

**Instruction, Curricula, and Advising Committee
Research and Graduate & Professional Education Committee
Report on: Charge: S-2301
Science Communication Efforts at Rutgers**

Spring 2024

Charge

Review efforts in science communication initiatives across the University and provide recommendations for any measures and limitations to raise awareness of the current limitations in the field of science communication across the entire Rutgers research community.

ICAC/RGEPC Subcommittee Members

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Supporting documents/links

- Slides presented to joint ICAC/RGEPC meeting <https://go.rutgers.edu/ntocdd3k>
- Link to Science Communication Initiative <https://scicomm.rutgers.edu/>
- Link to Ponzio, N. M., Alder, J., Nucci, M., Dannenfelser, D., Hilton, H., Linardopoulos, N., & Lutz, C. (2018). Learning science communication skills using improvisation, video recordings, and practice, practice, practice. *J. Microbio & Bio Ed*, 19(1), 10-1128. <https://journals.asm.org/doi/full/10.1128/jmbe.v19i1.1433>

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Background

The call for improving science communication has taken on greater emphasis in a post-COVID world where the lack of support and belief in science is blamed on failure to connect science with the public. Institutions and groups including the

- National Academy of Sciences,
- Public Communication of Science and Technology,
- American Association for the Advancement of Science,
- Welcome Trust,
- UK Office of Science and Technology Science and the Public,
- UK House of Lords,
- National Science Foundation, and
- Association of Science and Technology Center, and journals such as
- *Public Understanding of Science*
- *Science Communication*
- *Science*, and
- *Journal of Research in Science Teaching*

repeatedly address this issue through conferences, workshops, articles and special issues. Generally advocated in order to generate a scientifically literate public who can participate

in democratic processes, the issue is that few individuals learn any science after formal schooling (K-12). However, it has come to be recognized that content alone is insufficient to make a scientifically literate public, and

in a detailed examination of the knowledge necessary to interpret science in the media, content knowledge is only one of six types of knowledge necessary to critically “read” reports about science. Required as well is a knowledge of the methods of collecting data, how data is interpreted, the role of modeling in science, the role of uncertainty in science, and how science is communicated in the public domain. Thus, if science education is really to deliver on its goal of educating students to be able to make enlightened choices, it needs to broaden its conception of what aspects of scientific knowledge it should address (Baram-Tsabari & Osborne, 2015).

Therefore, incorporating science communication skills-based programs before graduating from formal education is critical to create “competent outsiders,” that is, someone who can access and use science as needed (Feinstein, Allen & Jenkins, 2013).

However, the promotion of science communication is not the responsibility solely of science programs, scientists, or science journalists. And content knowledge alone is insufficient to ensure that individuals are effective communicators. Science communication is inherently interdisciplinary and multicultural as effective science communication considers the needs/knowledge of the audience. To be effective then, what is required is formal training in science communication, not only to promote the ability of scientists to actively communicate their work to the general public as well as other scientists, but also to develop or enhance science communication skills that include the knowledge of the methods of collecting data, how data is interpreted, the role of modeling in science, the role of uncertainty in science, and how science is communicated in the public domain (Feinstein, 2011).

At Rutgers, the interest in science communication has been monitored by the Science Communication Initiative (<https://scicomm.rutgers.edu/>) an unfunded association of faculty, staff and students interested in pedagogy, training or outreach related to science communication. Founded in 2018 by Professors Nicholas Ponzio (Newark), Mary Nucci (SEBS) and William Hallman (SEBS), the Initiative has connected interested faculty across the three Rutgers campuses, developed and implemented outreach programs, connected faculty across disciplinary divides, and supported faculty and staff by providing science communication pedagogy support.

Since 2018, and accelerated after COVID, the Initiative has provided in class support pro bono to any faculty requesting science communication content. Understanding that the Initiative can no longer address all the requests for science communication support, this charge was proposed to review the barriers to incorporating science communication training into STEM and relevant STEM-related major and build upon efforts by the Rutgers Science Communication Initiative to promote science communication training, programs and outreach.

