

Lessons Learned: College Student Surveys as a Professional Development Tool

Dr. Dick Apronti, Angelo State University

Dick Apronti is an assistant professor at Angelo State University. He teaches transportation engineering courses, engineering graphics, and plane surveying. His research interests are in transportation safety and planning. Dick Apronti also has interests in projects that improve access to higher education and college retention for minorities and under-represented groups.

**Lessons Learned: College Student Surveys as a Professional
Development Tool**

Introduction

The development and adoption of student evaluation of teaching (SET) were first recorded in the 1920s [1] [2]. Since then, many proponents have researched the practice and suggested ways of implementing SETs to improve instruction. Student evaluations of teaching have mostly been standardized and accepted as a regular practice of assessing teaching effectiveness in most colleges, including my university. SETs have standard features that are described by Sproule [3].

1. The SET is a survey about course content and teaching effectiveness with open-ended and close-ended questions.
2. The closed-ended questions present a scale of possible values ranging from 1 for "poor" to a high of 5 for "outstanding."
3. There is a closed-ended question that has a summative function. The question asks the student: "Overall, how would you rate this instructor as a teacher of this course?"
4. The open-ended questions invite students to offer short critiques of the course content and the instructor's teaching effectiveness.
5. The anonymity of student respondents is assured by not requiring self-identifying information of the students and administering the survey in the instructor's absence.
6. The departments implement the SET surveys during the latter part of the semester.
7. The analysis of SET responses involves constructing question-specific and class-specific measures of central tendency and dispersion to assess the instructor's performance for that class. The instructor performance is summarized across departments and colleges as evidence of teaching effectiveness.
8. Characteristics of the student (GPA and academic year), course type (required, graduate), and instructor (novice, experienced) are ignored in the analysis.

The literature includes some criticism for the sole use of the SET as an evaluation of teaching effectiveness. However, the "formative" function of SETs has the support of most stakeholders. In this paper, I shall outline how I utilized my SETs as a novice instructor to make career development decisions that improved instruction methods. I also present SET data over time as evidence of improved teaching effectiveness after implementing those decisions.

Baseline Data

As a new instructor with a background as a Ph.D. student and postdoctoral research fellow, my experience is shared with other faculties with similar backgrounds. Discussions with colleagues in my department and other disciplines revealed that my experience is not odd in academia. Most faculties begin their first year of instruction with minimal experience as an instructor. In my case, my experience as a teacher, before starting my position as an assistant professor, was when

I occasionally filled in for a professor who had to attend a conference or was temporarily unavailable due to an emergency of some sort. With no training in teaching or instruction methods, I tried to imitate my professors' teaching using their already prepared notes on those occasions. I was confident that my teaching skills were adequate during those times.

As a tenure track faculty, I had the full responsibility of developing my lessons, planning learning outcomes, and the instruction needed to meet those outcomes. For courses within my field of specialization, I borrowed lesson materials created by my favorite professors when I was a student and tried to fine-tune them to meet my needs. Classes that fell outside my area of expertise were developed by relying heavily on the textbook and materials designed by the previous instructor of the course. In my first semester of teaching, I taught CENG 3311 Introduction to Transportation Engineering and ENGR 1307 Plane Surveying. CENG 3311 was my area of specialization, whereas, for ENGR 1307, I had little recollection of Surveying topics from my undergraduate education beyond the aspects related to Transportation Engineering.

ENGR 1307 Plane Surveying was one of the first engineering courses that enrolled civil engineering students. CENG 3311 Introduction to Transportation Engineering course had students that were primarily seniors and juniors. I found ENGR 1307 relatively more challenging to teach. By the second half of the semester, my ENGR 1307 classes were characterized by waning class attendance and unengaged students during lectures. Students struggled to understand the concepts I taught in class, as evidenced by low homework, exams, and quiz scores. Besides, students complained that they did not deserve the scores they were getting. The students felt they should be doing better because they were putting a lot of hard work into the course. I felt frustrated and unappreciated.

At the end of the semester, a review of the ENGR 1307 course grades showed the D, F, and W rates (students who had a grade of D or F or withdrew from the course) were 20%, 12%, and 8%, respectively. Students who Withdrew from the class had a D or an F made up 40% of a class with an initial enrollment of 25 students. The student evaluation of teaching for the course indicated an average score of 2.5 on a 5-point scale. The average score of 2.5 represented a performance less than the 10th percentile in my discipline. These scores were generated from the close-ended questions requiring students to choose from a scale of 1 to 5. A snapshot of some summaries of the quantitative assessments using the 5-point rating is presented in Table 1.

