

## **Where is Everybody? Participation in Online Student Evaluation of Instruction Surveys**

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## Abstract

End-of-semester student evaluation of instruction (SEI) (or student evaluation of teaching (SET)) survey instruments are commonly used by many universities. SEI results provide direct feedback about an instructor's classroom performance, teaching methods, organization and preparation, and effectiveness of interaction with students, among other measures. Faculty can use this feedback as part of an overall strategy to improve teaching and student learning outcomes. At many universities, SEI scores and comments are included as part of hiring decisions, in annual reviews, as a basis for merit pay decisions, and in evaluation decisions for tenure, promotion, and reappointment.

In Fall 2013, an online SEI process was adopted at University of the Pacific to reduce administrative workload and to preserve student anonymity. However, in the School of Engineering and Computer Science participation rates in the SEIs were seen to drop from a range of 85% to 95% with paper-based forms, to 60% or lower when the School transitioned to online SEIs. Although individual faculty members in other academic units have used ad hoc strategies to provide incentives for participation, no institutional strategies are in place to promote participation. Review of the literature suggested similar issues were experienced at other universities where online SEI instruments were introduced.

SEI participation data were examined for all courses taught in the School of Engineering and Computer Science in Fall 2014, Spring, 2015, and Fall 2015. A preliminary study of the effectiveness of 'interventions' in the forms of providing in-class time to complete the evaluations or providing modest bonus point opportunities demonstrated increases in SEI response rate ranging from 10% to 50% compared to response rates for the same course in prior years. An overall 93% SEI response rate was observed in Civil Engineering courses in which interventions were used, compared to 69% for the 'control' courses – all other Civil Engineering courses in which no interventions were used. In addition, analysis of SEI participation data for the three semester-period indicated higher participation rates by female students and by students with higher grade point averages.

## Introduction

Student evaluation of instruction (SEI) survey instruments are commonly used at the end of semesters to evaluate courses, labs, and instructors. At some institutions, results of these end-of-semester SEIs are included, or may be required, as part of documentation submitted for annual evaluations, merit pay decisions, in promotion and tenure reviews, and even in faculty hiring decisions<sup>1,2,3,4</sup>. Summative evaluation of instruction, typically performed at the end of a semester, provides useful feedback on overall aspects of course content and course management. Some faculty members have used online feedback forms to obtain formative feedback after each class or on an on-going basis, results of which can be used to make changes during the semester<sup>5,6</sup>. Student evaluation of teaching, the relationships between SEI results and student

learning, validity of evaluations, relationship to student workload, and frequency of formative and summative evaluations are among topics addressed extensively in literature<sup>2, 5, 7, 8, 9, 10, 11</sup>.

Factors motivating students to submit evaluations include<sup>5, 12, 13, 14</sup>:

- Desire to improve an instructor's delivery, particularly if the students are likely to have that instructor in a future course.
- Desire to improve course content, course design, the learning environment, or instruction modes.
- An expectation that the evaluation results will be used in meaningful ways.
- Desire to convey information about the instructional quality to others (e.g., as shown by the level of participation in online sites such as ratemyprofessor.com).

Tenure, promotion, or other personnel-related issues seem to be of secondary importance to students, but remain significant to the faculty member, the department, and the university<sup>12, 14</sup>.

Prior to Fall 2013, paper-based, end-of-semester SEI forms were administered in each course at University of the Pacific. Instructors typically gave students in-class time to complete the form. A student volunteer would take the completed forms to an Administrative Assistant. In the School of Engineering and Computer Science (hereinafter referred to as the SOECS), the Administrative Assistants would type the numerical data and comments into a spreadsheet – an arduous and time-consuming task. Compiled results were given to each instructor after course grades were submitted.

In recent years, University of the Pacific, like many other institutions, transitioned from traditional paper-based SEIs to online modes of evaluation to reduce copying costs, eliminate the need to use class time to complete evaluations, and to accommodate online or asymmetric course instruction modes, but the dominant motivation was to eliminate excessive administrative time associated with transcribing student feedback. From students' perspectives, online evaluations seem to be favored over the paper-based versions, since the online forms are viewed as more likely to be anonymous than paper-based evaluations where a student's handwriting may be recognizable<sup>15</sup>. Additionally, online tools provide an extended window of opportunity to provide feedback, students can revisit the evaluation during the open period if allowed by the system, and students have more time to formulate comments than would be allowed during a time-constrained in-class evaluation<sup>15</sup>.

