



Report
Of
IN-HOUSE SKILL DEVELOPMENT PROGRAM
UNDER IQAC

Daulat Ram College
On
SCIENCE COMMUNICATION

(5th, 12th, 16th, 26th and 28th Nov. 2022, 10am- 4pm)



Course Coordinator
Prof. Padmshree Mudgal
Biochemistry Department

Convener
Prof. Meetu Khosla
Psychology Department



DAULAT RAM COLLEGE

UNIVERSITY OF DELHI



Organizes

**IN-HOUSE SKILL DEVELOPMENT
PROGRAM UNDER IQAC**

On

SCIENCE COMMUNICATION

(5th, 12th, 16th, 26th and 28th Nov 2022,
10am- 4pm, Venue: Biochemistry
Department)



Topics Covered:

- Science communication: Scope and relevance
- Resources for literature mining
- Ethics, plagiarism and other forms of scientific misconduct in science Communication
- Tools and techniques of scientific writing (hands on)
- Tools and techniques of oral presentation (hands on)
- Planning a career as a science communicator

Resource Persons:

1. Prof. Padmshree Mudgal,
(Prof. Biochemistry Department)
2. Dr. Adita Joshi, Diector,
Sansriti Foundation, Delhi
3. Dr. Radhika Gupta
(Asst. Prof. Biochem.Dept.)
3. Dr. Neeraj Dohare
(Asst. Prof. Biochem.Dept.)

Registration:

Fee: Rs. 500/
Account holder name: Principal Daulat Ram College
Bank name and address: Indian Overseas
Bank, Daulat Ram College, University of Delhi-110007
Branch: University Branch
Account No: 173401000010004
IFSC code : IOBA0001734
MICR code: 110020084
Registration Link:

Contact: pmudgal@dr.du.ac.in, radhikagupta@dr.du.ac.in , 9310024869, 9871090746

Course Coordinator

Prof. Padmshree
Mudgal

Convenor

Prof. Meetu
Khosla

Advisor

Prof. Sarita Nanda
Vice Principal

Patron

Prof. Savita Roy
Principal

**PROGRAM SCHEDULE OF “SCIENCE COMMUNICATION” SDP
(5th, 12th, 19th, 26th and 28th November 2022)**

**Department of Biochemistry,
Daulat Ram College, University of Delhi**

5th November 2022			
Inauguration 10:15 AM followed by Tea			
Session	Time	Topic	Resource Person
I	11:00 AM–2:00 PM	Science Communication: Scope and Relevance	Prof. Padmshree Mudgal
II	2:15 PM–4:00 PM	Science Communication: Scope and Relevance... continued.	Prof. Padmshree Mudgal
12th November 2022			
Session	Time	Topic	Resource Person
I	10:15 AM–1:30 PM	Research Methodology	Dr. Narendra Kumar
II	2:00 PM–4:00 PM	Information source	Dr. Radhika Gupta
19th November 2022			
Session	Time	Topic	Resource Person
I	10:15 AM–12:15 PM	Ethics in Science Communication	Dr. Radhika Gupta
II	12:15 PM–2:00 PM	Citation and Referencing	Dr. Neeraj Dohare
III	2:30 PM–4:00 PM	Intellectual Property Rights (IPR)	Dr. Narendra Kumar
26th November 2022			
Session	Time	Topic	Resource Person
I	10:15 AM–1:15 PM	Tools in Science Communication	Dr. Adita Joshi
II	12:15 PM–2:00 PM	Tools in Science Communication...continued	Dr. Adita Joshi
III	2.30 PM-4:00 PM	Tools in Science verbal Communication...continued	Dr. Adita Joshi
28th November 2022			
Session	Time	Topic	Resource Person
I	9:00 AM–11:00 AM	Career in Science Communication	Dr. Adita Joshi
II	11:30 PM–1:00 PM	Career in Science Communication..continued	Dr. Adita Joshi

Convener Skill Development Program:

**Prof. Meetu Khosla
(Psychology Department)**

Course Coordinator:

**Prof. Padmshree Mudgal
(Biochemistry Department)**

Resource Persons:

**Dr. Radhika Gupta
(Asst. Professor, Biochemistry Dept.)**

**Dr. Neeraj Dohare
(Asst. Professor, Biochemistry Dept.)**

**Dr. Narendra Kumar
(Asst. Professor, Biochemistry Dept.)**

**Dr. Adita Joshi
(Director, Sansriti Foundation
Guest Speaker)**

Number of Registered Student Participants:

30 (29 students of IInd yr BSc. (Hons)
Biochemistry and 1 student of BSc.
(Hons) Botany 3rd year)

Duration of SDP:

