Summative, Long-Term Evaluation Plan for the "Introduction to Research Methods" Course

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Evaluation Background and Rationale

The National Institutes of Health (NIH) Bridges to the Baccalaureate Research Training Program grant is a funding mechanism to support community college students in transitioning successfully to bachelor's degree-granting institutions in Science, Technology, Engineering, and Mathematics (STEM). The expectation is that these community college students will successfully obtain their bachelor's degrees and go on to work or pursue further graduate study in STEM. The University of New Mexico (UNM) will be the lead institution for this grant with the overarching goal of transitioning Central New Mexico Community College (CNM) and Southwestern Indian Polytechnic Institute (SIPI) students into UNM's College of Pharmacy, College of Nursing, School of Medicine, and School of Engineering. The NIH requires that the transfer students receive training before and after the transfer process to support successful transitions between institutions and a productive STEM career path. Introductory research methods should be included in the training.

I have designed a course called "Introduction to Research Methods" for Bridges Program trainees to take before they begin research projects at UNM. Furthermore, this course can be adapted to teach students basic research methods beyond the Bridges Program. Since this course is a foundational course to support the students' future research careers, it needs to be rigorously evaluated for success at meeting the following learning objectives:

> By the end of this course, a student should be able to:
>
> 1. Review sources of information in PubMed and other databases, in books, on the internet, and other relevant sources, and evaluate them for validity and appropriateness;
> 2. Create and populate a citation/reference library and configure it for research purposes;
> 3. Find journal citation guidelines and configure citations and a reference list in a manuscript according to the guidelines;
> 4. Evaluate quantitative research results; and
> 5. Record and disseminate research results and research proposals in the following forms: a laboratory notebook, an oral presentation, a poster presentation, a manuscript, and a grant/fellowship application.

Here, I will outline the Evaluation Plan to assess whether the Introductory Research Methods course is successful at meeting the learning objectives, which are intended to prepare students to begin their research projects and their research careers.

Purpose of the Evaluation

Our overarching goal is to build the students' foundations for research success, especially those in the Bridges Program who are transitioning from Albuquerque community colleges to UNM to obtain their bachelor's degrees in STEM fields. We believe strongly in this unmet need, and we are invested in demonstrating, through evaluation, that we have successfully achieved our goal. Therefore, the purpose of the evaluation is to specifically assess:

- Whether the learning objectives of the course are appropriate and being met;
- That the training environment is inclusive, supportive, and safe for optimal learning;
- Progress of trainee growth in research skills; and
- Comparisons of research success with students who do not take the basic research course.

We will use the results of the evaluation to maintain and strengthen the areas where the course is meeting its goals, and to remedy areas where it is not.

Evaluation Stakeholders

Primary Stakeholders

A primary stakeholder in this evaluation is the NIH, which will be funding the Bridges Program. The Principal Investigator and Program Director of the Bridges Program grant are primary stakeholders since they will be responsible for submitting the grant application and administering the program. Any other administrators who will oversee the day-to-day operation of the program (such as the Program Manager) are also primary stakeholders in the evaluation.

Secondary Stakeholders

The students and trainees themselves, who will progress through the Bridges Training Program and the Introductory Research Methods course, are secondary stakeholders in this evaluation. Through the Program successfully meeting its overarching and interim goals, the students will be empowered to be successful bachelor's-level graduates of UNM who can go on to successful research careers and/or further study in STEM disciplines. Additionally, the program faculty mentors who will train the students and benefit from their research efforts are secondary stakeholders in this evaluation.

Tertiary Stakeholders

Students and faculty outside of the Program, who will interact with the trainees in various ways, are tertiary stakeholders in the evaluation, as are prospective students considering joining this program. As a whole, the participating colleges, CNM, SIPI, and UNM (College of Pharmacy, College of Nursing, School of Medicine, and School of Engineering), which will provide additional support for the trainees and will receive recognition for participation in the program, are tertiary stakeholders. Finally, the scientific community at large and overall society (including taxpayers who contribute to

the ability of the government to fund this program), who will benefit from increased scientific participation and diversification of scientist demographics, are tertiary stakeholders in the evaluation.