Actions

To address the charge, during late 2023 and early 2024, the ICAC and RGPEC subcommittee developed and fielded a survey to Rutgers faculty, staff and students. The survey questions (Figure 1) asked questions about interest, needs and format related to science communication efforts at Rutgers. The survey was distributed February 16, 2024 to faculty/staff and students (N=252 (71% faculty, 29% student [undergrad, grad, postdoc]) through the following listservs:

- Science Communication Initiative
- SEBS/NJAES/NB faculty/staff
- SEBS, NB students
- Senate committee chairs (for distribution) and committee members of this charge

The survey opened with the following paragraph:

At Rutgers, we define science communication as:

- the practices of communicating between scientists
- the practices of communicating between scientists and the public
- the education and training to build those skills, and,
- outreach to professional and public audiences through engaging programs and activities.

This survey is looking for your input as to what you think Rutgers should provide to ensure we are preparing our faculty, staff and students to be effective science communicators in any of these efforts.

Do you want Rutgers to provide support or training in science communication for yourself?
What needs do you personally have for science communication training at Rutgers?
How would you like to receive education or training in science communication?
Are you aware of the Science Communication Initiative?
Do you want help or support for your undergraduate students, graduate students or post docs in learning how to communicate science?
What science communication training do you want for your undergraduate students, graduate students and postdocs?
What format(s) would you prefer for science communication training for your students?
Are you aware of these examples of science communication courses offered for undergraduates and graduates at Rutgers?

Figure 1. Science communication survey questions fielded February 2024.

The subcommittee also collected data on what science communication courses are currently being taught.

Results

It is apparent that although science communication pedagogy has grown at Rutgers over the last 10 years (see <https://scicomm.rutgers.edu/academics/>), that interest in providing science communication training for students, faculty and staff continues to grow as well. However, awareness of the Science Communication Initiative (See Appendix A for all tables: Table 1), courses and events remains low among faculty and students (Tables 2,3), which is problematic given both the interest in receiving training in science communication at Rutgers among faculty (50%) and students (76%) (Table 4) and the fact that a lack of awareness means that courses, which need to be filled in order to be taught, will be cancelled due to lack of registration. And although the Science Communication Initiative was founded to promote science communication awareness and training at Rutgers, the lack of support from administration has meant that efforts have been limited to the two faculty who manage the Initiative on top of their job responsibilities.

Resolution

Be it resolved:

Given the strong interest in science communication training and pedagogy at Rutgers, the results of the ICAC and RGPEC survey, and the need to promote effective science communication pedagogy and training at Rutgers, the University Senate Recommends:

Recommendation 1

As an interdisciplinary topic for undergraduate and graduate studies (understanding science communication is critical for STEM, STEM-affiliated, and the public), we ask the University provide support for the Science Communication Initiative to serve as a centralized effort to connect and coordinate efforts across the four campuses, aligning its work with the existing scientific communication/skills training programs of the Rutgers Libraries. As the hub, the Initiative would:

- provide science communication workshops (potentially for fee) in both general issues/introduction to science communication and skill development (e.g., grant writing, poster creation/presentation);
- develop microcredential badges for students;
- develop a communication program for the Rutgers community to build awareness about opportunities for science communication training and pedagogy;
- convene a bi-yearly science communication conference series for the Rutgers community;
- work with each campus (Camden, New Brunswick, Newark) to ensure that their specific science communication needs are addressed; and
- develop educational and dissemination materials and workshops reflecting the most common languages/cultures in New Jersey and beyond.

Distributing the financial support across decanal units would lower the individual financial cost as well as ensure that the Initiative provides services across the campuses. Specifically, the graduate and professional schools also should receive funding to support science communication efforts.

Recommendation 2

That the University provides support and efforts to build out science outreach, which is a critical avenue for the public to engage with and understand science. This would include supporting existing programs (e.g., Geology Museum, Rutgers Bus and other community engagement efforts) and also develop improved processes and procedures with chancellor-led communications teams and university communications and marketing to communicate better the discoveries and achievements of Rutgers faculty and students.

Engaging with existing undergraduate and graduate courses in science communication (e.g., Writing Program, Communication Science, Communication in Science and Medicine) could provide opportunities for student internships focused on developing science communication materials in collaboration with chancellor-led communications teams and University Communications and Marketing. These same materials could also be used to advance alumni engagement efforts led by the Rutgers University Foundation.

