# Speak UP!

A Program for Teaching Communication Skills to Summer Undergraduate Researchers

About Speak UP!

In 2016, a cross-campus team, led by our Undergraduate Research Office (URO), piloted a program to teach core communication skills in a flexible, modularized way to summer research students. The **Speak UP! URO Communications Seminar** blended learning and practicing core component skills, with an emphasis on strategies for communicating complex research.

Our Question

Given **many students**, **great need**, **little time**, and **limited resources**, how might we help undergraduate researchers learn and practice **critical communication skills?**
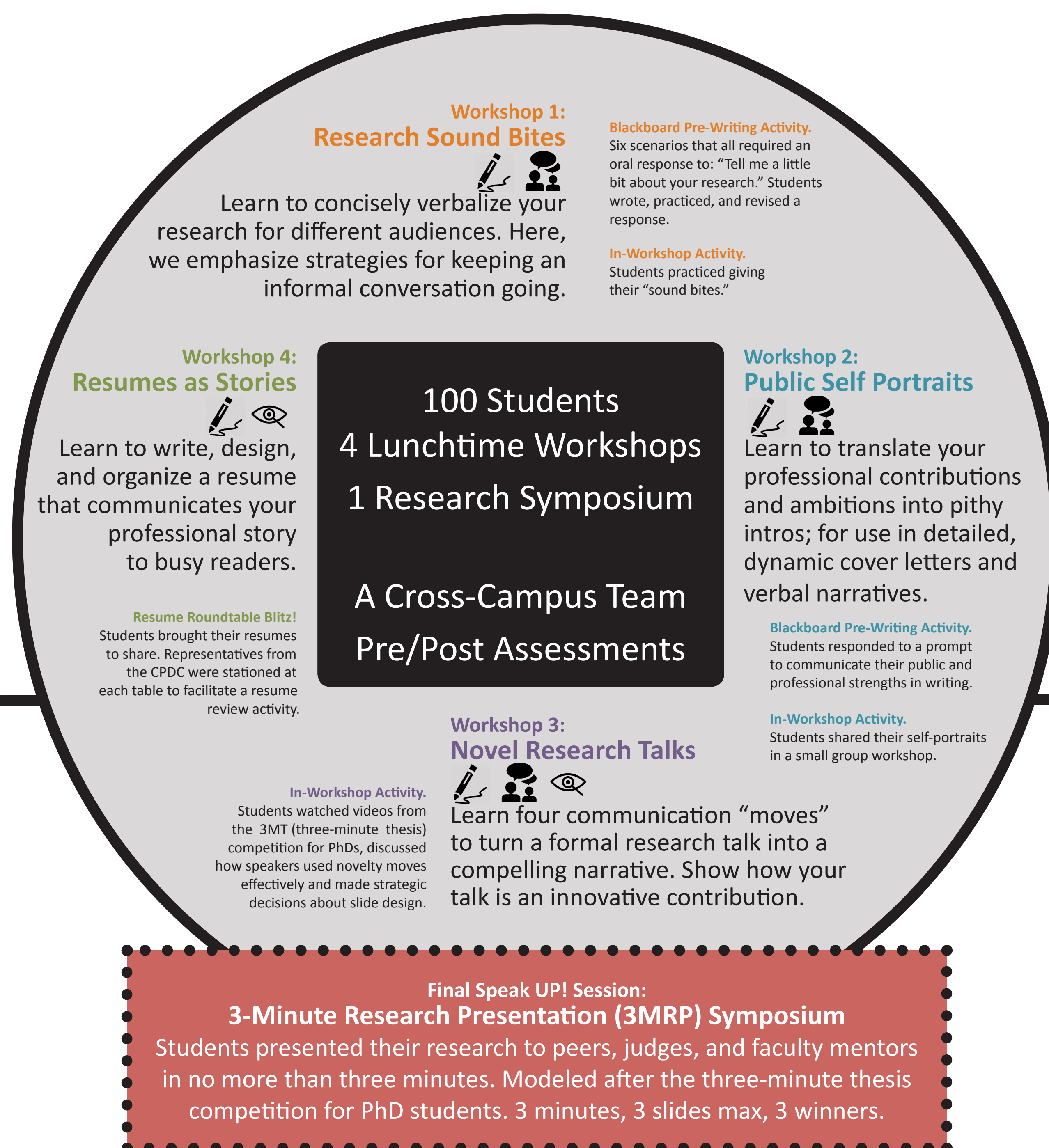
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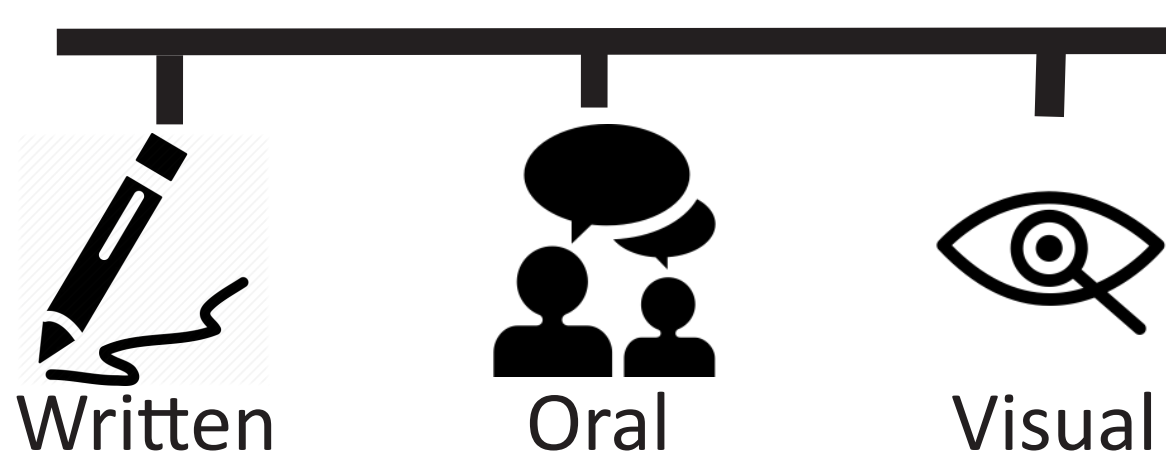
Our Team