Key Evaluation Questions

The evaluation will focus on the following key questions. These questions will address the specific requirements of the Bridges Training Program, and will rigorously assess whether the overarching goal of "bridging the gaps between Albuquerque community colleges and UNM, and increasing the number of graduates who pursue further study and careers in STEM fields" has been met:

1) What gaps in the students' research backgrounds are being addressed by this course?
2) In which ways is the course providing an environment that is inclusive, supportive, and safe for the trainees to learn research skills?
3) Which aspects of the course do the students report as successful and unsuccessful?
4) How do the students develop as STEM researchers as a result of taking the course?
5) How do students who take this course compare with student researchers who do not take this course?

Evaluation Design

The evaluation method we will use is a mixed-methods approach, allowing us to gather and assess the data needed to answer the key evaluation questions described above. We will use quantitative approaches as well as qualitative approaches. Some questions are appropriately answered by gathering quantitative data, such as the number of STEM majors and the percentage of students who go on to pursue careers in STEM fields. Other questions are appropriately answered by gathering qualitative data, such as vignettes from students describing whether they believe they gained research skills as a result of taking the Introductory Research Methods course. As described in Russ-Eft and Preskill (2009), a mixed-methods design will allow us to gather both hard numbers and grasp socio-cultural aspects of the course design. This mixed-methods approach will be accomplished by descriptive data gathering, surveys, and focus groups.

The evaluation will be primarily summative in nature. It will be used by the instructional designers and instructors of the course as a definitive gauge of its success. Additionally, the data can be used in a formative manner, to evaluate where the program is meeting its goals and mission—to maintain and strengthen those areas, to remedy areas where the goals and mission are not being met, and to make changes in real-time as necessary. The data will be gathered in a modified control group, pretest-posttest design (Russ-Eft & Preskill, 2009), wherein data will be collected before the start of the course, at the end of the course, and for up to 5 years after the course is completed to provide a longitudinal view of outcomes. The control group will consist of demographically matched students that are pursuing research studies as undergraduates but who have not taken the course, selected randomly. This modified control group, pretest-posttest design will provide a comparison between

trainees in the program and similar students who have not received the training interventions (see key evaluation question number 5). Furthermore, a longitudinal evaluation, and the ability to compare cohorts of trainees that go through the program is made possible by collecting data at repeated points before, shortly after, and years after completion of the course. For the Capstone internship, a pilot version of this evaluation will be conducted.

Records review

Descriptive data will provide key information about student enrollment in STEM majors, those that leave STEM majors, 2-year-to-4-year transfer rates, research experiences, and subsequent graduation rates. The data that will be gathered will include:

- Undergraduate enrollments numbers
- Number of undergraduates who transfer from 2-year to 4-year institutions, and after how many years
- The number of 2-year to 4-year transfer students obtaining their 4-year degree, and after how many years
- The number of undergraduates in STEM majors
- The number of undergraduates who leave STEM majors
- The number of undergraduates participating in STEM research
- Grade point averages of students
- The number of 4-year degree graduates working in STEM-related jobs
- The number of 4-year degree graduates pursuing and completing STEM-related graduate study

Enrollment, major course of study, and graduation data will be obtained from the college/university registrar's offices. Student research participation levels will be collected from departmental records of undergraduate student researchers. Being that these data will be derived from official college/university records, a validity check is not required. The enrollment, major course of study, graduation, and student researcher status data will account for every student at the participating colleges, and thus sampling concerns do not apply.

Current enrollees in the course

Students currently enrolled in the course will be given a survey before the course begins (Appendix 1), which they must complete as part of their grade in the course. The trainees will get credit for completing the survey, but they will be informed that only whether they completed the survey will be graded; the rest of the survey will be submitted anonymously, and their answers will not be connected to them individually. That way, they are more apt to be honest and forthcoming on the survey. The survey will yield a mixture of quantitative data from the close-ended questions, and qualitative data from the open-ended questions. The quantitative data will be used to compare the

students in the course with students who plan to embark on an undergraduate research project without first taking the course. The control students will receive a similar survey to the trainees, but with wording changed and certain questions eliminated to reflect that the students are not in the course. The quantitative data will also be tracked cohort-by-cohort, to show whether the program increases in effectiveness as years progress and whether different cohorts have different experiences in the program.