Recommendation 3

That the University assesses and recognizes achievements, successes, and innovations in science communication activities in undergraduate and graduate education and training programs. These could be in the form of awards (recognition *and* funding) to student groups and organizations, academic programs, and to Rutgers external stakeholder partnerships. These efforts could be used as best practice examples and function as models for effective science communication within and external to the Rutgers broader community and NJ.

Member Action:

Approve of the Response as amended to Charge S-2301 as discussed during full RGPEC meeting 12/13/24:

Enrique Curchister (co-chair)
Monica Mazurek (co-chair)
Wei Dai
Mert Gurbuzbalaban
John R. Kettle III
Carol Lutz
Rebecca Risman
David Salas de la Cruz
Nanjoo Soo
Paul Takhistov
Michael Zwick

Do not approve of Response as amended: NONE

Abstain from Action: NONE

Member Action:

Approve of the Response to Charge S-2301 as discussed during full ICAC meeting
1/24/25:

- Natalie Borisovets (co-chair)
- Taryn Cooper (co-chair)
- Victoria Axelsson
- Lucio Volino
- Mary Nucci
- Debra Keates
- Mihaela Carla Caponegro
- Rochelle Andrews
- Nkechi Mbadugha
- Jennifer Oberle
- Cori Anderson

Do not approve of Response: NONE

Abstain from Action: NONE

Appendix A: Survey Results

Table 1 (Faculty/staff) Are you aware of the Science Communication Initiative?

Yes 22%
No 78%

Table 2 (Faculty/staff) Are you aware of these examples of science communication courses offered for undergraduates and graduates at Rutgers?

I am not aware of any of these minors or courses	29.48%
Rutgers-SEBS: Introduction to science communication	6.94%
School of Graduate Studies: Communicating science	6.36%
Rutgers-School of Arts and Sciences: Writing in the professions	6.36%
School of Graduate Studies: Professional science writing and communication	5.78%
Rutgers-School of Arts and Sciences: Science writing	5.78%
Rutgers-SEBS: Visualizing information: Storytelling with data	4.05%
Rutgers-SEBS: Communicating and teaching climate science	4.05%
School of Graduate Studies: Science communication in plant biology	3.47%
Rutgers-SEBS: Environmental writing: Rhetorical strategies for complex ecological issues	3.47%
School of Public Health: Health/risk communication	2.89%
Rutgers-School of Arts and Sciences: Health communication	2.89%
Rutgers-School of Arts and Sciences: Analysis of scientific literature	2.89%
Rutgers-SEBS: Environmental education	2.89%

Rutgers-SEBS: Risk, health and safety	2.31%
Rutgers-SEBS: Communicating ocean sciences to informal audiences	2.31%
Rutgers-SEBS: Nutrition communication	2.31%
Rutgers-School of Arts and Sciences: Effective communication skills in genetics	1.73%
Rutgers-Camden: Biodesign	1.16%
Rutgers-Camden: Communicating biomedical science	1.16%
Rutgers-Camden: Art and urban sustainability	1.16%
Rutgers-School of Arts and Sciences: Science and health journalism	0.58%

Table 3. (Students) Are you aware of these science communication Minors and courses offered for undergraduates and graduates at Rutgers?