30 hours (5 days 10am-4pm)





The SDP on **Science Communication** was inaugurated on 5th November, 2022 by Vice Principal, Prof. Sarita Nanda by Lighting of the lamp. Special guest of Honour, Prof. Rajni Sahni, IQAC convener, Daulat Ram College, and Prof. Meetu Khosla, SDP Convener graced the occasion by their presence. Prof. Sarita Nanda in her address to the student participants emphasized on the importance of Science communication and how students should make full use of the opportunity provided to them. Prof. Rajni Sahni highlighted the importance of skill based courses in enhancing employability and career enhancement. Prof. Meetu Khosla informed the students about various SDPs conducted by DRC for upgrading skill sets of students.

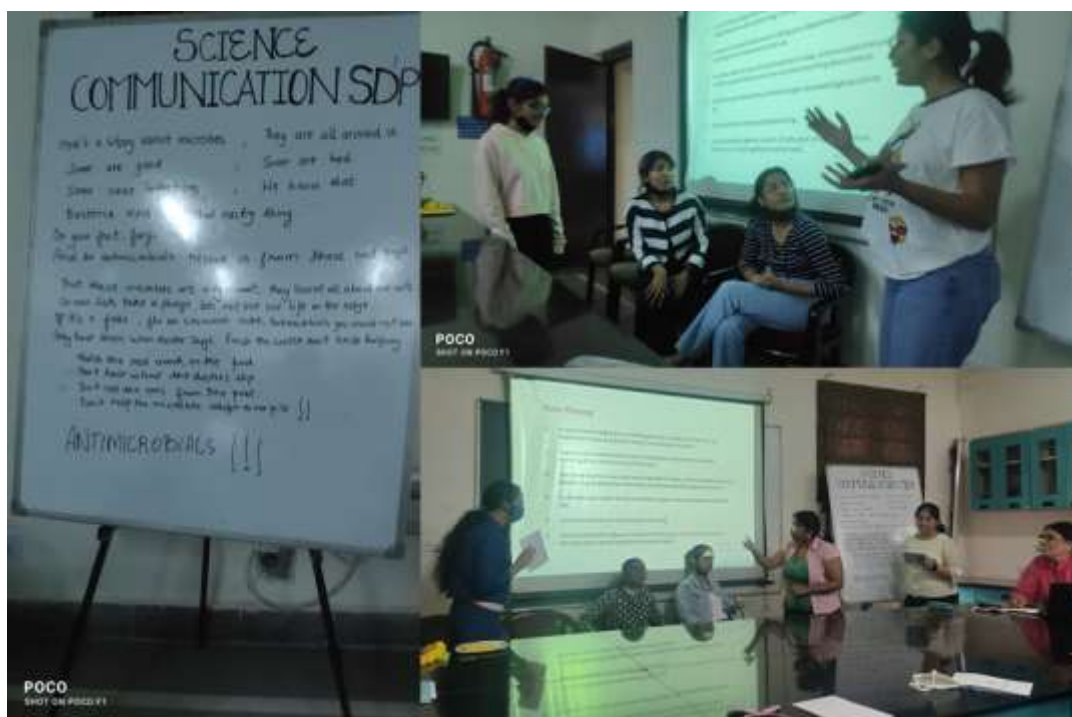
First session was taken by Prof. Padmshree Mudgal on ‘**Scope and Relevance of Science Communication**’. She talked about different modes of communication, both verbal and written. She highlighted on the importance of Science Communication. During the Covid 19 pandemic, Communication, both verbal and written was used very effectively in educating the general public about the Covid 19 virus, about strategies to prevent spread of infection and about vaccines and vaccination schedules. It is very important that general Public has to be made Science literate. They have to be informed about latest discoveries and how it impacts our lives. Science has to be communicated to policy makers to make informed policy decisions. Covid 19 vaccine development, project MOM, project Cheetah are examples of Government funded projects which were possible only because scientists were able to communicate the importance and relevance of these endeavours.

Scientific community also need to communicate to fellow scientists about their research findings for others to benefit from the new findings and take it forward.

Student Activity in Ist session: Role playing

Students were divided into groups of 5 and told to develop script and enact roles in any one of the following briefs provided:

1. A non-science dignitary is visiting your lab. Explain to him/ her an experiment you are performing / or a science concept.
2. A group of school students are visiting your department explain working of an instrument and its use.
3. You have learnt a new and exciting topic in class, communicate it to your mother / grandmother who does not know anything about science.
4. Convince your elder family members to get vaccinated against COVID-19.
5. Convince farmers to stop stubble burning.
6. You are Scientific Advisor to Govt. of India, give a brief to the Prime Minister on a recent significant science topic.



