

Student Research Showdown: A Research Communication Competition

Robert V. Reichle, *The University of Texas at Austin*

Abstract

Student researchers are rarely trained to explain their work to a general audience but must do so throughout their careers. To assist undergraduate researchers in building this skill, the Student Research Showdown—a research video and presentation competition—was created at the University of Texas at Austin. Students create brief videos on which their peers vote, and the top video creators face off with presentations and are awarded prizes by a panel of judges. Students reflect on their experiential learning as they construct a narrative that disseminates their findings, communicates impact, and serves as a sharable testament to their success. Indirect measures indicate that students improve their research communication skills by participating in this event.

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Student researchers typically benefit from mentoring and support (both formal and informal) as they work in a faculty mentor's lab, slowly becoming more skilled, knowledgeable, and invested in the scholarly work at hand. But after seeing a project through to completion and presenting their findings at a major conference, they may nevertheless encounter a common pitfall: They may become so focused on the specifics of their project that they do not successfully contextualize it for a wide, non-specialist audience.

An inability to target an audience and effectively communicate research is a danger for presenters in all disciplines and at all career stages (see, e.g., Brownell, Price, and Steinman 2013). But for up-and-coming student researchers, there is a particular danger in that their ongoing training involves becoming more detailed, more precise, and more experienced in their field. Although this training can serve them well as researchers and prepare them to present to expert audiences, it can lead to tunnel vision when it comes to making their work comprehensible and palatable to a general audience. Moreover, research communication is rarely included in their training in any formal or programmatic fashion (Brownell, Price, and Steinman 2013), even though surveys of researchers and faculty mentors indicate that both groups perceive large gains in oral presentation skills over the course of research experiences (Hunter, Laursen, and Seymour 2007). Bolstering the research communication skills of undergraduate researchers influences instrumental outcomes for the individual students, such as the reception of their work by graduate admissions committees, potential employers, and other decision-makers as well as fulfillment of the demands of their future careers (Chan 2011; Gray, Emerson, and MacKay 2005). Improved research communication among undergraduates also feeds into the broader outreach goals of organizations such as the American Association for the Advancement of Science (AAAS) by fostering better comprehension of research among the lay public.

To support these outcomes and address gaps in the existing approaches to research communication training, the Office of Undergraduate Research at the University of Texas at Austin created the Texas Student Research Showdown

(n.d.), a research communication competition for undergraduate student researchers. The showdown addresses the lack of student training in research communication, providing a platform to share student work, creating multimedia content that benefits both institution and students, and recognizing outstanding student researchers.

The Elements of the Texas Student Research Showdown

Format

The showdown consists of two rounds of competition: A first-round video competition and a second-round in-person presentation. Both rounds support and test students' research communication skills in different ways.

Videos

In the first round, students create short videos to present their research to a general audience. The video format was chosen because it allows for easy sharing of content by the students and by the university via social media. Moreover, studies of creativity and new media in education suggest that creating media using similar formats (such as podcasts) can facilitate deep learning of scientific content and increase motivation on the part of the creator (e.g., Pegrum, Bartle, and Longnecker 2015).

The videos must be a maximum of two minutes and publicly accessible on YouTube. There are no restrictions on the approach to the video content. Students have produced videos with techniques as varied as whiteboard time-lapses, animations, photo montages, “talking head” explanations of their work, or combinations of approaches. Some videos are scholarly in tone, others conversational or irreverent. Ideally, they strike a balance between communicating serious ideas and approaching material in a way that attracts a lay audience.

After video submissions close, the entries proceed to a judging process. Six judges—four faculty members, a member of the community, and a representative of the student body—rank their six favorite videos. Judges are asked to take the following characteristics into consideration:

- **The hook:** Does the student capture the audience's attention and make it interested in hearing more?
- **The narrative:** Does the student tell a story of research methods or trajectory as a researcher?
- **Merit and quality:** Do the research methods suggest rigorous scholarly or creative activity?
- **Accessibility:** Is the student targeting a general, rather than expert, audience?

This rubric maps roughly onto the framework of Baram-Tsabari and Lowenstein (2013) for measuring the written communication of science, as their written communication goals include clarity (accessibility), narrative, content (merit and quality), and style (the hook).

The undergraduate student body also has a voice in the competition. Through a form, currently enrolled undergraduates can vote for their favorite videos. The student vote ensures that the top videos are successfully communicating to a general audience. At the end of the voting period, the top three students in the judges' averaged rankings, along with the three students whose videos garnered the most votes, continue to the second round of the competition.