I am not aware of any of these minors or courses	14.59%
Minor in Science Communication	9.01%
Minor in Creative Expression and the Environment	7.30%
Rutgers-School of Arts and Sciences: Scientific and technical writing	6.44%
School of Graduate Studies: Communicating science	6.01%
Rutgers-School of Arts and Sciences: Science writing	4.72%
Rutgers-SEBS: Introduction to science communication	4.72%
Rutgers-SEBS: Environmental education	3.86%
Rutgers-SEBS: Risk, health and safety	3.86%
Rutgers-School of Arts and Sciences: Writing for biology	3.43%
Rutgers-SEBS: Visualizing information: Storytelling with data	3.43%
Rutgers-School of Arts and Sciences: Writing in the professions	3.00%
Rutgers-SEBS: Environmental writing: Rhetorical strategies for complex ecological issues	3.00%
Rutgers-SEBS: Environment in society and mass media	2.58%
Rutgers-SEBS: Communicating and teaching climate science	2.58%
Rutgers-SEBS: Weather, climate and television	2.58%
School of Graduate Studies: Professional science writing and communication	2.15%
School of Graduate Studies: Science communication in plant biology	2.15%
School of Public Health: Health/risk communication	1.72%
Rutgers-School of Arts and Sciences: Science and health journalism	1.72%
Rutgers-School of Arts and Sciences: Health communication	1.72%
School of Graduate Studies: Communicating science and medicine	1.29%
School of Graduate Studies: Effective communication	1.29%
Rutgers-School of Arts and Sciences: Biochemical communication	1.29%
Rutgers-School of Arts and Sciences: Effective communication skills in genetics	1.29%
Rutgers-SEBS: Nutrition communication	1.29%
Rutgers-School of Arts and Sciences: Analysis of scientific literature	0.86%
Rutgers-SEBS: Communicating ocean sciences to informal audiences	0.86%
Rutgers-Camden: Biodesign	0.43%
Rutgers-Camden: Communicating biomedical science	0.43%
Rutgers-Camden: Art and urban sustainability	0.43%

Table 4. Do you want Rutgers to provide support or training in science communication for yourself?

	Yes	No
Faculty/staff	50%	50%
Students	76%	23%

Although faculty and students differ in what they want to learn (Tables 5,6), it is apparent that both groups want to enhance their ability to engage with the public on science topics.

Table 5. (Faculty/staff). What skills do you want to learn?

93%	Other*
48%	Grant writing
36%	Creating visuals for my use or to communicate my research to the public (eg., graphics, video, films)
31%	Talking to philanthropic donors about research
23%	Talking to the public
23%	Talking to journalists
23%	Talking to policymakers
23%	Using social media (blogs, Facebook, Instagram etc.)
22%	Using technology
21%	Presentation skills
21%	Writing for the public (long form: books, articles)
21%	Writing articles for peer publication

Other*

- access to a laboratory
- creating visuals, using technology, presentation skills, talking to public, talking to journalists
- Effective and impactful presentations at conferences
- Using AI
- I would like Rutgers to promote my research to journalist and media outlets
- Cross-cultural Communication
- opportunities to talk to students about intersections of science and art
- Prevent censorship of controversial views in science. Allow full debate. Listen to alt views.
- Outdoor Ed for gardens

Table 6. (Students). What skills do you want to learn?

42%	Writing for social media (blogs, Facebook, Instagram etc.)
26%	Understanding how to communicate to different audiences
22%	Presentation skills
22%	Learning to write science papers for publication
20%	Grant writing
19%	Writing science papers
19%	Writing for the public
17%	Creating visuals (eg., graphics, video, film)
16%	Using technology
3%	Other*

Other*

- How to simplify research to layman terms
- Finding opportunities for astrophysics outreach that are not tied to specific advisors

Additionally, for faculty, the survey data indicated there is interest in supporting undergraduate and graduate training in science communication (Tables 7, 8).

Table 7. (Faculty/staff) What science communication training do you want for your undergraduate students?

85%	Other*
38%	Writing for social media (blogs, Facebook, Instagram etc.)
35%	Talking to journalists or policymakers
32%	Understanding how to communicate to different audiences
22%	Presentation skills
21%	Creating visuals (eg., graphics, video, film)
20%	Using technology
20%	Writing in the discipline
19%	Framing research for different audiences

Other*

- Understanding what sci comm is and what it is not
- Number 1, teach history of science.
- Pretesting communications

Table 8. (Faculty/staff) What science communication training do you want for your graduate students and or postdocs?

82%	Other*
49%	Writing for social media (blogs, Facebook Instagram, etc.)
42%	Writing papers for peer review publications
32%	Talking to journalists or policymakers
27%	Presentation skills
27%	Writing in the discipline
24%	Understanding how to communicate to different audiences
20%	Using technology
18%	Creating visuals (eg., graphics, video, film)
14%	Framing research for different audiences

Other*

- Working collaboratively with media/communicators
- How to reach relevant audiences.
- Learning how to present their research to their grandmother so she understands it

However, when asked how faculty wanted training for students, and when students were asked how they wanted to receive training, it was apparent that both groups were interested in alternative, non-course options for developing science communication skills. (Tables 9-11).

