AC 2012-3934: USING PEER TEACHING OBSERVATIONS TO GIVE FEEDBACK TO GRADUATE TEACHING INSTRUCTORS

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Using Peer Teaching Observations and Feedback in a Graduate Teaching Instructors Seminar

Introduction

One of the most effective ways that students can learn is collaborating with a peer. This paper will describe a peer learning project that is the focal point for a 7-session seminar that prepares graduate teaching instructors (GTIs) to teach. “The “Seminar for Teaching Assistants in Engineering” is a required course for all graduate students who are independently teaching a recitation, lab session, or course in the College of Engineering at the Pennsylvania State University. Approximately 60 students enroll in the fall and spring semesters. During the first half of the semester the students attend one two hour class per week. Various topics, tied to three themes, “Knowing Your Students”, “Strategic Course Design” and “Teaching Practice”, are addressed during these sessions. The remainder of the semester is devoted to teaching observations. The students are required to be observed while teaching twice, once with the course instructor and once with a peer GTI who is enrolled in the course.

Initially the course consisted of one observation where the instructor observed each student. Student’s comments and suggestions in course evaluations indicated that they would like to be observed more often to have feedback on their teaching as they progressed over the course of a semester. Because it was not practical for the instructor to observe students more than one time a peer observation project was implemented. A review of the literature supported the justification for peer learning. The pilot peer observation project feedback was positive in support of peer learning. The majority of the students stated that one of the most useful parts of the course was the peer observation project. Students not only learned to improve their teaching from the advice of a peer; participating in the assignment resulted in self-reflection on their own teaching skills. The students learned that observing a peer teacher made them aware of teaching strategies and methods that work or do not work and why; and how to constructively give and receive feedback.

GTIs are coached in both giving and receiving feedback from a peer, which includes discussions on the roles of the observer and the one being observed. Students are provided with a rubric (Appendix A) for this project with the deliverable being a paper that describes the experience. Using the rubric as a guide the paper requires a detailed description of each part of the assignment, the pre-observation meeting, the observation, the post-observation meeting and a formal letter providing constructive feedback to the observed teacher on his/her performance. Assessment data was collected in the form of a pre and post perceptions of learning survey. Students’ comments on how the peer learning project had helped them to understand and recognize themselves as teachers and build self-efficacy are described in this paper, along with assessment results, course materials, the assignment rubric, and survey instruments. Challenges experienced with the project are also discussed. Individuals who are involved with teaching GITs or using peer learning in their courses will be interested in this paper.
A valuable skill for graduate teaching instructors (GTI) is to constructively give and receive feedback. To be able to do this effectively and confidently takes practice and experience in the process. The instructor of the seminar for teaching assistants in engineering recognized that peer learning and teaching would help the students in this course to become more confident and focused teachers, and concurrently hone their research skills. It is important for teachers to be confident and comfortable with not only the content, more importantly with themselves and their classroom environment. This fosters a positive climate for learning. The skills of giving feedback and collaborating with others are essential in the workforce. Why not learn these skills in the classroom and provide tasks that involve GTIs teaching their peers? A wealth of evidence exists that peer learning and teaching is effective for goals, content and students of different skills and personalities (in Johnson, D.M. et al as cited in McKeachie & Svinicki, 2006).

The seminar teaches practical skills and pedagogical theory. The graduate teaching instructors understandably, are more focused on learning the practical skills because they are concurrently teaching while they are taking this seminar. The instructor believes that to develop teaching skills which the students will do with practice and coaching, needs to be coupled with instruction on pedagogy, which the students will receive in class meetings and assignments. The Peer Observation Project encourages a positive relationship between the observer and observed peer. The peer will have a shared experience and more importantly have different perspectives. This is especially helpful for international students who have requested more opportunities for teaching observations within the context of the seminar. The incorporation of peer feedback helps students become better at identifying the qualities of each other’s good work and diagnosing their own problems in their teaching. The Peer Observation Project gives international students the opportunity to add to their presentation skills by watching a peer for non-verbal cues (eye contact, body language, and gestures), verbal signals, use of diagrams and specific examples.

