Lodha Genius Program: SciComm Course Planning Doc

Course Title: *Connecting Science & Society: Learning how to engage audiences with our science*

Course Summary:

The module will focus on "Connecting Science and Society" and help students effectively share and engage different audiences with their scientific ideas by imparting critical skills and competencies within science communication.

Science communication is an act of connecting people with knowledge, emotions and shared experiences within the field of science. It is both an art to be practised creatively as well as a science to be studied systematically. This module will introduce students to the fundamentals of science communication and public engagement and help them develop essential skills in communication and participatory engagement.

Using interactive approaches like discussions, games, and activities, this module will expose students to various ideas and concepts such as storytelling techniques, understanding your audiences, balancing accuracy and accessibility of scientific ideas, and ethical and asocial justice considerations of engaging different publics with science. Additionally, the module will provide dedicated space for individual feedback, informal discussions and mentorship in and around science communication, and thereby serve as a tinkering space for developing and improving scientific presentations that students are expected to produce as part of the Lodha Genius Programme.

Course Methodology:

The course will employ a series of interactive approaches, assessments and activities to engage students with the course content, including presentations, open-ended discussions, role-playing activities, zine-making, grant-writing, storyboarding and more. It will use a variety of formative and summative assignments and activities for gauging and evaluating students' understanding of science communication principles. Additionally, it will have dedicated office hours to provide ample scope for individual feedback, informal discussions and mentorship in and around science communication.

Course Logistics:

Date, Time Venue: M/W/F for the first batch and T/Th/S for the second batch, 4 to 7 pm, LGP auditorium, 17th May to 15th June 2023

Course Timeline: Three 180-minute classes per week for 1 month

Total number of hours: 9 lecture hours per week per batch + 15 min office hours during lunch
[{3 hours x 12 sessions = 36 hours} **+** {0.25 hours x 12 office hours = 3 hours}]
Maximum number of students: 40

Course Modules:

Week 1: 18th to 20th May – Introduction to Science Communication

1. Thu/Fri:
    a. 3:30 pm - Welcome (10 mins)
    b. 3:40 pm - Course + Instructor + TA Intros (20 mins)
    c. 4:00 pm - Mentimeter survey + Sharing good practices (10 mins)
    d. 4:10 pm - Course overview + objectives + Course Logistics + Office hours (10 mins)
    e. 4:20 pm - Mountain Climbing Analogy (25 mins)
    f. 4:45 pm - Break
    g. 5:15 pm - What is SciComm & Public Engagement (some definitions) (15 mins)
    h. 5:30 pm - Icebreaker activity - Sc. Pictionary (30 mins)
    i. 6:00 pm - Explain: Projects + Grading (5 mins)
    j. Allocate group projects to groups of 5 people each, to each work on a controversial scientific topic/theme, such as (10 mins):
        i. Climate change
        ii. Biodiversity/Conservation
        iii. Mental health
        iv. Gender and sexuality
        v. Genetic engineering
        vi. AI-based technologies
        vii. <feel free to add more suggestions>
    k. 6:15 pm - Make a zine (30 mins) (optional, skip if time doesn't permit)
    l. 6:45 pm - Share your rough ideas + any queries
    m. 7 pm - Disperse

2. Sat/Mon:
    a. Roles of SciComm'ers in Society (**brainstorming activity**)
    b. Group activity: Why is SciComm imp and how is it useful to students?
    c. Challenges of doing SciComm in India (?)
    d. Building a SciComm Career in India (?)
    e. Finish your zine

Week 2: 22nd to 27th May – Understanding your audiences

3. Mon/Tue:
    a. Carousel activity of listing Aims, Approaches, Audiences & Public Motivations
    b. SciComm Strategy & Fundamentals
    c. Cyclical strategy
    d.
    e.

4. Wed/Thu:
    a. Understanding your SciComm Audiences
    b. Activity: Communicate a sc. concept for three diff. audiences
    c. Exercise: Articulate audiences for your group project topic

5. Fri/Sat:

a. Evaluation & Impact Measurement
b. Reflexivity + Iterative feedback incorporation
c. Activity: Articulating answers to the following questions for their group projects:
    i. **Why** are you doing your science communication initiative/project?
    ii. **What** do you want to achieve with it?
    iii. **How** will you know if you have been successful?
    iv. **Are** your goals clear, specific and realistic?