Students very enthusiastically participated in the activity. They learnt that skills are required to convey science concepts and topics to the general public.

The afternoon session on 5th Nov., Prof. Mudgal focussed on the outcomes of the activity conducted in the morning. In verbal communication it is very important to have knowledge of the target audience, their background and education level. Science verbal communication should be in a very simple and relatable language. It should be explained in contexts of their background and

in a language they understand. Play acting of Rajeshwari who enacted grandmother who was being convinced to take Covid 19 vaccine was appreciated by all.

Student Activity in IInd session: Analyze the Newspaper reports on Science Topics

Student groups were given a science newspaper report and they had to analyse it in terms of

- Ease of understanding the Topic
- Interesting or boring
- Presentation
- Gain of knowledge.



Students learnt many important points that have to be kept in mind while writing a scientific report. The Headline should be catchy and relatable to attract the audience. The audience will read an article if they think it will impact them in a certain way. Difficult words and scientific jargon puts off a reader, if they don't understand the initial few lines, they would not read it further. Activities helped the students to self-discover the important aspects of scientific writing skills.

On 12th Nov.22, in the morning session Dr. Narendra Kumar took a session on '**Research Methodologies**'.

Dr. Kumar taught the students about research design and methodology. He talked about the importance of research before writing an article. Students learned about the importance and need

of basic research and applied research. Basic or fundamental research is mainly concerned with generalizations and formulation of a theory. Research concerning human behavior, natural phenomena or relating to pure mathematics are examples of fundamental research. Applied research focuses on finding a solution for an immediate problem facing public/society or industry. Applied research aims at certain conclusions facing a concrete social or business problem is an example of applied research. Development of Corona vaccine is an example of applied research. The research design describes how the researcher will investigate the central problem of the research and is, thus part of the research proposal. Dr. Kumar taught about characteristics of a good research design.

He assigned some small research **Activity** to student on current environmental issues like Air Pollution in Delhi other topics like college canteen food and health issues etc. All the students participated in the research activities. Students made very good research hypothesis with proper research design. Students learned about the importance and need of basic research and applied research. They also learned the importance and scope of clinical research and vaccine development. Dr. Kumar explained how to implement research from laboratory bench to bedside.

Afternoon session was taken by **Dr. Radhika Gupta on Sources of Information.**

In this session students were given insight into the methods used to obtain scientific information. These included the literature survey required to build up hypothesis on any topic. Students were taught about the various kind of scientific literature and the primary and secondary sources of information. The major example of primary sources of data is original articles published in reputed journals. The secondary source of data includes review articles, where there is compilation or analysis of primary data. As an example she explained the methods used to write a chapter on 'History of CRISPR methodology'. Students were further given information about google scholar and NCBI/ PubMed and procedure to use these databases. In the NCBI database students were taught the methods to search for a topic. They were taught ways by which year wise and author wise searches can be done.

Student Activity in IVth session:

As an exercise students were asked to write a paragraph on any scientific topic by doing literature survey from PubMed. The students were divided into groups five and were given topics such as Covid vaccines, E. coli, H. pylori, Hemoglobin, Vitamin D and hypothyroidism. One set of students explained vitamin Ds role as an intracellular hormone.

On 19th Nov.22, in the morning session Dr. Radhika Gupta took a session on '**Ethics and plagiarism in science**'.

In this session students were given information about scientific misconduct and ethics. Four key concepts responsibility, accountability, liability and due diligence of ethics were explained. 6

principles of ethics scientific honesty, carefulness, Intellectual freedom, Openness, Attribution of credit, Public responsibility were also elaborated to the students.

Further students were introduced to plagiarism. Plagiarism word is inspired from greek literature where it means to kidnap. In scientific community violation of academic integrity by not acknowledging information obtained from a particular source or exactly copying someone else's work or idea or article is considered an act of plagiarism. It is a serious ethical offence and can be punishable. Students were given details regarding the kind of plagiarism and methods to prevent plagiarism. They were taught methods to check plagiarism by using online tools such as small seotools, grammarly, duplichecker and plagiarism checker.

Student Activity in IVth session:

As an exercise students, checked the paragraph they had written in sources of information session for plagiarism by using online tools. Most of the students had about 50% plagiarism in their original drafts. They were further taught methods to rephrase sentences such that plagiarism can be prevented. Finally students could obtain 100% plagiarism free scripts.



Mid morning session on 19th Nov, 2022 was taken by **Dr. Neeraj Dohare** on ‘**Citation and Referencing**’

Students were given information about principle, importance and applications of citation and referencing and the importance of bibliography in scientific communication.

