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With support from the SCS Dean's
Advisory Committee Undergraduate
Research Engagement Working Group

An Interactive Workshop on Undergraduate Research Mentorship for Graduate Students

We designed and conducted a workshop to teach graduate students how to mentor undergraduate research assistants. We focused on interview-informed *information structures* that help reduce the uncertainty inherent in research.

Project Design

Over the course of the last year, we designed and piloted an interactive workshop on research mentorship strategies for graduate students based on feedback we collected from undergraduates. We determined that the key struggles faced by undergraduates were all related to the **uncertainty inherent in the research process and created three information structures to reduce this uncertainty**.

1. An individual development plan that consists of high level goals and a rough schedule made in collaboration with the student at the start
2. A research log updated weekly by the student that is reviewed at meetings.
3. A startup checklist to help students hit the ground running.

We walked graduate students through a five-step system for scoping research projects and filling out these documents. This involved sequencing projects in a way that grows in complexity and allows the mentee to build both confidence and skills.

Project Evaluation

We conducted surveys before and after our workshop and found that our training led to increased ability to answer several pertinent questions.

We asked participants the following 6 questions:

1. What are some effective ways of keeping track of how a project with an undergrad is progressing?
2. How do you know if a project is behind schedule?
3. When is the best time to solicit goals from a mentee for a collaboration?
4. What are some of the key features of a well-scoped project for an undergraduate?
5. How should one structure a sequence of projects for a mentee?
6. What are some of the basic pieces of information someone needs to assist you on the sort of research you do?

We scored answers given before and immediately after the workshop on a 0/1 rubric. While significantly more people attended the workshop, we were only able to get completed answer forms from twelve participants.

Lessons Learned

- While we did not achieve statistically significant differences across all questions, we did improve scores on the three questions with the lowest original scores. This indicates that our workshop was effective but focused on some content that participants already knew. Next time, we plan on perhaps substituting out this content for a deeper dive into how to effectively communicate / handle tough situations, a topic that was brought up by some attendees post-workshop.
- The interactive structure seemed to help with keeping folks engaged and broke up the lecture-like components into manageable chunks.
- We plan to conduct follow-up surveys with participants to judge retention and efficacy of the workshop before the next offering. We'd also like to, if possible, survey undergraduates who worked with someone who took our workshop and collect their feedback / integrate our program into some of the REU programs held by various departments.