Week 3: 29th May to 3rd June – Balancing Accuracy and Accessibility

6. Mon/Tue:
    a. Balancing Accuracy vs. Accessibility in SciComm
    b. Hooks
    c. Activity: Think of a science topic or idea that you'd like to communicate with a public audience. Think about your goals for this - is it to enterain? Educate? Inspire? Based on your goal, develop 3-5 conversation starter prompts or questions that could help you engage your audience in this topic or idea!

7. Wed/Thu:
    a. Dealing with Jargon + Using Metaphors & Analogies in SciComm

8. Fri/Sat:
    a. Exercise: Develop ways to balance A vs. A using images, metaphors, analogies for your respective group projects
    b. Time for general interactions, revision of concepts and feedback on group projects

Week 4: 5th to 10th June – Storytelling Techniques

9. Mon/Tue:
    a. Importance of Narratives for SciComm
    b. Narrative Frameworks
    c. Elements of narratives: who, what, where, when, why, how

10. Wed/Thu:
    a. Storytelling tips and techniques for SciComm
    b. Elements of storytelling: Plot; Characterization; Action; Climax / Tension; Finale/Resolution

11. Fri/Sat:
    a. Exercise: Develop a storyboard for your respective group project

Week 5: 12th to 15th June – Ethics and Social Justice via SciComm

12. Mon/Tue:
    a. Role Play Activity
    b. Ethics of doing SciComm

13. Wed/Thu:
    a. SciComm & Social Justice
    b. Exercise: Articulate ethical and social justice considerations for your respective group projects

14. Fri/Sat:
    a. Final Group Presentations for LGP

Other Ideas to Explore:

15. Why communicate your science?
16. Identify basic principles of science communication: know your audience, engaging your audience, hook, use of jargon, empathy, dialogue, purpose
17. Identify the various forms of science communication: social media, podcast, video, writing, art, etc.
18. Identify the purpose and methodology of the participants' own science communication projects
19. Recognize the evolution of science communication / History of SciComm
20. Recognize best practices in science communication
21. Recognize how science communication can be tailored for multilingual and multicultural audiences
22. Recognize that science communication is interdisciplinary
23. Apply elements of science communication and best practices in the final project
24. Feedback and mentorship during LGP for their final presentations

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Pre-course Agenda:

1. Meet TAs and plan course responsibilities:
    a. Review course structure - **all of us**
    b. Designing + implementing activities - **all of us**
    c. Developing slides and/or activity prompts - one TA leads every week and all of us give feedback - here's the Google Slide to get started: https://docs.google.com/presentation/d/1EznooqihKy-_-QEDKBZYtJuzHZXOs7Ku7EmhsPEWP_o/edit?usp=sharing
        i. Week 1 - <TA name>
        ii. Week 2 - <TA name>
        iii. Week 3 - <TA name>
        iv. Week 4 - <TA name>
        v. Week 5 - <TA name>
    d. Coordinating class logistics - done

    e. Evaluating projects - **all of us**
    f. Feedback and mentorship during lunch - SK + 1 or 2 TAs daily (if possible)
    g. …
2. Discuss course objectives & overall learning outcomes (What is the course? What are its objectives? What will you learn? What will you not learn?) - SK
3. Discuss the course structure in detail & briefly brainstorm re: the flow of concepts (clarify with Anupama) - SK
4. Refine the flow & classroom activities - **all of us**
5. Come up with grading mechanisms for the course - develop activities/projects/case studies for assignments - **all of us**
6. Do a physical recce of the course venue/room and finalise - need space for activities on the wall + space to do group work + projector for slides + table for keeping stationery & laptop - SK
7. Add resources + reading materials for each concept for TAs+students to refer to - SK
8. Miscellaneous

<u>13th May 2023:</u>

9. h

Materials needed:

1. Stationery
    a. Chart paper x 12 pieces (white)
    b. Post-It notes x 8 stacks (multiple colours)
    c. A4 sheets x 200 sheets (white)
    d. Dot stickers x 2 sheets (of different colours)
    e. Coloured Markers x 5 pieces (preferably of 5 diff. colours)
    f. Sketch pens - 4 packs
    g. GlueTac - 1 pack
    h. Board pins - 1 box