Graduate Teaching Instructors have a desire to learn what it takes to be successful in the classroom. Oftentimes GTIs are given their teaching assignment a week prior to the start of a semester. They will be given the syllabus and outline for a course and some coaching by their advisor on the course content, however little or no instruction on how to deliver this content, how to teach, and pedagogical theory. In addition the GTI may not clearly understand the value of the teaching experience. Because the GTI has research responsibilities, which are a priority, he/she may look at their teaching responsibility as added chore. They may not connect teaching skills to life skills, such as presentation, coaching, giving and receiving feedback, and communication. More so, they may not see that the teaching experience may improve their methodological research skills. "The process of teaching students engaged in inquiry provides practice in the application of important research skills." Students who both teach and conduct research greatly improve their abilities to generate testable hypotheses and design valid
experiments. The GTIs in the seminar learn the value, pride and respect of being college teachers.

Course Context

The Peer Observation Project requires that students work in pairs. The objective of the assignment is that students will observe and give feedback to a peer teacher. Although the class is required for teaching assistants who are actively teaching, some students who do not have a teaching responsibility voluntarily enroll in the course. Every student in the course will observe a peer who is teaching. For the students who are not teaching, they will observe a peer teacher, and then complete a microteaching assignment that requires giving a teaching presentation to the entire class so they can then be observed by all the students collectively.

The instructor launches the Peer Observation Project assignment to the class during the second class meeting. The presentation entails a discussion on the value of being observed and being an observer. The students have a discussion about their prior knowledge of peer observations. Have they ever been involved in a peer learning assignment? What did this entail? Did they have experience giving and receiving feedback? Could they give reflective thought to this process and describe their experience to the class? These are warm up activities to get the students thinking about their role in the Peer Observation Project assignment. An important point of the observation assignment is that students understand that they are observing the performance, delivery and presentation of the teacher, not evaluating the content. The students are not expected to be content experts.

The setup of the peer groups is a test in logistics and communication for the students because they are from multi-engineering disciplines. The instructor briefly outlines the project criteria and explains the rubric which can be accessed in the course management system. All communication and submissions for the assignment are done through the drop box. The instructor elaborates on the importance of doing all the criteria for the assignment. The assignment has four parts. Once the students select a partner they inform the instructor by a drop box who is in their peer group; for example Irene and Sarah will be peer reviewers. However, because we have students who are not teaching, it is necessary for a student who is not teaching to observe a teacher. This student finds a pair who will accept him/her as a third reviewer. This student is required to observe only one of the two teachers in the pair. This all takes some organization and coordination on the part of the peer groups because the students must exchange schedules and contact information in order to set up the best time to do an observation. This is an entire out of class and independent group project. Students are responsible for coordination and process.

Students are encouraged to select a peer who is outside of their discipline. Because the participants in the class are from a variety of engineering majors, it’s not likely that a student will be observing a person from the same major. Because the class does not always have an even
number of pairs, it is sometimes necessary for students to be in a group of three teachers. If this is the case then each student must observe a different teacher. Such as, Irene observes Sarah, Sarah observes Pablo, and Pablo observes Irene. The pair/groups must be selected by the third week of the semester and the students can arrange the observations as it fits their individual schedules.

Class meetings are devoted to discussion on the value and theory of using peer learning and how to give feedback. The students are given the reading as an out of class assignment to be prepared to discuss during the third week of class. During the class meetings the students are in groups of 3 or 4. One student, as the discussion leader, summarizes the reading for the group. The group then has a 10 minute discussion on the article and notes the key points or interesting findings from the article. After the discussion, each group reports out to the class on their findings. This encourages class discussion and students can put forth any issues or concerns regarding the project. The purpose of this activity is to teach the students about peer learning theory, objectives of peer observations and the roles of the observers. The next activity done in class is a role play in giving and receiving feedback. The pairs volunteer to do this in front of the class under the coaching of the instructor.