The qualitative data from the surveys and the focus groups (described below) will be reviewed and coded by myself, the instructional designer. I will code the responses and assess themes and outlier information. This information will be used both summatively, to demonstrate whether the course is meeting its goals and objectives, and formatively to assist myself, any other instructional designers involved in this course, and the instructors in making adjustments to improve the program in real time.

The questions in the survey will be validated by pilot-testing the questions with two students seeking graduate research degrees. The instrument may be adjusted based on the pilot study before employing it in evaluating this course.

The control-group students for this evaluation design will be selected from undergraduate student researchers who did not take this course. I will ask faculty mentors of these students to assist me in identifying the control-group students from amongst their student trainees. The number of control students will be limited by the number of volunteers who elect to take the survey within the survey timeframe. I will ask for at least 10 volunteers, and I will aim for a 50% response rate.

In addition to the survey, current students in course will participate in a focus group facilitated by a student liaison. Approximately 30 minutes of class time will be dedicated to discussing the evaluation questions (Appendix 2). The facilitator will transcribe the discussion session. Although the participants will be aware that a program facilitator will be present and taking notes during the discussion, they will be reassured that no specific responses will be used, that we are identifying overall themes to improve the program, and that the information gathered will be fully anonymous. The qualitative data that will be gathered from these focus groups will be assessed as previously described.

Finally, students' performance on in-course assessments will be used in this evaluation. Their median and mode scores will be used as a measure of whether the students achieved the learning objectives of the course. If students achieve an 80% or higher on the in-course assessments, then it will be inferred that the students achieved the learning objectives. If the scores are lower than that, the course will be adjusted to close the achievement gaps that are identified in the material.

Former students

After they complete the course, I will send annual surveys out to former students to determine whether they believe that the course prepared them for their undergraduate research project, postgraduate research study, and/or research careers (Appendix 3). I will attempt to receive responses from as many students as possible for at least 5 years after they have completed the course. The students will have two options for completing the survey: a paper version or an online version. They will receive multiple reminders to complete the survey, and the survey-completion window will be at least three months long. These measures are to encourage a high response rate (goal: 80% or more). These surveys will yield both quantitative data and qualitative data, and these two forms of data will be used similarly to the current-student data as described above.

Faculty

Faculty mentors of undergraduate researchers will be given an annual survey (Appendix 4). The faculty mentor survey will ask questions about the total number of undergraduate students they mentor; the number of students they mentor that completed the research course; their assessment of the student's success, competency, and prospects in STEM research; etc. We are aiming for a response rate of 50% of all faculty hosting undergraduates who completed the course. As with the other surveys, both qualitative and quantitative data will be obtained from the surveys. These data will also be used to answer key evaluation questions about the effectiveness of our course design and delivery, and identify potential problems from a faculty perspective.

All participants

All participants in the course—faculty, current students, and former students—will be provided a link to an online portal where they can submit comments anonymously at any time. This is a means to capture any other data that we have not anticipated but might be useful to the evaluation, and provide a means for people to provide feedback if they are not otherwise comfortable doing so via surveys or focus groups. We do not have goals for response rates until we observe this anonymous, online comment portal in action for at least one year. We will code the comments and assess themes that can be used to influence instructional design and delivery in a formative manner, or to be included in a summative evaluation of the program.

Additional validity and data usage considerations

Qualitative data that are collected from the focus groups and surveys will be validated for how well they parallel the data collected in a quantitative fashion. This will provide triangulation of the results for cross-validation. Russ-Eft and Preskill (2009) state that data triangulation may provide a more credible and holistic view of a situation. The results of the qualitative assessments will be used only within the program to improve it and provide evidence of its success at meeting the goals and objectives. Thus, our evaluation need not apply to a wider population or other course offerings. Through repeated data gathering year after year, we will acheive consistency in the findings from

cohort to cohort and can observe changes as a function of time. Since the surveys will be as anonymous as possible for student privacy, we cannot perform subject-matched analysis over time, but cohort matching can be accomplished.

All data will be collected and stored in an Excel database on my computer and backed up in Google Drive. Data will be de-identified for student privacy and password-protected.

