya and Priyanka, the second position was held by Mansi and Muskan, all these four mentioned students from Indraprastha College for Women, and the third position was taken by Chinmay of Indraprastha College for Women and Anshika of College of Vocational Studies.

After the Inter College Quiz Competition, Prize Distribution Ceremony was held and the certificates were distributed by Mrs Ritu Singhal, the Society Coordinator. In the end, the president of ANANTA, Ojasvi Gupta thanked everyone for their presence. She thanked the Faculty advisors for their constant support and the team members whose efforts made the event a grand success.

It is the priority of the society to groom young minds by conducting workshops round the year, for the students by the students under supervision of Coordinator and faculty advisors. The workshops are being conducted with the motto of developing critical thinking in the students. The society takes it up to be its utmost duty to spark the light of ideas which may convert into flames of discovery.