After the initial weeks of peer learning pedagogy, the students are expected to schedule their peer observations and proceed with the assignment outside of class. There are four parts to the assignment, a pre-observation meeting, the observation, a post observation feedback meeting and a deliverable paper describing what took place in each of the first three parts. The paper is a narrative detailed description of the experience from the point of view of the observer. The paper also includes a letter directed to the teacher (the one being observed) giving positive and constructive feedback, with advice on how to observe a peer teacher. The completed papers are submitted to the assignment drop box. This project is worth 20% of the grade for the course. Students are allowed to do one revision of the paper based on feedback from the instructor. The Peer Observation Project assignment and rubric can be found in Appendix A.

Objectives of the Peer Observation Project

- To give GSIs the opportunity to be observed two times during the semester.
- To learn how to give and receive constructive feedback.
- To practice content delivery, voice projection, pace, and articulation.
- To recognize body language, non-verbals, eye contact, and student cues.
- To recognize personal delivery styles.
- To practice and develop communication and evaluation skills.
- To articulate the feedback in writing.

Method

Participants
During the Fall 2011 semester the instructor launched the current study with the first group of participant volunteers. This semester there were three sections of the course with a total of 34 students enrolled. Of the 34 students, 24 were teaching a lecture, laboratory or recitation; and 10 were non-teachers who were primarily responsible for grading, office hours and tutoring sessions. All of the students were required to do the peer observation assignment. There were six female students and 28 male students. All of the students consented to participate in the study according to the university requirements from the Office of Research Protections. Of the 34 students 23 were international students (4 female, 19 male). The international students came from a variety of countries including India, Turkey, Iran, Bangladesh, Iraq, South Korea, Ecuador, Venezuela and China. For some international students this semester was their first experience teaching in an American classroom. The students represented a mix of engineering majors, such as electrical engineering, civil engineering, environmental engineering, engineering science, aerospace, industrial engineering, chemical engineering, computer science engineering, and engineering mechanics.

The Survey Instrument

Assessment was collected in a pre-post self-efficacy peer observation survey. The students completed the pre survey before they began the peer observation project. The instructor wanted to know what prior experience the students may have had with observing and giving feedback to a peer and if these perceptions changed after the peer observation experience. Students completed the post survey after the Peer Observation Project assignment was completed and graded. In addition the students did a minute-paper in class at mid-semester. This provided the instructor with an opportunity to address issues and make just in time changes to the course. The self-efficacy pre-post items can be found in Appendices B and C.

The questions on the pre and posttest surveys targeted student’s confidence with the peer observations. The initial questions were related to gender (male-female), ethnicity (international student), engineering major, teacher or micro teacher, and prior peer observation experience. Additional questions were Likert type and open-ended. On a scale of 1-5 with 1 being strongly disagree and 5 strongly agree students were asked to rate 7 items about their confidence in observing a peer teacher, giving feedback to a peer teacher, being observed while teaching, how to use feedback for improvement, understanding the value of giving and receiving feedback, and confidence in modeling good teaching for their students.

Independent t-tests were conducted to examine whether the average rating for the items changed from the pre-survey to the post-survey. None of the differences in item means were found to be significantly different from the pre-survey to the post-survey. The small sample sizes result in limited power to detect differences from the pre-survey to the post-survey. Because the survey was anonymous and did not have identifiers, a paired t-test could not be conducted. Therefore, an independent t-test was used, treating the pre-survey and the post-survey data as independent groups. Future administrations of the survey will ask participants to provide an identifier so that
a paired t-test could be used. The descriptive statistics for these items can be found in Appendix B (pretest) and Appendix C (posttest).

For pre-test open ended questions the students had these comments: (38 students completed the survey)

When asked “what do you think you will learn about yourself from being observed by a peer teacher?” (Figure 1), students said that “the observer would find problems that I would neglect”; “feedback helped to improve my presentation skills”; “helped recognize my strengths and weakness in teaching”; and I will learn how someone will critique me. When asked, “What do you think you will learn about yourself from observing a peer teacher?” (Figure 2) a student commented, “Things that I cannot see for myself. We sometimes have the idea that we know ourselves pretty well and we have an image that we could be doing things right and sometimes we are mistaken.” The word clouds below are a visualization of the frequency key points of two question items from the pre-post self-efficacy survey. A word cloud is a special visualization of text where more frequent and prominent words are highlighted. The word clouds provided an initial analysis for spotting key points, themes and major differences.