The video competition—only the first half of the showdown—results in some immediate deliverables. Students retain the rights to their video entries, so they can use them to communicate their work to other audiences such as prospective employers, admissions committees for graduate or professional programs, and friends and family members. As a first step in sharing research findings, these videos are in some ways comparable to research posters: They tend to be more relaxed and informal than a spoken, in-person presentation; they require students to focus only on essential information and provide context for the particular research questions; and they can stand on their own when shared electronically (unlike PowerPoint slides, which can be less effective without in-person narration). The videos also have the potential to be more engaging than posters, particularly in communicating the broad outlines of a project to a general audience. At the same time, they are less effective as a way of sharing fine-grained details or data with other scholars in a particular field.

Presentations

In the second and final round, the six finalists deliver short presentations to the panel of judges and a live audience. These presentations are meant to be reminiscent of TED Talks—short (a maximum of six minutes), accessible, and limited audiovisual materials. The judges score each talk on a 10-point scale using the same rubric as the videos (hook, narrative, merit, and accessibility). The judges also have the chance to ask questions after each presentation. Judges' scores are tabulated and averaged at the event, so that winners can be announced at the conclusion of the presentations. The student presentations are recorded and posted to YouTube after the event. This format was chosen as a way for students to provide a more in-depth explanation of their work, yet still require them to adhere to length and judging constraints as well as tailor the content of their talk for a lay audience.

Rules and Awards

Submissions reflecting research and creative activity in any discipline are welcome in the competition, and the work can be in progress or completed. The research activity need not be independent; as long as the student has made a substantive intellectual contribution to the project (that is, worthy of coauthorship in a more traditional academic context), the work is eligible for inclusion. The

awards for the competition winners are made to individual students, which means that group projects are only eligible if everyone with a stake in the project agrees to enter the competition. A single student must serve as the main narrator or focal point of the video (the “student research communicator”); if the video continues to the second round, that student alone will go on to deliver the in-person presentation. Before entering the competition, all students in a group project must agree on the division of the award money (if any is received).

At the conclusion of the first round, there is an “audience choice” prize of an iPad that is awarded to the recipient of the largest number of votes. At the end of the final round, prizes of \$1,500, \$750, and \$250 are awarded to the first-, second-, and third-place winners. In the event of a tie, the cash awards are split between the two recipients.

Support

Throughout the competition, the UT Office of Undergraduate Research offers support to participants in the form of research communication workshops. Given that undergraduate research is a high-impact educational practice (Kuh 2008) and that surveyed institutions and faculty commonly indicate that oral communication is both a crucial feature and a benefit of undergraduate research (Lopatto 2003), the campus-wide office of undergraduate research is an ideal home for workshops supporting such professional development.

Each year, workshops are offered that cover various aspects of communicating research in these formats. Previous workshops have included such topics as the following:

- Producing a Short Video (the basics of Final Cut or iMovie video editing software and tips for making projects accessible to a general audience within the constraints of a short video)
- Making a Two-Minute Pitch (effectively pitching projects and ideas to garner support from audiences)
- How to Explain Your Research to Anyone (turning research into a narrative that will get attention, capture interest, and motivate audiences)
- Being Brief, Clear, and Still Feeling Like a Scientist When You’re Finished (condensing a research project into a brief talk)
- Who Knew? How to Explain Your Research to Anyone (turning research into a compelling knowledge story)

Hosts of these workshops have included faculty partners from disciplines relating to research communication (such as communication studies, rhetoric and writing, and English) and staff partners with skills related to video production and entrepreneurial pitches.

The workshops on packaging content offer variations on the theme of tailoring the communication of research

findings to the knowledge base and the needs of the audience (Weigold 2001). By framing their work in the context of a narrative—the story of the student researcher facing challenges and overcoming obstacles—students can sustain the interest of listeners who are far from being experts in their discipline. Moreover, this focus on narrative steers students toward the sort of self-reflection posited by Kolb (2014) as an important step in the experiential learning process (“reflective observation”). Paired with interpersonal discourse about their experiences, such reflection facilitates deep and transformative learning (Kilgo, Sheets, and Pascarella 2015; Wawrzynski and Baldwin 2014) while reinforcing students’ understanding that their educational experiences are not limited to the classroom. The opportunity to consciously reflect on their experience has the potential to support the experiential learning of the many students at the institution who engage in mentored research outside of a formal program and who therefore might not otherwise be overtly directed to reflect on their trajectory as a researcher.

Implementation

A campus-wide event like this requires buy-in from three groups: faculty, students, and administrators.

At the beginning of the submission period, faculty partners are contacted who work regularly with the undergraduate research office, including research mentors, associate deans for research in the academic colleges, and the faculty and staff who run honors programs and research-oriented student success initiatives across campus. Faculty are especially helpful in spreading the word to students and encouraging their more creative students (those who might be more comfortable with video production) to submit. Advertising the event through academic advisers has proven effective, as they are often in contact with students who can bring both research experience and dynamic flair to the event.