Pre/Post course feedback questions:

1. **Pre-course survey –** Assess participants' baseline understanding and confidence of key SciComm, PE and related skills and competencies:
    a. Participant demographics including ethnicity, culture & language
    b. Confidence in understanding and doing science communication
    c. Confidence in understanding and translating a wide scope of scientific knowledge
    d. Confidence in crafting a narrative
    e. Confidence in articulating and designing appropriate SC&PE interventions for appropriate audiences
    f. Confidence in understanding ethical and social justice aspects of SC&PE
    g. Confidence in evaluating science communication work

h. Confidence in seeking resources to improve science communication skills

2. **During Course Evaluations –** Throughout the workshops, use various activities & projects to help us assess participant's understanding and application of key SC&PE concepts:
    a. What did you learn from this workshop?
    b. Was it engaging?
    c. What would have added value?
    d. What did you like? What did you not like? What could have been better?

3. **Post-course survey –** Assess participants' change from the baseline survey:
    a. Confidence in understanding and doing science communication
    b. Confidence in understanding and translating a wide scope of scientific knowledge
    c. Confidence in crafting a narrative
    d. Confidence in articulating and designing appropriate SC&PE interventions for appropriate audiences
    e. Confidence in understanding ethical and social justice aspects of SC&PE
    f. Confidence in evaluating science communication work
    g. Confidence in seeking resources to improve science communication skills

4. **Post-workshop survey (3 months after) –** Assess participants' long-term change based on the previous two surveys:
    a. Confidence in understanding and doing science communication
    b. Confidence in understanding and translating a wide scope of scientific knowledge
    c. Confidence in crafting a narrative
    d. Confidence in articulating and designing appropriate SC&PE interventions for appropriate audiences
    e. Confidence in understanding ethical and social justice aspects of SC&PE
    f. Confidence in evaluating science communication work
    g. Confidence in seeking resources to improve science communication skills

Additional ideas + food for thought:

- How about showing them the science pages in newspapers that summarize new science research and ask them to write one such of their own? Mix journalism and scientific knowledge
- Debate competitions would also be nice

I'm summarising a few key updates from today's meeting (13 May 2023):

1. Group projects: We will provide a few suggested topics for students to choose from but also allow them to pick their own if a sufficient number of people are interested in a common topic. While I don't want to provide a very specific prompt, after some reflection

I do agree that we need to give them some guidance for orienting their initial thinking about the group projects. This could be something along the lines of "Design a science communication output, activity, intervention or initiative for engaging audiences with a scientific concept within any of these themes".

2. Reflexive Practice: We will ask them to formulate a plan for their resp. group projects in week 1, revise that in week 2, and finalise it in week 4. At each of these junctures, we will ask them to make a zine/doodle/mindmap of their project and ask them to reflect on the evolution of their ideas in Weeks 2 & 4.

3. From concepts to practice: The overall course will try to introduce a concept in every class, develop short activities to test and learn more about these ideas, and will be followed by the application of these concepts into their respective group projects (roughly 1 hour for each of these 3 things, but can be varied on a day-to-day basis as per convenience). Also, please feel free to take notes, park ideas, add suggestions (and critiques) and pose questions liberally on the GDoc!

4. Materials: It would be great if one of you could check the availability of the materials mentioned on Pg 5 of the GDoc. If not, I'll try to arrange these from elsewhere. This is a tentative list of materials and we might need a few more small things as we progress through the course - so finding an operational stationery shop nearby would be useful in any case.

5. Slides: For Day 1, I'll put together some slides for now. Would be great if everybody could pitch in going forward with things like activity instructions and slides for the content they might cover (more to be discussed soon).

6. Meetings: It would be best to meet every day 30-45 mins before the class to go over the plan for the day and help set up the class activities etc. And we could meet once a week for an hour to plan the next week's activities. Anyway, for now, let's meet in person on the 17th of May - could you all decide on a time that works for all of you based on your other commitments and let me know as soon as possible? Thanks!

7. Coordination: If everyone feels comfortable, it might be useful to have a Whatsapp group for quick coordination during the module. Let me know your thoughts on this and I can share a group joining link if needed.