

Quantitative Reasoning Associates encourage

teaching and learning together

by forming a

pedagogical partnership

between a faculty member and a student and

engaging students as collaborators.

The Quantitative Reasoning Associates (QRA) program is a collaboration that connects student engagement and faculty development,¹ redefines student engagement as a partnership,² reframes the knowledge and skills of students and faculty, and creates a new role for students in academic development.³ This relationship can also “enhance disciplinary and process learning for students, inform faculty learning about teaching and about students, and shape conversations about and approaches to developing institutions of higher education, particularly—and pressingly—in relation to fostering more equitable and inclusive teaching and learning environments” (Cook-Sather, Bahti, and Ntem 2019, p.13-14).

Students are paired with an instructor in a specific course (with a quantitative component) to support student learning as serve as an additional resource. QRAs are selected through an application process by the course professor in conjunction with the QR Center Faculty Director and Associate Director. QRAs are trained to help students with the course materials in a variety of ways and the exact nature of their role is determined by the QRA and professor pair. More information on the tasks that can be assigned to QRAs is available below and on the QRA contract document.

I. Why develop a pedagogical partnership?

Research supports the benefits of pedagogical partnerships for faculty and students. Specifically, studies show that faculty:

- experience transformed thinking about and practices of teaching;
- changed understandings of learning and teaching through experiencing different viewpoints;
- and reconceptualization of learning and teaching as collaborative processes.

Students engaged in pedagogical partnerships report experiencing enhanced:

- confidence, motivation, and enthusiasm;
- engagement in the process, not just the outcomes, of learning;
- responsibility for, and ownership of, their own learning; and deepened understanding of, and contributions to, the academic community.⁴

¹ Source: Cook-Sather and Felten (2017b)

² Source: Matthews (2016)

³ Source: Felten et al. (2019)

⁴ These findings are taken from Cook-Sather, Bovill, and Felten (2014) and Cook-Sather, Bahti, and Ntem (2019). Other research also confirms these conclusions. See, for example, Curran and Millard (2016), Kaur, Awang-Hashim, and Kaur (2018), Duah and Croft (2014), and Griffiths (2018).

A summary of these findings can be found in “Outcomes of Pedagogical Partnership Work” at <https://www.centerforengagedlearning.org/books/pedagogical-partnerships/outcomes/>.

In particular, students who are traditionally underrepresented in higher education benefit from this pedagogical partnership because of the support it provides for student success, providing a sense of belonging, and increasing students’ engagement in their own academic experiences.⁵

II. Why use a QRA instead of or in addition to a TA?

Some faculty choose to use a QRA only, or a QRA and TA together (often, these can be the same individual). Here are some benefits of working with a QRA:

- *They come highly recommended.* QRAs are students who have applied and interviewed for the position and been recognized by faculty for academic achievement and peer-tutoring ability.
- *They are trained.* In the fall semester, all QRAs complete a two-day (approximately 6 hours) in-person training provided by the QR Center. QRAs receive additional training online.
- *Their training is ongoing.* QRAs meet once a month with the QR Center tutors and directors to learn new techniques, discuss the challenges they face, and share their successes.
- *They are classroom-based.* Although QRAs often also have shifts in the QR Center as tutors, they are available to work one-on-one with your class for up to 40 hours over the course of a semester.
- *They are part of a team and you are partners.* The QRAs are considered staff in the QR Center. Monthly QR staff meetings will connect your QRA with other QRAs and tutors in similar roles.

In short, a QRA will allow you to do more in your classroom with innovative pedagogy and challenging material.

III. Who should consider working with a QRA?

You may want to consider working with a QRA if you:

- teach a course with any quantitative content or a quantitative component;
- enjoy collaborating with students;
- value student-centered teaching techniques as much as or more than traditional lecture.

IV. What role can a QRA play in your course?

The QRA can:

- facilitate study groups inside or outside of class;
- hold office hours to review course material, problem sets, homework, or other quantitative assignments;
- offer exam preparation help or study sessions;
- model the collaborative strategies necessary for successful group problem-solving;
- meet with students for one-on-one conferences at the QR Center for projects or labs;
- give formative feedback on project ideas, lab reports, and other course assignments;
- help students generate specific direction for research (e.g., projects, lab design);
- attend labs or workshops and help troubleshoot;
- offer in-class, interactive mini-lessons on basic quantitative concepts (e.g., interpreting and assessing validity of data sources, introduction to excel, using a scientific calculator, computing statistics, working with data sets, calculating unit conversions, understanding the order of operations);

⁵ See Colón García (2017), Cook-Sather and Agu (2013), Cook-Sather and Felten (2017b), Cook-Sather et al. (2019), de Bie et al. (2019), Gibson et al. (2017), Cook-Sather (2018b), and de Bie et al. (2019).

- act as a resource by creating a bridge between students, the QR center, and the professor;
- attend some classes and model learning behaviors (e.g., active learning, critical analysis) or participate in a teaching mirror;
- offer feedback to the professor on the wording of assignments or course materials;
- share inside knowledge with the professor about what students are and are not learning;
- mark unambiguous, low-stakes student assignments (e.g., multiple-choice homework assignments) and they must be provided with an answer key.

*If there is a task you would like the QRA to perform that is not on this list, please contact the QR Center directors.

The QRA cannot:

- be placed in charge of your class without you present (unless meeting outside of scheduled class time);
- advise you on what grade to give a student;

V. How do you integrate a QR Associate into a course?

- *Collaborate with your QRA.* The QRA can help you to assess student learning while your course is still in progress. The QRA has insider knowledge of how students grapple with quantitative assignments and material. As such, the QRA can serve as a “change agent,” contributing to both faculty development and student learning.
- *Make the students accountable for the work they do with the QRA.* The success of the QRA depends on whether the professor communicates that the QRA is central or peripheral to the classroom learning community. There are several ways to emphasize the importance of the QRA, for example:
 - devote a paragraph in the syllabus to describing the role of the QRA and providing his/her contact information;
 - support a policy statement written by the QRA;
 - include office hour visits to the QRA in the class participation grade or as extra credit;
 - make it mandatory for students to attend a certain number of out-of-class review sessions or office hours with the QRA;
 - require students to submit a study plan after the QRA session.

VI. How can you help make the experience productive for the QRA and your students?

- Tell your students to read and respond to QRA emails.
- Add the QRA to your course Moodle page so that they can keep track of where you are in the course and any changes that are made during the semester.
- Explain to your students that the activities that occur with the QRA outside of class time are still an important part of the class. Make them accountable for attending.
- Make clear to your students how they are to prepare for study sessions or office hours with the QRA. For instance, reviewing class notes, reading the textbook, beginning problem sets, and determining questions in advance of the session.
- Reinforce with your students the boundaries of the student-QRA relationship. (For example, you may need to limit the number of times that a student can work with a QRA on an assignment.)
- Ask your QRA for feedback on classroom procedures and exercises.
- Ask your QRA for feedback on assignments.