Treci Bonime[1]
Joanna Dickert[2]
Annette Jacobson[1]
Jennifer Keating-Miller[3,6,7]
Kurt Larsen[1]
Kevin Monahan[4,7]
Nisha Shanmugaraj[5,7]
Stephanie Wallach[2]
Necia Werner[6,7]
Jen Weidenhof[2]
Joanna Wolfe[5,6]

[1] College of Engineering
[2] Undergraduate Research Office
[3] Dietrich College, Dean's Office
[4] Career & Professional Development Center
[5] Global Communication Center
[6] Department of English
[7] SpeakUP! Workshop Instructor

Carnegie Mellon University
College of Engineering

Carnegie Mellon University
Career & Professional Development Center

URO
Carnegie Mellon University
DEPARTMENT OF ENGLISH

GCC
Carnegie Mellon University
Dietrich College of Humanities and Social Sciences

Structure of the Program

We developed a series of once/week, lunchtime workshops that taught core communication skills via interactive lectures and non-evaluative (ungraded, not-for-credit), real-world activities focused on public communication of research.

Workshop 1: Research Sound Bites
Learn to concisely verbalize your research for different audiences. Here, we emphasize strategies for keeping an informal conversation going.

Blackboard Pre-Writing Activity. Six scenarios that all required an oral response to: "Tell me a little bit about your research." Students wrote, practiced, and revised a response.

In-Workshop Activity. Students practiced giving their "sound bites."

Workshop 4: Resumes as Stories
Learn to write, design, and organize a resume that communicates your professional story to busy readers.

Resume Roundtable Blitz! Students brought their resumes to share. Representatives from the CPDC were stationed at each table to facilitate a resume review activity.

100 Students
4 Lunchtime Workshops
1 Research Symposium

A Cross-Campus Team
Pre/Post Assessments

Workshop 2: Public Self Portraits
Learn to translate your professional contributions and ambitions into pithy intros; for use in detailed, dynamic cover letters and verbal narratives.

Blackboard Pre-Writing Activity. Students responded to a prompt to communicate their public and professional strengths in writing.

In-Workshop Activity. Students shared their self-portraits in a small group workshop.

Workshop 3: Novel Research Talks
Learn four communication "moves" to turn a formal research talk into a compelling narrative. Show how your talk is an innovative contribution.

In-Workshop Activity. Students watched videos from the 3MT (three-minute thesis) competition for PhDs, discussed how speakers used novelty moves effectively and made strategic decisions about slide design.