The call for submissions is promoted to all known student researchers, including those who have applied for other sources of funding or have presented their work in other on-campus venues. Due to the specialized format of the competition, there is most likely a self-selection effect at play—only students who believe they are capable of making a creative video will choose to do so. On a campus with about 40,000 undergraduates, 15, 15, and 27 submissions arrived in the first three years of the competition respectively—below the event’s expected capacity (approximately 45 students) and fewer than the 200+ submissions for more traditional sources of student research funding received each year. To increase the number of submissions, future consultations are planned with faculty who can incorporate the event into their syllabi (for example, as an assignment or for extra credit). The event format also may be adjusted (such as by eliminating

the second-round presentations to focus solely on videos). Publicizing the event and soliciting submissions require the most time for office staff; compared to a traditional poster session or symposium, the event requires less overall time and fewer staff resources to administer.

Administrative buy-in is the most straightforward way to secure funding for a competition. The majority of the funding is used to pay for the \$2,500 in student awards, whereas a smaller amount (approximately \$250) covers posters and postcards advertising the event (although most publicity is done electronically). Highlighting the idea that the contest identifies students who can become “the face of student research” at the university has been helpful in building support, as has the fact that the student-submitted videos are immediately available for sharing by the university. In the first two years of the event, support came primarily from the college that houses the undergraduate research office. Once videos and student success stories were available to share, they were used to draw the attention of outside donors, the university communications team, and the president of the university. Even if internal or external funding requests do not pan out, a competition that officially recognizes students for their research and communication achievements can still draw students, as it can lead to attractive items on student résumés, CVs, or graduate school applications.

Outcomes

Independent of monetary awards, the creation of videos allows students to share their work online with a potentially vast audience. Table 1 shows the total number of votes (limited to members of the undergraduate student body) and video views within the two-week voting period.

Once the competition concludes, links to the student videos as well as the recordings of the finalists’ presentations continue to be hosted on the showdown website, further increasing their reach. Student participants, then, can potentially present their work to a much larger and diverse audience than they would typically encounter at an academic conference.

The workshops on research communication were one of the original motivations behind the competition. However,

very few workshop attendees ultimately created videos: Of 56 workshop attendees over three years, only nine submitted video entries. In feedback, students indicated that they did not attend workshops because of scheduling conflicts, because they did not feel they needed additional help, or because they were unaware of them. Despite the low conversion rate of attendees to submitters, these workshops convey important messages and information to student researchers. Alternate routes are being explored to communicating this material to students in future years. One likely avenue is to visit class meetings of courses that pertain to research training. On other campuses, another option might be to incorporate this content into existing formal research programs.

In a post-event feedback survey of the 2017 video submitters (see Table 2), students were asked to self-assess their research communication skills before and after the showdown. Students’ research communication abilities improved as a result of the showdown: On a 5-point scale (5 = far above average), students rated their abilities before the event as 3.57 and after the event as 4.29, with a mean increase of 0.714, paired $t(6) = 3.873$, $p < 0.01$. This suggests that participation in this event does indeed improve student outcomes. This is consistent with the notion that reflection and synthesis, particularly using technology and new media (see, for example, Sandeen 2012), can facilitate deep learning and help students unpack high-impact educational practices. Students also reported equally high levels of satisfaction with the video competition as a chance to share work with others (4.71 on a 5-point scale, 5 = very satisfied) and as an opportunity for development as a research communicator (4.71). They also indicated a high degree of satisfaction with the event as a whole (4.57).

Finally, the positive experiences of the students themselves attest to the usefulness of this model. Student videos and presentations have highlighted such diverse and interdisciplinary research areas as the secondhand clothing economy in Uganda, clinical approaches to helping people who stutter, and sustainable agriculture practices that are best suited for rising global temperatures (see Table 3). Experience sharing research with a lay audience has been a boon to the student participants who have garnered other press coverage from venues ranging from university

TABLE 1. Showdown Submissions, Votes, and Video Views by Year

	2015	2016	2017
Submissions	15	15	27
Votes	1,267	1,108	1,704
Views within voting period	4,066	3,845	4,289