Data Analysis

The data will be collected before the course begins, after the course, and again for at least 5 years after the student completes the course. The data will be assessed primarily by descriptive statistics. However, a comparison between training program graduates and the control group will be done by a *t*-test (or a non-parametric alternative, as appropriate) to determine whether the training program had a specific effect on academic success and career pursuits of the participants. Additionally, analyses of variance and *post-hoc t*-tests will be performed to compare data between cohorts to assess whether there are statistically significant differences between cohorts over time. Qualitative data collected from the surveys and focus group observers will be transcribed and coded to determine overall themes. If possible, the frequency of the themes will be determined and analyzed by descriptive statistics, as well as inferential statistics comparing separate cohorts of students over time, and comparing the trainees with control-group students.

We will work with a statistical consultant if needed to determine the most appropriate statistical methods for the data. We hypothesize that the Introductory Research Methods course will have a positive effect on the students in each of the key evaluation questions (see section D). The null hypothesis is that the course has no effect on the trainees in the key evaluation questions.

Each of the five key evaluation questions is probed several times across the four surveys and focus group discussions that will be administered to current students, former students, and faculty.

Constraints and Possible Solutions

The chief constraints to a successful evaluation center around non-participation of students, former students, and faculty in the various surveys or other data-gathering activities. We detail the potential constraints below and offer proactive solutions that are expected to minimize the likelihood of experiencing these constraints.

Student participation

The students may not want to complete the pre- and post-course surveys, especially if they are feeling overwhelmed by responsibilities in life and school, and potentially feeling survey fatigue from completing course evaluations multiple times throughout the year. To address this constraint, we will make survey participation a graded and mandatory course activity. Additionally, trainees may be reluctant to participate fully in the focus group discussions, causing us to not capture complete data and relevant themes. To address this concern, we will work diligently up-front to build a rapport between the students and the discussion facilitator, well before we have our evaluative discussion. We aim to build trust and a sense of psychological safety in the trainees. Additionally, we will assure the trainees that we will keep the discussion notes as anonymous as possible, and we will create and inform the trainees of a no-retaliation policy within the program to ensure them that they will not experience punishment in any way if they are critical of the course.

Former student participation

Once they complete the course, former students are not required to interact with the program in any way. However, we aim to encourage a constant connection to the course by providing follow up resources (or courses) for research preparedness and professional development. We will emphasize that completing the survey is essential to the continued success of the course and future students' success in a message (email or letter) that will accompany the survey. We will administer the survey online and have a paper-and-pen option, as per the participant's preferences. We will leave the survey open for around 3 months to allow the participants to have significant time to complete the survey, and we will send out monthly reminders to do so that will cease when the participant completes the survey.

Faculty participation

Faculty mentors are often busy and survey-adverse, creating a potential constraint to getting evaluation data from faculty. We will make the survey available between early-December and late-January annually, so that the faculty have the option to complete the survey after the end of one semester and before the beginning of the next, when faculty burden is lower. We will appeal to faculty members' sense of desire to see the institution succeed, pointing out in a note to accompany the survey that the success of the course prepares students for quality research activities, which contributes to the success of the institution, which supports their success as faculty.
By anticipating the potential constraints, and offering solutions to them, we do not expect that these constraints will be factors in executing this evaluation plan.

Plans for Evaluation Communication and Reporting

NIH, a primary stakeholder in this evaluation, requires that we prepare a written annual report on the progress of the training program. This is a summative report, intended to inform the NIH grant officials whether to continue funding this training program, and whether to approve a competitive renewal of the grant after 5 years. In this report, we will include the data about this course along with other data about the Bridges program overall. The data will be presented in a written narrative detailing the results, supported by charts, graphs, tables, or other formats for data dissemination. The information could be used by the secondary stakeholders to help them determine whether they should continue to participate in the program and perhaps recruit others to participate in the program. Tertiary stakeholders, such as the scientific and educational community at large and potential participants interested in the program, can access summarized evaluation results through peer-reviewed publications, presentations at conferences, the annual program brochure, the program's website, and social media accounts. They can use the evaluation results we present to support creating their own training programs or justify choosing to participate in our program.