Figure 1: What do you think you will learn from being observed by a peer teacher?
For posttest opened questions the students had these comments: (17 students completed the survey)

At the end of the semester, when asked, 80% of the students said yes, they had asked a friend/colleague/peer to observe their presentation skills. When asked a second time “what do you think you learned about yourself from being observed by a peer teacher?” students now commented on more specific details, such as certain teaching methods (i.e. opening the class with a welcome greeting), “many things that go unnoticed”, “the other peer’s observation helps assess my teaching ability”. “I learned that my reiterating what I write on the board is very helpful for the students who are in the back of the class and cannot see the board.” The comments from the posttest showed a growth in the skill of the peer teacher and a confidence that was not represented in the pretest. The peers were more insightful and thoughtful, the responses richer. “Being observed made me more self-aware of habits that need to change…things like how often I give eye contact, speaking volume, notes clarity; are some examples of things that need an outside observer to assess.”

When asked what advice you would give to someone who was going to observe a peer teacher students were very open and direct. “Be prepared for the course”, “make good suggestions and give beneficial feedback”, “have a meeting beforehand”, “always use a check list and criteria”, “be especially careful about the interaction between the students and the teacher” and “watch out for clues from when the students may have trouble following the teacher and how you improve upon that”. In answering the question, “do you plan to be a college teacher as a career goal?” in the posttest, 67% of the students said yes!
Conclusion and Reflection

The instructor of the course integrated a peer observation project because students asked for more than one observation of their teaching. Initially one observation by the instructor was provided to each student who was teaching; and no observation was offered to the non-teaching students. The instructor believed that the non-teachers, as well as the teachers, should have at least one opportunity to be observed. Because of class size and limited time for a one credit course, it was not possible for the instructor to do more than one observation per student per semester. In addition, the instructor believed students would learn much from observation of a peer. This assignment would not only give the students an opportunity to be observed two times, (once by the instructor and once by a peer) it would also allow for the non-teachers to be peer observers. At the same time, to complement the teaching observations the instructor integrated the microteaching assignment for the non-teacher, which gave the non-teachers an opportunity to present to the entire class and receive feedback as well. The instructor saw the Peer Observation Project as a sound pedagogical strategy that would actively involve the entire class in the valuable practice of learning from a peer.

Peer learning is a successful teaching strategy. The experience learned from this exercise would give the students skills in formal observation, giving constructive and proper feedback, and by observing a peer teacher they would learn about their own teaching. The long range benefits will be the life skills that students will use in their future careers as engineers in a broader sense. The experience of giving constructive feedback, being a confident communicator, and the positive self-efficacy of being observed by a colleague/peer; and the self-confidence to be an observer will carry through the student's life.

The success of this project is evident in the papers that the students submit at the end of the project. To summarize from the students comments most felt that being observed by a peer was a rewarding and worthwhile experience. The feedback given was in a tone that students could understand and appreciate. This was a “safe” environment where the students could be comfortable with a peer as the observer. By being an observer students were able to learn from a peer teacher what was lacking in their own teaching style. Student’s expressed that it was easier to “talk” with a peer graduate student instructor because they were essentially on the same level, as one student said, “in the same boat”. This was a win-win experience for all. The students gained confidence and practice in their presentation and delivery, and use of skills on giving and receiving constructive feedback. The instructor for the course was able to recognize a heightened level of maturity and confidence in the graduate student instructor as it evolved from the beginning to the end of the course.

With each semester the instructor sees where changes can be made to make the assignment more understandable by the students. The students invariably miss some points in the rubric. They do not complete all the required criteria, especially the formal letter of feedback addressed to the observed peer. Many students give a summary, not a letter. Also, a description of each step is
necessary so the instructor knows what took place in the pre and post observation meetings. These sections sometimes lack the depth and detail required for the deliverable. The instructor intends to revise the rubric to be more specific.