Table 9. (Faculty/staff). How would you like to receive education or training in science communication?

92%	Other
65%	Social media
51%	Newsletter
38%	Short workshops (a few hours or few days)
32%	Small grants for pilot research or outreach development
26%	Short courses during the school year
24%	Long workshops (eg., bootcamp, over several months)
21%	Opportunities to network with others interested in science communication
20%	Short courses during the summer or winter terms
19%	Badges/microcredentialing

Other*

- articles to read
- Discussions with the public on their preferences
- Intensive Grant writing workshops with paid consultants and course releases
- Seminars
- Zoom Presentations

Table 10. (Students) How would you like to receive education or training in science communication?

92%	Other*
48%	Once a semester seminar or workshop
28%	Training added to existing courses
28%	Monthly seminar or workshop
24%	1 credit short courses
24%	Weekly seminar or workshop
21%	3 credit long courses
21%	Pass/fail courses

Other*

- Asynchronous, no credit classes
- Asynchronous training modules
- Bootcamp in summer
- Research advisors taught to train students

Table 11. (Faculty/staff) What format(s) would you prefer for science communication training for your students?

84%	Other*
46%	Badges/microcredentialing
36%	1 credit short courses
27%	3 credit semester courses
25%	Long workshop (week-long bootcamp)
24%	Training added to existing classes
24%	Short workshop (a few hours or a couple of days)

Other*

- support for faculty that are already including scicomm training & assessments in their courses
- class on how to give a seminar
- lecture/workshop with RISE summer students
- newsletter

Appendix: (Faculty) Do you have suggestions for how Rutgers should improve its communication of science to the general public?

As a Director in the Writing Program and Director of the Writing Centers, I think any workshops that could help science writers translate their research into simpler, more direct language would be excellent.
They should use the library as the main sources of our communication. They should assist faculty in creating social medial post and help us market our science results to the community and the scientific community. The library should be the center of science communication. They should have a budget to market our research in the media or social medial constantly.
Engage with primary and secondary schools around the State of New Jersey.
The survey doesn't allow for descriptions of efforts being done at the department or school / unit level. I serve as Dean of the Graduate School in Newark, and we have multiple initiatives around research communication (which includes science communication).
Stop creating jobs for more administrators!
Better PR team.
include the development of these skills in the context of the workplace
There is way too much clutter in RU communications in general. If I were to believe the emails I receive from the President, the Chancellor, the Provost, and the Dean of SAS, this place is positively teeming with support staff who are worthy of endless praise and attention for the quality of their service. The institution cannott even do a moderately good job of communicating with itself, how is it going to provide instruction in communicating with the general public whatever that is.
Stop making faculty having to work so hard to do this independently, like with do with every other thing at Rutgers. And if you truly value science communication and our research, stop treating expert faculty as customer service delivery vessels.
provide training for faculty & student volunteers, provide support (funding, printing materials, events, ...) to faculty that don't have grant funding to pay for the materials, provide a space for faculty interested in scicomm to collaborate & share resources, include scicomm in current events more than just Rutgers Day for example during campus tours we can show Waksman Museum, show the research done in each department, scicomm showcase event for students & faculty to show their scicomm projects
Use funds already allocated for PR to promote what is done at Rutgers in the fields of sciences. It is not sexy like sports PR but needs to be done (and not enough done yet).
When exciting discoveries are made (not just at Rutgers but globally) they should timely discuss importance of science and how it pays off over time , and is the only way to keep us globally competitive.
Science communication should be infused across the institution and Rutgers should support and allow creativity to appear wherever and whenever if fits the situation. A platform to share best practices and to learn from each other is important. It is also important to distinguish between marketing and science communication. Too much science communication at Rutgers is just marketing...it is so much more.