TABLE 2. Post-Event Assessment Survey

<p>1. How satisfied were you with the video portion of the showdown (round 1) as an opportunity:</p> <p>... to share your work with others? ... for your own development as a communicator of your research?</p> <p>Very Satisfied / Satisfied / Undecided / Dissatisfied / Very Dissatisfied</p>
<p>2. How would you describe your abilities as a communicator of research ...</p> <p>... BEFORE taking part in the showdown? ... AFTER taking part in the showdown?</p> <p>Far Above Average / Somewhat Above Average / Average / Somewhat Below Average / Far Below Average</p>
<p>3. Please rate the usefulness of the showdown workshop(s) you attended:</p> <ul style="list-style-type: none"> • How to Explain Your Research to Anyone • Making a Two-Minute Pitch • Video Creation <p>Very Useful / Useful / Neutral / A Little Useful / Not at All Useful / Did Not Attend</p>
<p>4. Please provide the reason(s) why you weren't interested in attending the above workshops.</p>
<p>5. Do you have any suggestions for how we could make it more likely for you to attend such workshops?</p>
<p>6. What was the most beneficial thing about participating in the showdown?</p>
<p>7. Overall, how satisfied were you with the Texas Student Research Showdown as a whole?</p> <p>Very Satisfied / Satisfied / Undecided / Dissatisfied / Very Dissatisfied</p>
<p>8. Any other comments or suggestions about the showdown?</p>

communications to the *New York Times*. The 2015–2017 winners' research related to such topics as end-user interfaces for 3D printing, devices for mitigating damage from oil spills, and systems for measuring the flow properties of oil drilling. Figure 1 provides a breakdown of the academic colleges represented in the video submissions.

Conclusion

The student research showdown model can easily adapt to the needs of other campuses. Aside from its many logistical advantages over more traditional poster sessions or symposia (no need for printed posters or costly poster stands, videos that can be widely disseminated online, and opportunities for research communication training), it offers a fun and novel model for the sharing of student research stories. Moreover, by encouraging students to use new formats to unpack their work in way that is more accessible to a lay audience, the event supports the synthesis and reflection that is necessary for deep learning and making the most of the high-impact practice of undergraduate research.

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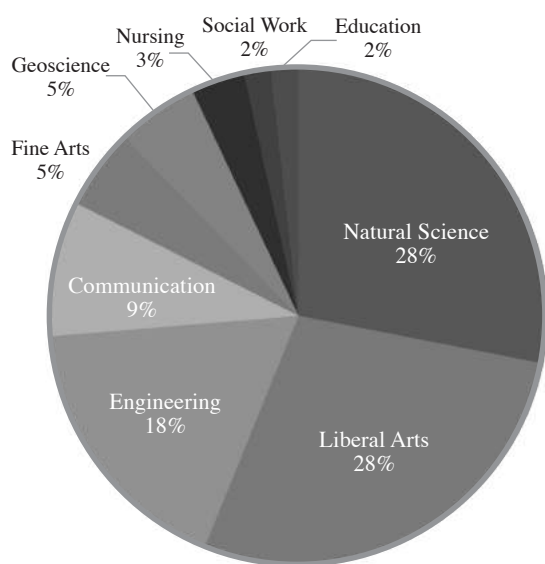
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TABLE 3. Showdown Winners

Student	Title of presentation	Award
2015		
Sanjai Bashyam	The Innovation Station: A 3D-Printing Vending Machine	1st place
Ashley C. Rivera	Discovering Meaning: Drumming and Garifuna Identity	2nd place (tie)
Tarale Murry	The Relationship between Basketball, Christianity, and Hip-Hop on the Influence of Black Male Adolescent Identity Development	
Julia Chernis	MRI: How It Works and Why It Is Safe	3rd place (tie)
Nicole Gloris	How Does the Nutritional Behavior of Texans with Multiple Sclerosis Relate to Their Quality of Life and Secondary Disabilities?	
2016		
Karan Jerath	International Oil-Spill Remediation: The Numerical Simulation of an In-Situ Subsea Separator	1st place
Julia Caswell	Benefits of Audio Walks on Student Engagement	2nd place
Joy Youwakim	Climate Change and Sustainable Agriculture	3rd place
2017		
Mitchell Johnson	Automated Drilling Fluid Property Measurement	1st place
Thomas Dougherty	Making Waves with Bluetooth	2nd place
Min Ji Son	Inheritance of EDC effects	3rd place

Note: from Showdown Archive, <https://ugs.utexas.edu/our/showdown/archive>

FIGURE 1. Showdown Submissions by Academic College, 2015–2017



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Robert V. Reichle

The University of Texas at Austin,
robert.reichle@austin.utexas.edu

Robert V. Reichle joined the School of Undergraduate Studies at the University of Texas at Austin in 2014. Prior to coordinating the Office of Undergraduate Research, he conducted research on the brain signatures of second-language processing as an assistant professor in the Department of Foreign Languages at Northern Illinois University, where he taught courses in French, psycholinguistics, and second-language acquisition.

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