A new requirement, that will be added Fall 1012, for the project that will peer grading. The peers will grade each other’s final paper using a redesigned rubric as a component for the grade before it is submitted to the instructor for final grading. The instructor will discuss the rubric and how to grade using the tool in class so the graders will know what is expected. The purpose of this is to allow the peers the opportunity to grade a paper written by a peer learner.

Although there were no statistically significant differences between the pre-test and the post-survey, some of the item averages changed in a positive direction. In particular, students seemed be more comfortable watching video recordings of themselves and have more confidence modeling teaching. With a larger sample, we may be able to detect significant differences and better understand changes in the perceptions of the graduate student instructors over the course of the semester. A future study may try to combine data from multiple semesters in order to have more power in conducting the statistical analyses.

The instructor believes that participation in the Peer Observation Project is beneficial to the GSIs. The students learned skills that will carry on throughout their professional lives, such as giving and receiving feedback, communication skills, observation skills, presentation and research skills.

Bibliography

Appendix A – Peer Observation Project Assignment and Rubric

Peer Evaluation Feedback Assignment Instructions and Rubric (20 points)

Peer Observation Assignment is due one week after the observation date.

Research states that peer learning is beneficial. According the McKeachie, “students often learn more from interacting with other students; one of the best methods of gaining clearer long-lasting understanding is explaining to someone else.” The purpose of this project is for you to experience giving feedback and receiving feedback from a peer. You will observe each other teaching. Each person will have an opportunity to observe the other. If you are not teaching this semester you will observe someone and complete this project. However, because you will not be observed you will do a microteaching assignment which will allow the class to observe you.

To you begin you will:

- Select a peer observer and exchange contact information

- Schedule your observations and put the dates of the observations in the drop box in the Peer Observation folder. This will let your instructor know the schedule.

- Proceed with Step 1 – 4.

Step 1: Schedule a Pre-observation meeting to discuss expectations. Even if you and your peer teach the same course you must have a thorough pre session meeting.

- Give the observer some background on the lesson.
- What do you each expect to learn from the observation?
- Does the instructor want the observer to look for specific concerns during the observation?
- What can the observer expect? Environment? Course goals? Student types? Class size?
- Is this a lecture, lab or recitation?
- Should the observer be acknowledged or introduced to the students?
Step 2: **Observation (You are only required to observe 40 minutes of the class session)**

- Use the Checklist for Observing Teaching Behaviors document as a guide.
- Take notes about the observation.
- Listen and watch for delivery, clarity of speech, engaging students, answering students questions, being prepared, clarity of writing, interaction with students, being respectful and friendly
- Immediately following the observation complete the Observation Feedback Form below

Step 3: **Post-observation meeting. Here the observer gives feedback to the instructor on his/her teaching.**

- Overall impression of the observer
- Give three positive comments to the instructor on what was good about his/her teaching
- Any surprises or did the session go as planned
- Comment on any issues or concerns that the instructor mentioned in the pre-session
- Use notes and check list as evidence to provide feedback
- List suggestions where his/her teaching can be improved upon. Please be specific make reference to the teaching by using specific examples and give a recommendation on how you would change this technique in the future.
- Thank the instructor for their time and commitment to better teaching and learning.

Step 4:

**Deliverables (submit to ANGEL drop box):**

Summary document, due one week after the post-observation meeting, should contain a detailed description following the criteria in each step. Be specific and give examples:

Part 1: Describe in detail the pre-session meeting (5 pts.)

Part 2: Describe in detail your experience in the class observation (5 pts.)

Part 3: Describe in detail what took place in the feedback meeting (5 pts.)

Part 4: Conclusion (5 pts.) - The conclusion should contain a narrative letter addressed to the peer instructor with the observer’s recommendations for improvement and describing examples of good practice. It should also contain a statement that reflects on your experience being an observer. Answer the question, what advice would you give a peer who was going to do an observation of another peer?
Part 5: The completed Observation Questionnaire should be included.