Table 1: SET assessment on a 5-point scale

Parameter	Average Score	Standard Deviation
Found ways to help students answer their questions	2.38	0.99
Helped students to interpret subject matter from diverse perspectives (e.g., different cultures, religions, genders, political views)	2.00	0.94
Encouraged students to reflect on and evaluate what they have learned	2.74	1.15
Demonstrated the importance and significance of the subject matter	2.88	1.05
Formed teams or groups to facilitate learning	3.19	1.33
Made it clear how each topic fit into the course	2.44	1.00

Provided meaningful feedback on students' academic performance	2.19	1.17
Stimulated students to intellectual effort beyond that required by most courses	2.44	1.00
Encouraged students to use multiple resources (e.g., Internet, library holdings, outside experts) to improve understanding	2.44	1.17
Explained course material clearly and concisely	2.06	1.03

I reviewed the qualitative data from the SET. I analyzed the data by identifying the common adjectives and descriptions students used in describing my teaching. Some of the definitions used to critique my instruction are bulleted below.

- Unorganized presentations and coursework.
- Confused presentations.
- Unclear explanations.
- Not confident in his knowledge.
- Rushing through lessons.

Beyond these descriptions were some comments that sounded more like warnings to future students about the course.

"take opportunities to ask questions during office hours. Make sure pre-class assignments and reading is done before coming to each class, or you will be lost through the whole semester."

Other comments indicated that attending class was not beneficial to the students. Some students pointed to the office hours as helpful in helping them understand the lessons covered in the course.

The story was quite different from the Introduction to Transportation Engineering course. There was a 100% pass rate, with four of the six students getting an A grade and the remaining getting B. The quantitative data from the SET showed an average value of 3.3 for both my teaching and the course. The SET score was ranked as a 41st percentile score in my discipline.

There were critiques from the qualitative part of the SETs, but there were only two descriptions.

- Disorganized presentations
- Confusing explanations

Some students suggested improving the course content with more examples and better preparation before classes.

Reading the comments from the surveys was a discerning moment. I had to admit that my teaching was inadequate and provided little benefit to my students, especially in teaching courses outside my area of expertise. I realized that to stay relevant in my career and give value to my students; I had to improve. I had to learn how to be a better instructor for the sake of my students and career.

Changes

The SET results from my first semester of teaching motivated me to prioritize instruction education. I talked to some of my more experienced colleagues in the department to learn from their experiences. Some of my peers had attended conferences and workshops that had helped them improve their teaching in the past. I also met with my department chair and discussed my challenges in my first semester of teaching. Discussions with my department chair culminated in a plan to attend some workshops and training events.

My first teaching workshop was with ASEE's National Effective Teaching Institute (NETI) in August 2018. The NETI workshop provided a theoretical overview of teaching methodology and pedagogy. I became aware for the first time of the need to intentionally design a class to make it more interactive and engaging. After NETI, I attended ASCE's Project ExCEED (Excellence in Civil Engineering Education) in August 2019. The ExCEED program is an intensive five-day practical teaching workshop where I had the opportunity to witness firsthand how to prepare and teach an engaging and well-organized class. In the Summer of 2020, I had the chance to participate in the ESCALA workshop. ESCALA (Spanish for "striving") provides faculty development programs and remedial program evaluation services to close the gap in educational access and completion rates for Latinos. The ESCALA workshops target Hispanic-Serving Institutions (HSIs). The ESCALA workshop was valuable in my growth by introducing the concept of equity in the classroom. I became aware of the diversity in my classroom and how I could develop my instruction to leverage strengths in students from different cultural contexts.

These workshops provided a unique perspective to teaching and have been instrumental in improving my instruction skills since my first semester in Fall 2017. Over the years, I have changed my instruction methods by the following actions.

1. I have developed learning objectives for each lesson.
2. I have prepared outlines for the lesson plan before each class.
3. I have planned and implemented various active learning strategies and demonstrations to keep students engaged throughout my lesson delivery.
4. I have designed class presentations and activities that leverage the strengths associated with students with different cultural contexts.
5. I have improved my relationship with students by being more personable in my interactions with them.