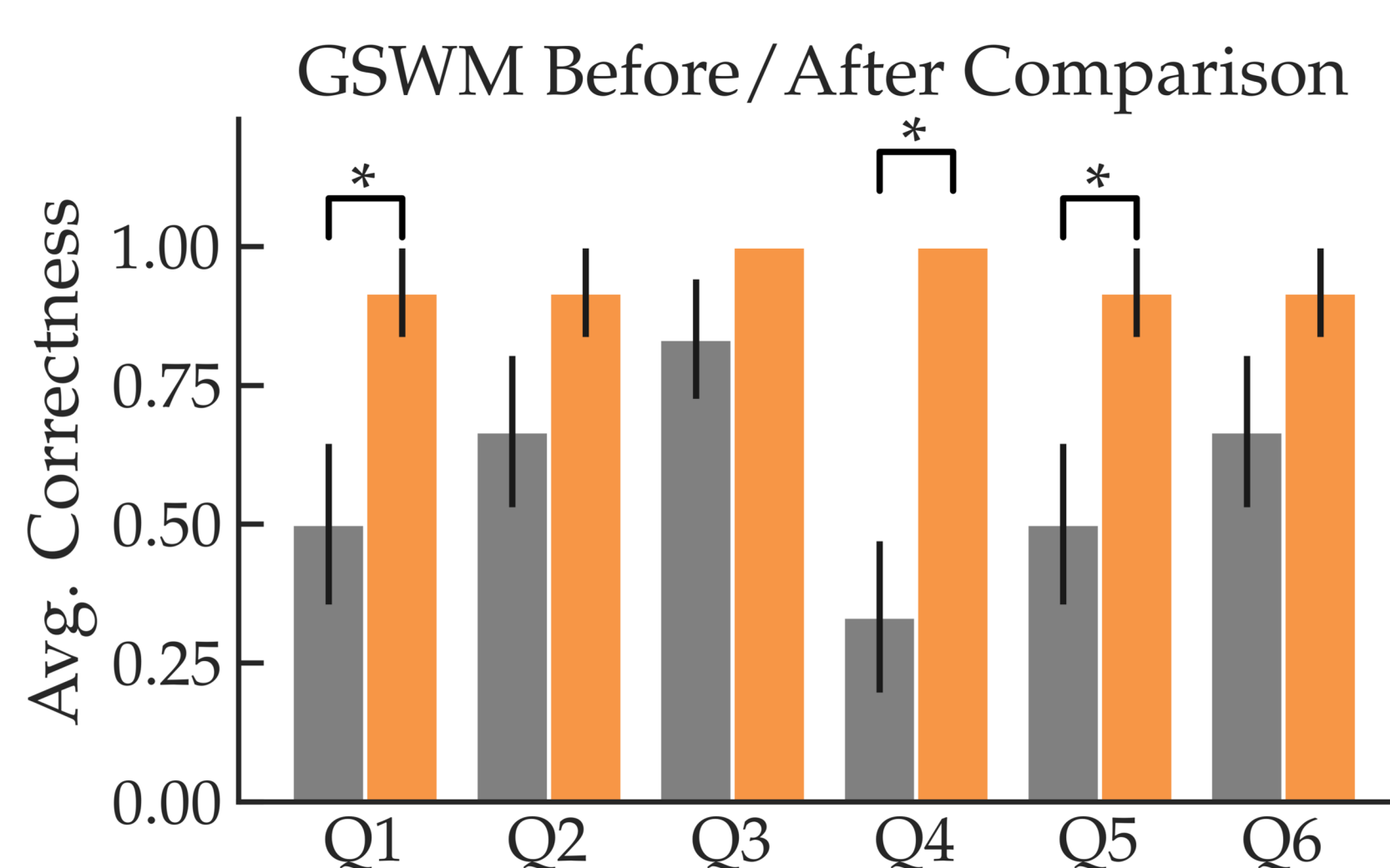
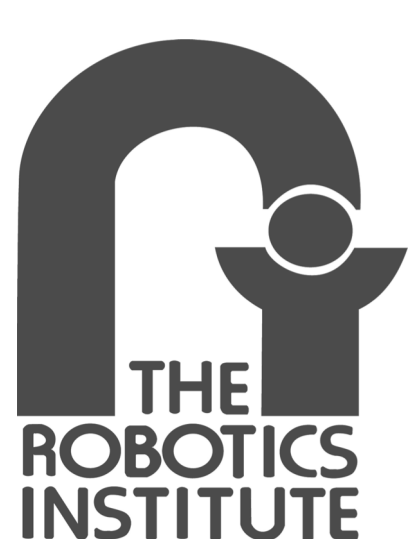


Figure 1: We see statistically significant differences in three of the questions we asked ($p < 0.05$ under a paired t-test).

Q2 Before: "If some milestones are not being met or student indicates they are running into schedule." [vague]
Q2 After: "The research log indicates difficulties or ideas that didn't work. Progress can also be checked with respect to the milestones set in the IDP." [specific, references information structures]
Q5 Before: "First understanding the undergraduate's knowledge ability, and how the sequence of projects depend on each other and cater to the student." [got dependencies point]
Q5 After: "The 5-step rule provides a logical structure for organizing projects and tasks. First, the UG can be given a "softball" task then more complex sequence of tasks (e.g., a flow chart) that they can work on." [makes explicit reference to giving the undergrad more autonomy over time]

Figure 2: We highlight some noticeable improvements in survey question responses.



Check out <https://scs-phd-deans-committee.github.io/grad-mentorship-workshop> for slides!