Faculty members who communicate regularly to the general public could meet with faculty who want to learn about this or get better at it and provide mentoring.
Perhaps a quarterly magazine which can be delivered to alumni & neighboring communities. I believe Engineering publishes one. Rutgers should communicate the incredible contributions of its scientists to the wider public.
Provide summer opportunities for high school students or to the public
there should be a template in your unit that you can draw from.
by training Scientists in communication skills, involving public and evaluating and adjusting the existing strategies.
Those proposing this initiative should be in better communication with the Writing Program, SCI, and SEBS
Encouragement and training for faculty, staff, and graduate students.
have a group involved meet regularly
Focus on Philanthropy
Continue to encourage faculty and students to engage with the public.
provide training and support for those who receive blowback for public statements
Build relationships and communications with community organizations including those related to specific causes or conditions, e.g. Alzheimer's Disease, climate change, etc.
Make it a regular task, not just waiting to highlight the major advances. Let the public know science goes on every day.
Better publication relations department to bring important discoveries to public attention. You have failed me.
Communicate clearly and widely about its efforts in communication of science. It's hard to suggest improvements to services about which relatively little is known, and especially not much in detail. There should be a great deal of transparency in this process. The topic and Rutgers services and resources should be unavoidable, for example, to any faculty member seeking internal or external funding.
Do more science-related activities on Rutgers Day (Rutgers Fest) at the end of April; Do tie-in activities with the Rutgers Geology Museum.
Rutgers is doing an exceptional job at communication with the general public, other research and educational institutions
I want Rutgers to hire someone to write up short summaries for the media when I publish articles. If someone is doing that already, they are not doing a good job of reaching out to faculty since I don't know who they are.
Support from trained science communication professionals to assist in outreach efforts.
Have public resource that is easily accessible on science topics in the news. For example, during COVID, there was a lot of disinformation and a Rutgers science information resource could have helped our New Jersey community. Have a clear message to avoid confusion and anger.
I teach in the humanities, but have a background in science, and teach students from the sciences. I look for ways all the time to merge science and writing, art, cultural appreciation. I think there's a lot of room at Rutgers to amplify the intersections between the sciences and the arts. That intersection is itself a form of communication, but could also be communicated more broadly/effectively.

Follow other successful models such as the Alan Alda Center for Communicating Science
Science writers who help interpret science and scientific advances for various publics (there is no such thing as the "general public")
Depends on the goal -- is it to promote research happening at Rutgers, or promote/educate in general about science?
help all of the professors with their web sites -- focusing on sections for the general public.
Write more about science done at Rutgers. At least in the news feeds of Rutgers or the School of Arts and Sciences. Currently the hard sciences are hardly featured at all
I signed up for the Speakers Bureau, but never was invited for anything. I think it needs to be better promoted.
Allow debate. No to censorship of alternative views. When debate is not permitted, it is not science. Students should be encouraged to study the history of science to learn about how consensus in science sometimes gets it wrong.
I think that science communication and respect should be instilled at all levels. It should start with Rutgers governance and administration learning to communicate with the scientists. It should continue with faculty and staff communicating across schools and within a school and with their students and postdocs. In a beloved community environment, it becomes much easier to reach out to the general public at large , congress the US senate, the various government offices industry donors, all the way to high school elementary school and kindergarten. And then back the process goes back to Rutgers governance and administration communicating with scientists in a virtuous circle. The techniques for doing this are well known, and Rutgers has the people to do it at all levels. Just as an example, the Eagleton institute, has an excellent program in place for communicating science to congress. There are many others. The benefits of science to the University and society are also very well known. Suffice to mention, the achievements of Rutgers in advancing medicine during covid or creating a basil drug resistant strain helping agriculture in NJ. The school of marine biology at Rutgers has an excellent program to communicate science. What is really needed at Rutgers in , is to create and reinforce a culture of communication at all levels. The place to start, is at the administration level, creating a climate of communication and respect between faculty working in science and the high level administration. This naturally percolates to all levels of society in the virtuous circle as described above.
In general, Rutgers could promote itself more. Maybe we need more outreach to the media about the research going on at Rutgers. The websites have improved, but we can also be more proactive to get attention.
Incentivize scientists to engage the public more
Build a science communication team in the marketing dep.
We do need more training. we ought to make it part of on-boarding and required in curricula
Networking between different departments for opportunities to collaborate and work in synergy.
Rutgers Cooperative Extension has been doing this for a very long time and can provide a wealth of experiences to contribute to this effort. I suggest that regularly releasing press releases about research activities and outcomes (including contact info for the

researchers involved) will help us 'spread the word'. We can also host more open houses on specific subjects.

Hire staff members who are responsible for science communication within departments. This would include social media management, website management, and content creation.