Formative evaluation results will be presented primarily to staff and administrators of the course and overall Bridges program, in order to continuously improve the course in real-time. We will use the results to troubleshoot problem areas and brainstorm solutions or maintain and strengthen successful areas.

Conclusion

We believe that this evaluation plan will provide a robust evaluation of the Introduction to Research Methods course and answer the 5 key evaluation questions described in Section D. This rigorous evaluation will support the success of the Bridges Program and its participants in a sustained way for decades to come.

Reference

Russ-Eft, D. F., & Preskill, H. S. (2009). *Evaluation in organizations: A systematic approach to enhancing learning, performance, and change*. New York, NY: Basic Books.

Appendices

Appendix 1: Survey of current students (before versus after the course)

Survey question for current trainees	Key question addressed	Data analysis
Have you ever received formal training in research and/or laboratory techniques? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Are you involved in a laboratory, clinical, or population health research project currently? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Are you interested in being involved in a laboratory, clinical, or population health research project if you are not currently involved with one? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Are you interested in continuing on with a laboratory, clinical, or population health research project if you are currently involved with one? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Do you envision yourself having a career in laboratory, clinical, or population health research in the long term? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, did you feel adequately prepared to do your research before starting on the project? *Options: (1) Yes, (2) No, (3) I am unsure.*	1, 3, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, how many hours per week do you spend doing research-related activities?	4, 5	Descriptive statistics, comparison between control

Options: (1) Less than 2 hours per week, (2) 2-6 hours per week, (3) 7-12 hours per week, (4) 13-20 hours per week, (5) 21-40 hours per week, (6) More than 40 hours per week.		group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, do you feel like you spend too much, too little, or just the right amount of time doing research related activities? *Options: (1) Too much time, (2) Too little time, (3) The right amount of time, (4) I am unsure.*	3, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, do you feel you are able to balance research related activities and school work? *Options: (1) Yes, (2) No, (3) I am unsure.*	5	Descriptive statistics, comparison between control group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, do you feel you are able to balance research related activities and your personal life? *Options: (1) Yes, (2) No, (3) I am unsure, (4) Not applicable.*	3, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
If you are currently involved in a laboratory, clinical, or population health research project, do you feel you are able to balance research related activities and other employment? *Options: (1) Yes, (2) No, (3) I am unsure, (4) Not applicable.*	3, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
What are your greatest challenges, if any, in balancing school work, research-related activities, your personal life, and/or other employment? *Open-ended.*	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
What are your greatest successes, if any, in balancing school work, research-related activities, your personal life, and/or other employment? *Open-ended.*	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
What resources or information can an "Introductory Research Methods" provide to you so you can complete a research project successfully? *Open-ended.*	1, 2, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
General demographic questions, like age, ethnicity, gender identification, sexual orientation, area of residence (zip code), marital status, family considerations, etc.	5	Descriptive statistics, comparison between control

		group and trainees (t-tests)

Appendix 2: Themes to be addressed in focus groups with current students

Theme topic/question for current-trainee focus groups	**Key question it addresses**	**Data analysis**
What makes you interested in pursuing a scientific research project as an undergraduate student?	1, 4, 5	Qualitative analysis, coding responses and identifying themes
What concerns do you have about pursuing a scientific research project as an undergraduate student?	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
Are you planning on pursuing scientific research in graduate school? In professional school? Why or why not?	1, 4, 5	Qualitative analysis, coding responses and identifying themes
Are you planning on pursuing scientific research as a career? Why or why not?	1, 4, 5	Qualitative analysis, coding responses and identifying themes
Before you took this course, what did you know about basic research techniques?	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
As a result of taking this course, what do you know about basic research techniques?	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
Is there anything in this course that you feel is lacking in preparing you for (or supporting you in) a research future?	1, 2, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
Is there anything that this course did particularly well in preparing you for (or supporting you in) a research future?	1, 2, 3, 4, 5	Qualitative analysis, coding responses and

		identifying themes
Is there anything you would change about this course in order to better prepare you for (or supporting you in) a research future?	1, 2, 3, 4, 5	Qualitative analysis, coding responses and identifying themes
Do you feel more or less prepared than your peers to conduct scientific research?	1, 3, 4, 5	Qualitative analysis, coding responses and identifying themes