Students were given the knowledge of different formats of references as well as different components of references such author information, title of book, research paper, review paper, patent etc., journal or publishers, volume, page number and ISSN.

In this session, all students learnt about the different softwares which are utilized for referencing such as Endnote, Mendeley, Zotero etc. Students were also given the knowledge for preparing reference library with the help of these software.

In end of this session all students preformed one **Activity** which was based on the identification of reference style from given examples. Another home assignment was given to students where they had to prepare a reference library from given research paper in an hands on mode.

Afternoon session on 19th Nov, 2022 was taken by **Dr Narendra Kumar** on '**Intellectual Property Rights**'.

Dr. Kumar taught and explained about Intellectual Property Rights (IPR). What are exactly intellectual property rights and why are they important?

Intellectual property is several distinct types of creations of the mind for which property rights are given in the corresponding fields of law. Examples of intellectual property include an author's copyright on a book or article, a distinctive logo design representing a soft drink company and its products, unique design elements of a web site, or a patent on the process to manufacture chewing gum etc

.First time grad students learned about IPR. Students learned about patent law and international IPR court. Dr. Kumar gave many examples of Indian traditional components patenting file and international issues like Curcumin. He also explained about the Database and their uses. In the time of internet, Database is very important Intellectual property. Dr. Kumar explained how to use the database for gene sequences. He also assigned some activities related to the IPR. For example, Activity: "Give some examples of patents and copyrights controversies in India or world?" He also explained about the Database and their uses. In the time of internet, Database is very important Intellectual property. Dr. Kumar explained how to use the database for gene sequences. He also assigned some activities related to the IPR. **For example, Activity:** "Give some examples of patents and copyrights controversies in India or world?"



On 26th Nov. sessions were taken by our Guest speaker **Dr. Adita Joshi** on ‘**Tools in Science Communication**’.

Dr. Adita Joshi was welcomed and introduced by Dr. Radhika Gupta. In the morning session she focussed on written Communication skills. The participants were told to work in a group and write bring an article of around 300 words on any science Topic.

Dr. Adita outlined the main points that should be kept in mind while writing an article. Write up should be written keeping audience in mind. Article should be well planned and should be complete in itself. The title and body should hook on the audience. Long sentences should be avoided. A clear message should be conveyed. Closure should be made with specific outcomes.

In the afternoon session Dr. Adita talked about different types of written content for example twitter, blogs, article, abstract, full feature article, small article, review etc. It is very important to keep word limit in mind. Message should be conveyed with clarity, completeness and accuracy with in the word limit. First collect and write the information, then edit.

Student Activity: Articles written by students were discussed and improved on.

On 28th Nov. **Dr. Adita Joshi** gave an overview of career opportunities in Science Communication. All scientific Institutions, Pharma, Biotech, and technology based Industry require Science Communicators to convey to the General Public, press and Government about their latest research outcomes, discoveries, drugs, or products. All Science Museums, Centers, require science Communicators. Job opportunities are available with Publishing houses, media-both visual and written, and social media.

Students can also become illustrators. Opportunities are plenty.



Feedback

Most students felt that the SDP was very well organized and they learnt a lot. They learned new skills and have got an idea about a new job scope and opportunities in the field of Sciences.

Many found all the presenters and resource persons were exceptional. Incorporating tons of activities was also really helpful, interesting and gave them more clarity of the subject.

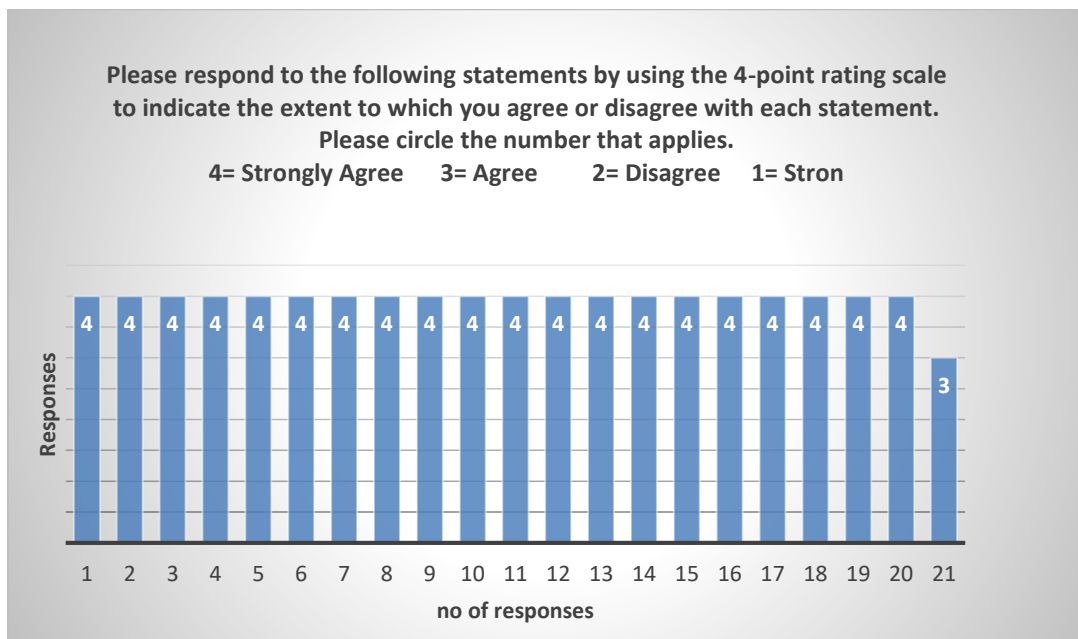
Most students felt they got to learn multiple skills besides development of their scientific communication like team work and speaking skills. Each day activities helped them to broaden their thinking from science in books to science in everyday life. Overall it was an experience that would help greatly in their future career goals.