Observation Questionnaire Feedback Form

(This must be included in the Summary)

Observer’s Name(s):_________________________________________________________________

Teacher’s Name:____________________________________________________________________

Date: ______________________________ Course observed:_______________________________

_____ Lecture    _____Lab   _____Recitation

On a scale of 0-5, 5 being the highest score, rate the performance of the teacher.

1. How well does the instructor introduce the topic?

   5  4  3  2  1  N/A

   Briefly explain your reason for the score:

2. How well did the instructor practice good presentation skills, consider clarity, delivery, articulation, eye contact, pace and non-verbals?

   5  4  3  2  1  N/A

   Briefly explain your reason for the score:

3. How well did the instructor adequately use technology was it appropriate and related to the topic?

   5  4  3  2  1  N/A

   Briefly explain your reason for the score:

4. How well did the instructor tie the lecture content into prior knowledge reflecting on previous lectures?

   5  4  3  2  1  N/A

   Briefly explain your reason for the score:

5. How well did the instructor summarize the lecture at the wrap up of the class?
6. How well did the instructor elaborate on items to be addressed in the next class?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

7. How well did the instructor address student’s questions during class?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

8. How well did the instructor present key concepts and illustrate with examples or demonstrations?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

9. How well did the instructor promote a comfortable climate for the students?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

10. How well did the instructor maintain a professional attitude, poise and composure?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

11. How well did the instructor utilize appropriate strategies consistent with instructional goals?

5  4  3  2  1  N/A

Briefly explain your reason for the score:

12. How would you rate the overall performance and effectiveness of the instructor?

5  4  3  2  1  N/A

If the instructor used any active learning strategies such as group discussion, pair-share, problem-solving or the minute paper please elaborate on what you observed during the activity?
After the observation please list notes/comments to be used when giving formal feedback to the instructor during the post session. Consider the instructor’s strengths and areas for improvement.

The Schreyer Institute for Excellence in Teaching, Penn State University (2010)11

Appendix B – Pre-test Self-efficacy Results

Welcome to the self-efficacy pre-survey on peer observations for ENGR 888. This first survey should be completed at the beginning of the semester. The purpose of this survey is to garner information from you on your experiences with the peer observations of teaching. Please answer all questions below. Thank you for participating in the survey.

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<th>I know what to do with the feedback I receive from a peer observation</th>
<th>I am comfortable watching a video recording of my own teaching</th>
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![Bar chart showing responses for each statement with a legend indicating strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree.](chart.png)
Welcome to the self-efficacy post-survey on peer observations for ENGR 888. This second survey should be completed at the end of the semester. The purpose of this survey is to garner information from you on your experiences with the peer observations of teaching project now that it is completed. Please answer all questions below. Thank you for participating in the survey.

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### I am a

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<tbody>
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<td>First time teacher</td>
<td>11</td>
<td>73%</td>
</tr>
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I have asked a friend/colleague/peer to observe my presentation skills.

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<td>Yes</td>
<td>12</td>
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Please answer these questions relative to your post observation experiences and knowledge (after taking the seminar).

| Statistic | I am confident that I can conduct an observation of a peer | I am confident that I can give constructive feedback to a peer teacher. | I am comfortable with the idea of being observed while I am teaching. | I know what to do with the feedback I receive from a peer. | I am comfortable watching a video recording of myself teaching. | I am confident that I am modeling good teaching for my students. | I understand the value in giving feedback to a peer teacher. | Min Value | 3 | 3 | 2 | 3 | 1 | 3 | 3 |
|-----------|-----------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------| Max Value | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Mean      | 4.33                                                      | 4.00                                                                | 4.27                                                                | 4.13                                                      | 4.20                                                            | 3.93                                                            | 4.27                                                            | Variance | 0.38 | 0.43 | 0.78 | 0.55 | 1.17 | 0.35 | 0.35 |
| Standard Deviation | 0.62                                                      | 0.65                                                                | 0.88                                                                | 0.74                                                      | 1.08                                                            | 0.59                                                            | 0.59                                                            | Total Responses | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
Do you plan to be a college teacher as a career goal?

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