Final Speak UP! Session: 3-Minute Research Presentation (3MRP) Symposium
Students presented their research to peers, judges, and faculty mentors in no more than three minutes. Modeled after the three-minute thesis competition for PhD students. 3 minutes, 3 slides max, 3 winners.

Pre/Post Assessment Findings

We administered a pre- and post-program survey to capture students' beliefs, attitudes, and perceptions about their skills.*

Figure 2. Pre- and post-test results for students' self-assessment of **verbal skills** on Likert scale (1=strongly disagree, 5=strongly agree).

Percent at pre-survey who self-assessed at the highest level of comfort and self-confidence (5="strongly agree") **decreased** from pre- to post-, while those with more more modest levels of agreement (at least agree, 4 or 5) **increased**.

- Pre-Survey: "strongly agree" (5)
- Post-Survey: "strongly agree" (5)
- Pre-Survey: at least "agree" (4 or 5)
- Post-Survey: at least "agree" (4 or 5)

From pre- to post-, students became more modest in self-assessment of verbal skills.

Practice giving oral presentations | Comfort with public speaking | Confidence in ability to give presentations

Figure 3. Pre- and post-test results for students' self-assessment of **writing skills** on Likert scale (1=strongly disagree, 5=strongly agree).

Percent at pre-survey who self-assessed at the highest level of self-confidence (5="strongly agree") **remained stable** from pre- to post-; confidence in writing skill and belief in the strength of the resume (at least agree, 4 or 5) **increased**.

- Pre-Survey: "strongly agree" (5)
- Post-Survey: "strongly agree" (5)
- Pre-Survey: at least "agree" (4 or 5)
- Post-Survey: at least "agree" (4 or 5)

From pre- to post-, students gained more confidence in writing skills.

Expectation of strong writing skills in field | Confidence in writing skills | Belief that resume communicates strengths

Figure 4. Post-program survey question: "Which Speak Up! topics were most beneficial to you?"

Research Sound Bites 22.9% | Public Self Portraits 17.1% | Novel Research Talks 28.6% | Resumes as Storytelling 45.7% | 3MRP Symposium 77.1%