Appendix 3: Survey of former students

Survey question for former trainees	**Key question it addresses**	**Data analysis**
What is the current status of your career? *Options: (1) I am employed or own a business in a STEM field, (2) I am employed or own a business, but not in a STEM field, (3) I am pursuing a Master's degree in a STEM field, (4) I am pursuing a Master's degree but not in a STEM field, (5) I am pursuing a doctorate in a STEM field, (6) I am pursuing a doctorate but not in a STEM field, (7) I am not employed nor own a business, and not pursuing a degree, (8) other; please explain below.*	1, 3, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Did participation in the Introduction to Research Methods course influence your choice of career? *Options: (1) Yes, (2) Mostly yes, (3) Mostly no, (4) No*	1, 3, 4	Descriptive statistics
Did participation in the Introduction to Research Methods course have an overall positive or negative influence in your choice of career? *Options: (1) Completely positive, (2) Mostly positive, (3) Both positive and negative, (4) Mostly negative, (5) Completely negative.*	1, 2, 3, 4, 5	Descriptive statistics
If given the opportunity to do it all over again, would you choose to take the Introduction to Research Methods course? *Options: (1) Definitely yes, (2) Probably yes, (3) Ambivalent/Maybe, (4) Probably no, (5) Definitely no.*	1, 3, 4	Descriptive statistics
In retrospect, what aspects of the Introduction to Research Methods course do you think helped you the most in your career path to this point? Which aspects helped the least? *Open-ended.*	1, 2, 3, 4	Qualitative analysis, coding responses and identifying themes
General demographic questions, like age, ethnicity, gender identification, sexual orientation, area of	5	Descriptive statistics,

residence (zip code), marital status, family considerations, etc.		comparison between control group and trainees (t-tests)

Appendix 4: Survey of faculty mentors

Survey question for current faculty mentors	**Key question addressed**	**Data analysis**
How many undergraduate students do you mentor in your research group? *Numerical answer*	1, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
How many students who took the Introduction to Research Methods course do you mentor in your research group? *Numerical answer*	1, 5	Descriptive statistics
Overall, how satisfied are you with the performance of undergraduate researchers in your laboratory? *Options: (1) Very satisfied, (2) Somewhat satisfied, (3) Neither satisfied nor dissatisfied, (4) Somewhat dissatisfied, (5) Very dissatisfied.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Overall, how satisfied are you with the performance of students who took the Introduction to Research Methods course in your laboratory? *Options: (1) Very satisfied, (2) Somewhat satisfied, (3) Neither satisfied nor dissatisfied, (4) Somewhat dissatisfied, (5) Very dissatisfied.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Specifically compared to the average undergraduate research mentee, how satisfied are you with the performance of the students who took the Introduction to Research Methods course in your laboratory? *Options: (1) Very satisfied, (2) Somewhat satisfied, (3) Neither satisfied nor dissatisfied, (4) Somewhat dissatisfied, (5) Very dissatisfied.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Do you believe it is likely that most of the students who took the Introduction to Research Methods course in your research group will continue on with STEM graduate studies and/or careers after leaving your group? *Options: (1) Very likely, (2) Somewhat likely, (3) Mixed likelihood, (4) Somewhat unlikely, (5) Very unlikely.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)

Do you believe it is likely that the most of the undergraduate students in your research group will continue on with STEM graduate studies and/or careers after leaving your group? *Options: (1) Very likely, (2) Somewhat likely, (3) Mixed likelihood, (4) Somewhat unlikely, (5) Very unlikely.*	1, 4, 5	Descriptive statistics, comparison between control group and trainees (t-tests)
Have any of the students who took the Introduction to Research Methods course presented their research at national conferences, published papers in peer-reviewed journals, and/or obtained competitive research fellowships? *Options: (1) Yes, (2) No.*	1, 4	Descriptive statistics
What are the most successful aspects of the Introduction to Research Methods course? Least Successful? *Open-ended.*	1, 4, 5	Qualitative analysis, coding responses and identifying themes
General demographic questions, like age, ethnicity, gender identification, sexual orientation, area of residence (zip code), marital status, family considerations, faculty rank and years of service.	5	Descriptive statistics, comparison between control group and trainees (t-tests)