Many students felt it would really help those who want to pursue masters and PhD in sciences. It was a knowledge enhancing workshop that made us aware about Science Communication & how can we apply it in future.

All students were extremely satisfied with the SDP and would recommend other students to attend such SDPs. 95% students felt the workshop delivered and fulfilled its objectives as promised.

4= Strongly Agree 3= Agree 2= Disagree 1= Strongly Disagree

22 responses **Question : SDP objectives were stated clearly and met**



Details of Students:

Name	Email ID	Course and semester
Mansi Singh	Mansi.singh0227@gmail.com	B.Sc(H) Biochemistry
Riya Chaubey	chaubeyriya13@gmail.com	Bsc biochemistry hons ,3rd semester
Milli Negi	milki.negi200@gmail.com	Bsc(H)-biochemistry, 3rd semester
Komal Attri	komalattri.1806@gmail.com	Bsc.(H) biochemistry 3rd semester
R Rajeshwari	21050632@dr.du.ac.in	Bsc Hons Biochemistry, 3rd semester
Niharika Singh	21187788@dr.du.ac.in	B.Sc. (Hons.) Biochemistry - 3rd Semester (2nd year)
Aditi Jha	aditijha1206@gmail.com	BSc(H). Biochemistry, 2nd Year
Anupama Kabdwal	21020776@dr.du.ac.in	Biochemistry hons 3rd sem
Divya Sharma	idivyasharma7@gmail.com	B.Sc(H)Biochemistry, 3rd Semester
Nandini Singh	21221934@dr.du.ac.in	Bsc. (Hons.) Biochemistry; Second Year
jhanvi bhati	jhanvibhati15@gmail.com	bsc hons biochemistry
Purvi	Purvibindal27@gmail.com	Bsc (hons) biochemistry 3
Rushika Budhathoki	rushikabudhathoki21@gmail.com	Biochemistry 3rd semester
Syona Agnihotri	syonaagnihotri@gmail.com	Bsc (h) Biochemistry, 3rd semester
Manvi Sharma	manvi.sharma752005@gmail.com	Bsc Biochemistry hons (3rd sem)
Reetu Rana	reeturanar@gmail.com	BSC hons biochemistry (2nd yr)
Shubhra Shekhar Tripathi	shubhratripathi004@gmail.com	B.Sc. Hons. Biochemistry, semester 3
Vanshika yadav	vanshikay854@gmail.com	Bsc biochemistry hons 3rd semester
Hargun Saini	sainihargun216@gmail.com	Biochemistry honors 2nd year
Parnika Joshi	parnikajsh25@gmail.com	Third semester; bsc. (hons.) biochemistry
Khushi Vaswani	21241612@dr.du.ac.in	BSc (Hons) Biochemistry , 3rd semester
Ananya Taneja	ananyataneja653@gmail.com	Biochemistry 2nd year
Gorika	20175534@dr.du.ac.in,	Botany (Hons) IIIyr
Ishita Yadav	ishitayadav213@gmail.com	Biochemistry 2nd year
Anhad kaur chhabra	anhadkaur68@gmail.com	Biochemistry 2 nd yr
Rakshita singh	rakshitas53@gmail.com	Biochemistry 2nd yr
Simran	simrannsingh788@gmail.com	Biochemistry 2nd yr

Vanshika raina	Rainavanshika705@gmail.com	Biochemistry 2nd yr
Ayushi Malik	ayushimalik004@gmail.com	Biochemistry 2nd yr