* Our IRB approvals covered SURF and CIT SURE students (n=80) working on STEM-related projects. Of those, 42.8% (n=35) completed both pre/post assessment. Chi-square analyses indicate that study respondents approximate our overall study population in terms of college, funder, and class year. However, the small sample size is a limiting factor for this set of analyses.
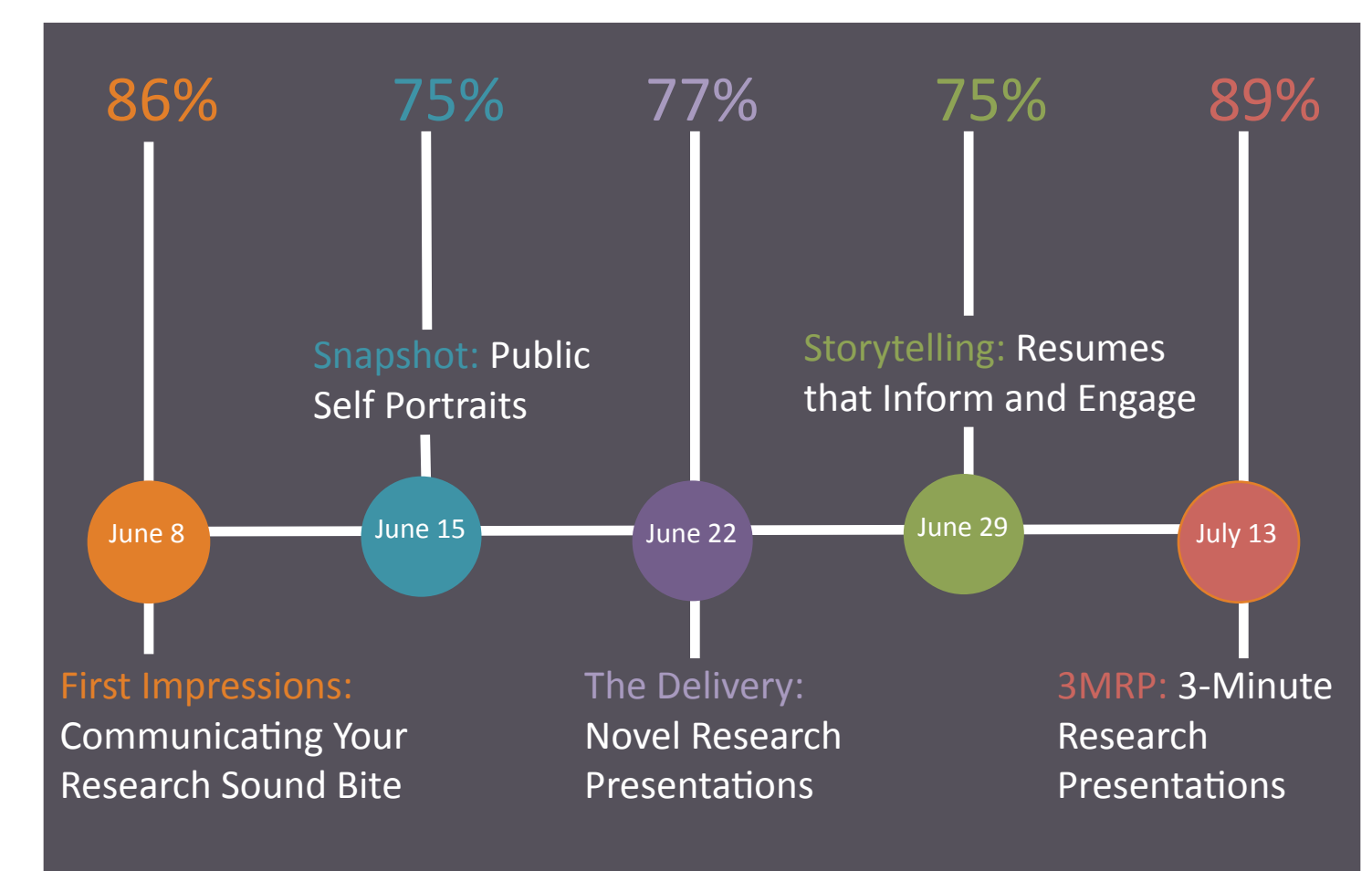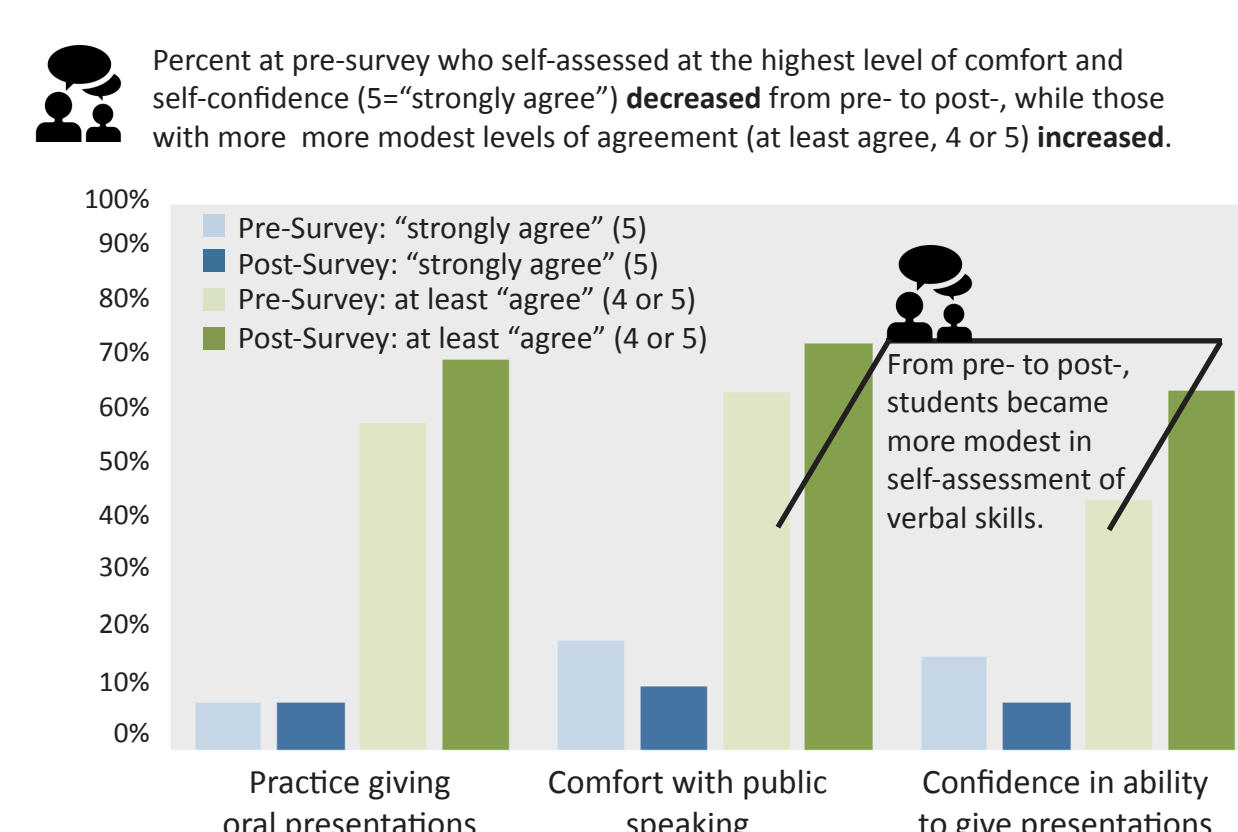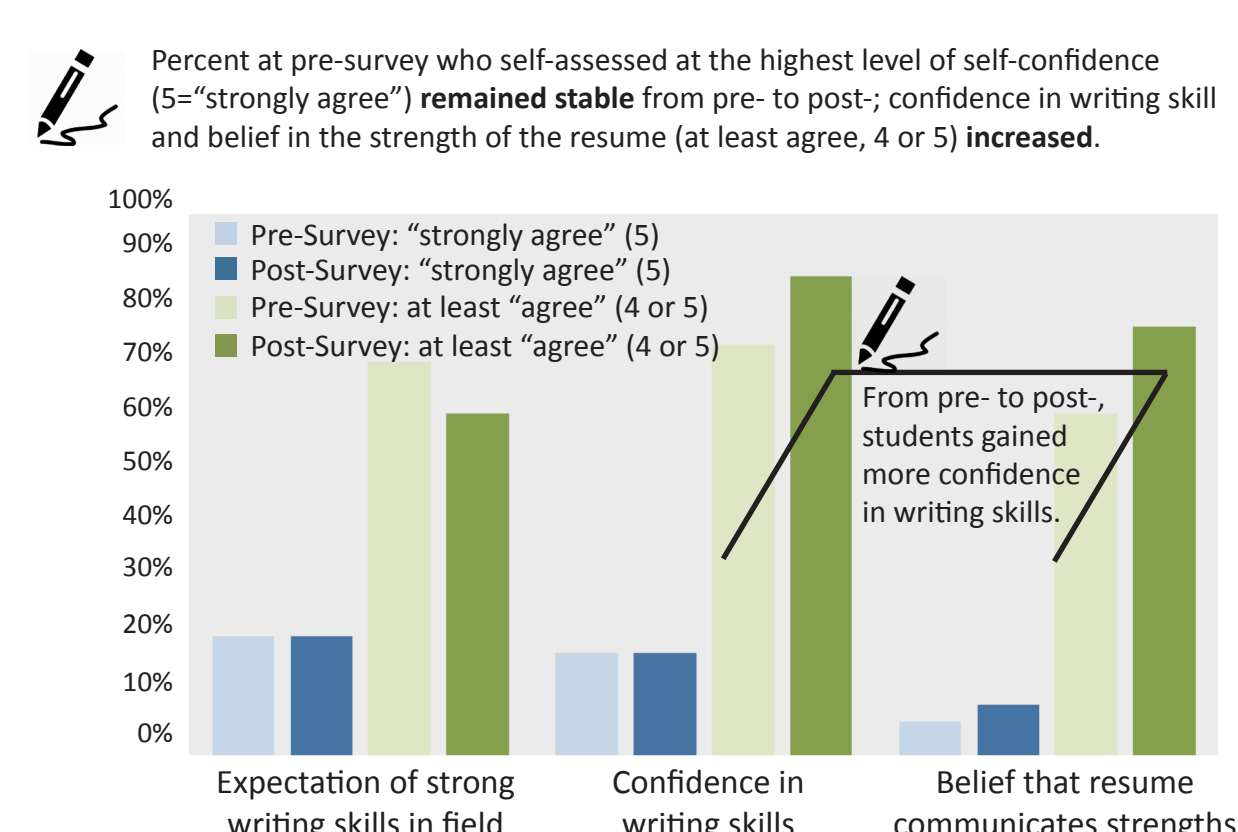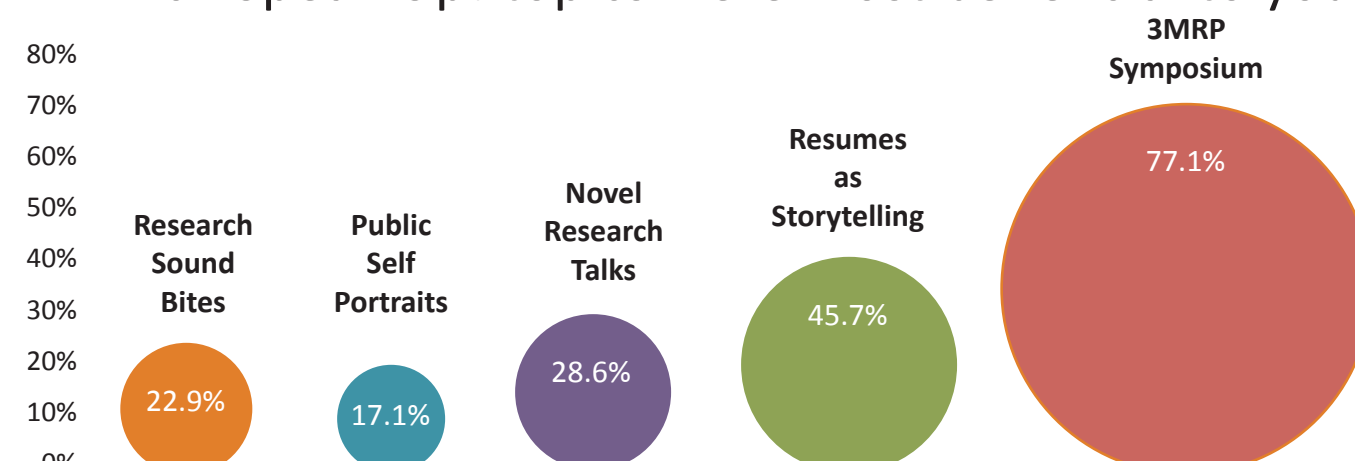
Our Students

