
How to Effectively Communicate Science and Scientific Research to a Broad Audience

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*Discovery Undergraduate Research Internship Program
Interns for Indiana program – September 24, 2009*

The 3 rules for effective communication

- Rule 1: Tell the people what you are going to tell them
- Rule 2: Tell them the information
- Rule 3: Tell the people what you told them

Outline/Summary

- To be an effective communicator you must:
 - ❑ Become a professional presenter
 - ❑ Have a very clear understanding of the area
 - ❑ Believe in what you are presenting
 - ❑ Define your audience
 - ❑ Respect your audience
 - ❑ Use effective examples to demonstrate your points
 - ❑ Be factual rather than opinionated
 - ❑ Monitor the audience response

Be Professional

- If you look sloppy – the audience will feel sloppy
- If you look professional the audience will have an expectation of quality
- Don't play with toys – keys, etc
- Don't miss-use the pointer
- Don't do annoying things!
- Speak clearly
- Be confident

Know your area well

- Be sure you have a clear understanding of the topic area
- Do additional research based on your audience makeup so you are prepared for potentially difficult questions
- If appropriate, bring some support materials with you

Believe in what you are presenting

- Be on time
- Start and finish on time
- Have quality presentation materials
- Be confident in your presentation style
- Speak in a positive and projecting manner
- Smile don't scowl at your audience
- Never say
 - “I have never done this before..” or
 - “I am not really sure what to tell you...” or
 - “I don't really know much about this topic but...”

Define your Audience or “Meter” the level of the audience

- If you have a technically advanced audience, feel free to use technical terms in moderation
- If you are “talking down” use great care in your word usage to match the knowledge level and experience of your audience:
e.g.
 - Undergraduate presenting to high school
 - Graduate to an undergraduate
 - Professor to public, etc
- Don’t use abbreviations or acronyms unless you are sure the audience understand them;
 - e.g. “The AFLCIO met with the FDA at the OBER convention to deal with SSRI and ANA related to the IABME just before the AIMBE event”

Ouch.....

- The **American Federation of Labor and Congress of Industrial Organizations**, met with the **Food and Drug Administration** at the **Office of Biological and Environmental Research** convention to deal with **Secure Storage and Retrieval of Information and Active Network Abstraction** related to the **International Association of Biomedical Engineers** just before the **American Institute for Medical and Biological Engineers** event”

Jargon is often a show stopper for the public

- Even scientists from different fields often struggle with technical terms from one field to another
 - e.g. biology terms compared with those used in physics and chemistry
- If scientists struggle – imagine how hard it is for the general public!

Defining my audience



DURI | Discovery Park Undergraduate Research Internship Program

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We are now accepting applications from **Faculty and Staff** for research project descriptions through Friday, August 21, 2009.

Student applications will be accepted through Friday, September 4, 2009 at 5:00p.m.

Would you like exceptional undergraduates participating in *your* research?

What is the DURI program?

The Discovery Park Undergraduate Research Internship (DURI) program is designed to involve Purdue undergraduates in the interdisciplinary research environment of Discovery Park. The program provides opportunities for students to work with faculty affiliated with Discovery Park on cutting edge research projects that involve combining two or more disciplinary strengths. Working closely with faculty, students experience the excitement, challenge, and power of truly interdisciplinary research in the fast-paced, entrepreneurial environment that is Purdue's Discovery Park.

DURI offers 50 part-time (6-10 hours/week) student internship slots per academic semester. A list of DURI internship opportunities is available on this website and students are invited to submit the simple online application form for a maximum of five projects. Please click here to view past project descriptions.

DURI Program Highlights

- Earn 1 credit for the internship core seminar series, GS490A
- Potentially earn research credits through a project's sponsoring department
- Receive a \$500 scholarship per semester in DURI
- Take part in year-end Undergraduate Research Forum and Poster Session

Summer 2009 DURI Program

The DURI program will offer opportunities for Summer 2009. The program will provide up to 15 slots for undergraduate students to work full-time on a research project for a minimum of 400 hours of research between May 18, 2009 and August 7, 2009. Our wrap-around educational brown bag seminars will meet once a week to enhance the students' research experiences.

Selected students will earn a \$4500 scholarship, payable in three installments. The Discovery Learning Center will fund \$1500 of this amount. We ask the project coordinators to provide the remaining \$3000 through any combination of the following: research project, academic departments, college/school support, and Discovery Park centers.

DURI

- Undergraduates
- interdisciplinary research
- Earn 1 credit
- Research credits
- \$500 scholarship
- Research Forum

Interns for Indiana

- Links interns with start-up companies
- participate in a seminar series
- Develop interest and confidence in start-ups

Respect your audience

- Do not denigrate the audience or use inappropriate jokes
- Be careful about issues of race, sex and religion – they are very complicated areas
- Never argue with your audience
- Never make absolute statements on issues that are not factual

Use good illustrations

- Demonstrate your points by example
- Make sure your illustrations are well suited to your task
- Be succinct when you use illustrations
- Always make sure your illustration is clearly relevant to your point

How to deal with big challenges

- Climbing Mt. Everest is a real challenge!





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Be factual rather than opinionated

- Distinguish ideas from facts.
- Present ideas that are supported by facts
- Try to link your story with the big picture
- Try to excite the listener into defining questions of interest to them
- Encourage them to ask questions

Fact: Students with college degrees earn more money

- **“Earn More Money:** A person who goes to college usually earns more than a person who doesn't. This information is based on the U.S. Census Bureau's 2007 median earnings for full-time workers at least 25 years old. Annual earnings, based on degree, are: high school diploma, \$32,500; associate's degree, \$42,000; bachelor's degree, \$53,000; master's degree, \$63,000; and professional degrees, \$100,000+. “

Source: <http://www.collegeboard.com/student/plan/starting-points/156.html>

Monitor the Audience Response

- Are they paying attention?
- Are you facing blank faces?
- Are people responding – nodding heads, smiling, etc?
- Are they taking notes or “praying” to their Blackberries?



Image source:

http://blog.cleveland.com/nationworld_impact/2009/03/large_Blackberry-hand-Nov21-08.jpg

Some additional pointers to consider

- Communicating with public audiences is not the same as giving a lecture colleagues or students
- Keep in mind that your audience most likely will not be taking notes or underlining your handouts.
- Think and talk in themes or the big picture not minutiae
- Use active verbs & vivid nouns.

Responding to Audience Questions

- Repeat the question so that the audience all hear it – this confirms with the questioner that you are answering their questions
- Never argue with a questioner – under any circumstances
- If you disagree with an assertion, never say “*you are wrong*” etc – always answer in a diplomatic way e.g. “*You make a good point, let me give you an alternative perspective*”

Some supporting materials

- Presentation 101 for Graduate Students

- <http://www.cyto.purdue.edu/Education/index.htm>

This presentation gives a demonstration of how to give an effective seminar – in it there are many good ideas of how to be an effective communicator.

- American Association for the Advancement of Science (AAAS)

- <http://communicatingscience.aaas.org/Pages/newmain.aspx>

Concluding your presentation

- Remember to repeat what you told the audience – (this is your conclusion)
- When you have finished, always acknowledge your colleagues, friends, family or support group that allowed you to be where you are
- Finally thank the audience for their attention. (Never ask for questions) End with “Thank you very much for your attention”

Summary

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Thank you for your attention

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