These changes were implemented over time as I became aware of their importance from the various workshops I attended.

Impacts on Teaching Effectiveness

Table 2 shows the SET average ratings from Fall 2017 to Fall 2020 for ENGR 1307 Plane Surveying. Presented in Table 2 are the ratings and times when I attended each of the workshops to show trends in improvement.

Table 2: Comparing teaching effectiveness over the years with workshop attendance for the Plane Surveying course

Semester and Year	Average Teaching Effectiveness Score	D	F	W
2017 Fall	2.5	20%	12%	8%
National Effective Teaching Institute (NETI) workshop attendance (August 2018)				
2018 Fall	2.3	6%	6%	6%
ExCEED (Excellence in Civil Engineering Education) workshop attendance (August 2019)				
2019 Fall	4.3	0%	8%	0%
ESCALA Scholar workshop				
2020 Fall	4.2	0%	0%	0%

Table 3 shows the SET ratings for the Introduction to Transportation Engineering. Both tables 2 and 3 show a marked improvement in SETs over the period. Class attendance for both courses has improved significantly, with most class attendance at 100%. In the last semester (Fall 2020), the two classes recorded average SET scores of 4.2 on a five-point scale. The scores placed my performance at the 50th percentile of instructors in the engineering discipline. I now feel more confident that my classes are engaging and valuable to students.

Table 3: Comparing teaching effectiveness over the years with workshop attendance for the Introduction to Transportation course

Semester and Year	Average Teaching Effectiveness Score	D	F	W
2017 Fall	3.3	0%	0%	0%
National Effective Teaching Institute (NETI) workshop attendance (August 2018)				
2018 Fall	3.6	7.7%	7.7%	0%
ExCEED (Excellence in Civil Engineering Education) workshop attendance (August 2019)				
2019 Fall	3.6	7.1%	7.1%	0%
ESCALA Scholar workshop				
2020 Fall	4.2	3.5%	3.5%	0%

The Fall 2020 qualitative data from the SETs also indicate a shift over the years. A sample of student statements extracted from the survey is presented below.

"I appreciated you making the course interactive amongst the students."

"Fantastic job, love your teaching."

"I like the way you have taught the classes that I have taken with you. I want more examples worked out during class, due to me being a more involved learner."

"This was a fun class, and it taught me patience, working with teams, and a lot of numerical skills and error mitigation. The professor is a very good teacher who is willing to accommodate student's struggles and helps whenever he can."

I believe the SETs are an essential tool that helped me realize the need to improve my teaching. The SETs also served to validate whether my strategies to improve my teaching skills were working. I surveyed and discussed with colleagues within the department to gather their opinions about SETs. The responses generally showed that my colleagues also found these surveys helpful as feedback from students about their teaching. However, the consensus was that peer evaluations done by colleague faculty are also beneficial and sometimes even more informative in helping improving teaching effectiveness.

Conclusion

In this paper, I have presented my experience as a novice instructor and how SET data was instrumental in developing and implementing a plan to improve my teaching skills. I discussed the SET scores and the class performance, as well as critiques from students. I identified several teaching workshops to gain some instructional training and discussed attending them with my department chair. Finally, I showed how attending the conferences has culminated in improving my teaching effectiveness.

In my quest to be a student-centered instructor, I believe the SET is an essential data source that can be used to assess teaching effectiveness. Other data points exist that can complement SETs. For instance, discussions with other faculty members showed that they also found SETs helpful, but they did not use them in isolation. Peer evaluation of instruction was an additional consideration in assessing teaching effectiveness.

References

- [1] B. Algozzine, J. Beattie, M. Bray, C. Flowers, J. Gretes, L. Howley, G. Mohanty, and F. Spooner, "Student Evaluation of College Teaching a Practice in Search of Principles," *College Teaching*, Vol. 52, pp. 134-141, Fall 2004.
- [2] H. H. Remmers, "The Purdue Rating Scale for Instructors," *Educational Administration and Supervision* 6, pp. 399-406, 1927.
- [3] R. Sproule, "Student Evaluation of Teaching: A Methodical Critique of Conventional Practices," *Education Policy Analysis Archives Volume 8 Number 50*, 2 November 2000.
- [4] M. D. Sorcinelli, "Faculty Development: The Challenge Going Forward," *Peer Review* 9.4, 2007.