One hundred students were invited to participate. Research funds were not contingent upon attendance, and faculty mentors helped encourage participation. See Table 1 for demographics by college, grant, and year.

Table 1. Number of student participants by category.

College	Grant Type				Year		
	SURF	CIT SURE	DC Honors	Other	Rising soph	Rising junior	Rising senior
CIT	34	8	0	3	17	12	16
CFA	2	0	0	0	0	1	1
CMU	4	0	0	0	0	3	1
Dietrich	6	0	11	1	3	3	12
MCS	28	0	0	0	5	11	12
Tepper	0	0	0	0	0	0	0
SCS	3	0	0	0	1	0	2
Total	77	8	11	4	26	30	44

Attendance fluctuated but remained high across the five events (Figure 1).

Figure 1. Percentage of the 100 students who attended each of the five Speak UP! component events.

86% | 75% | 77% | 75% | 89%

Snapshot: Public Self Portraits | Storytelling: Resumes that Inform and Engage

June 8 | June 15 | June 22 | June 29 | July 13

First Impressions: Communicating Your Research Sound Bite | **The Delivery:** Novel Research Presentations | **3MRP:** 3-Minute Research Presentations

Future Directions

What We Know Now	What We'd Try Next
Playing it Safe. Students tended to sit with friends, which meant interactive workshop activities were often done with peers in their own discipline.	Mix it UP! Random seat assignments would further our goal of giving students practice communicating with people outside their area of expertise.
Learning the Ropes. Students were learning what non-evaluative workshop participation looks like. Having CPDC facilitators for the resume blitz helped with discussion and feedback.	Stronger Together! Having facilitators stationed at each table for each of the workshops would help ensure students are getting ample direction and feedback on their activities.
Testing, Testing. This pilot focused on students who received URO funding. IRB constrained our reporting population, and some students got away at the last session before we could catch them for the post-survey assessment.	The More, The Merrier! We would be pleased to expand the program to more students engaged in summer research. We would aim to expand our IRB approvals and process to cover (and capture!) all participants.

Our Thanks!

We thank Amy Burkert and Marsha Lovett for their support, along with the faculty mentors, 3MRP judges, and CPDC staff who volunteered.