Despite these advantages, the significant disadvantage of online evaluation of instruction compared to the paper-based version is the low student participation that appears to have accompanied the transition at many institutions<sup>3, 16</sup>. Studies of response rates to web-based surveys noted low response rates in general, possibly due to excessive numbers of survey requests received by individuals<sup>17</sup>. At University of the Pacific, online evaluations are made available to students over a two-week window before the end of instruction. Students receive an email message from the University once every three days to complete any remaining SEIs. In the SOECS, participation rates ranged from 85-95 percent with hard copy forms, whereas a decrease in participation rates to 60 percent or lower were observed with the implementation of online SEIs.

Active and meaningful participation by students is key to obtaining reliable and useful evaluation data, since low participation in SEIs limits the availability of quality data for decision making. Students' comments on evaluations can provide faculty with specific guidance or direction for addressing the issues that may have led to low numerical scores or reinforce the use of effective instructional techniques. Lack of student feedback is of particular concern for new faculty who may not have prior experience and may lack student input from previous semesters.

Low participation levels in evaluations have led to some negative perceptions on the part of faculty, particularly when the feedback provided was largely negative. Based on our own experiences, faculty perceptions of low response rates or negative student feedback have included the following:

- only the students who really liked or disliked the course or instructor provide feedback, and that students who are ambivalent or neutral do not participate,
- only the students who have negative input or expect low grades in the course are likely to participate. In some cases, faculty have dismissed the feedback, attributing the input only to those students "who have an axe to grind,"
- students are too busy to provide useful input, or that they do not care about the quality of instruction to take the time to complete the evaluations,
- students from departments other than the faculty member's department are providing the negative reviews, thus faculty may dismiss the reviews because "their own" majors are not the ones with the negative perceptions, and
- the course is required, or a general education course, or for some reason not a course some students perceive as relevant to their degree, and therefore only those students are the ones completing the evaluations and providing the negative feedback.

In their review of studies on course evaluations, Anderson et al.<sup>3</sup> summarized the results of several pilot studies comparing traditional paper-based evaluations to electronic evaluations – either in online forms, or sent via email. They noted that response rates to online evaluations were generally lower than for paper-based evaluations, although among the studies cited, there did not appear to be a significant difference in student ratings provided on online evaluations as compared to traditional in-class evaluations.

In an effort to improve SEI response rates, interventions used by others have included encouragement by the instructor, demonstration of how to use the evaluation tools, modest grade incentives, early access to course grades, making summary SEI results available to students, or campus-wide promotional efforts to emphasize the importance of SEIs<sup>3, 15, 16</sup>. When comparing effectiveness of various incentives to promote participation in online evaluations, Dommeyer et al.<sup>15</sup> found modest grade incentives to be the most useful tool, achieving response rates on online evaluations very similar to response rates on in-class evaluations. The authors found no significant difference or bias among student ratings in each of the two groups. For faculty members who may have concerns about providing grade incentives, other intervention mechanisms could be used to promote participation.

### **Student Evaluations of Instruction – Analysis of Response Rates**

A pilot study was performed in the SOECS in Fall 2015 to examine effects of interventions on student participation in end-of-semester evaluations. For the seven course/lab sections listed in

Table 1, interventions were implemented in Fall 2015 but not in prior semesters. The intervention mechanisms used are shown in Table 1. A total of 75 different course sections were taught in Fall 2015 by SOECS faculty.

Table 1. Interventions used in Fall 2015 courses to evaluate effects on response rates for end-of-semester evaluations

Course Subject	No. of Students Enrolled	Intervention mechanism used
Graphics (CE 15)	30	In-class time given to complete SEI
Mechanics of Materials (EN 121)	37	Homework Bonus (0.3% of overall grade)
Sustainability (CE 173)	22	In-class time given to complete SEI
Risk Analysis in Civil Engineering (CE 293)	11	Homework Bonus (0.3% of overall grade)
Fluid Mechanics Lecture (CE 130)	21	Homework Bonus (0.3% of overall grade)
Fluid Mechanics Lab (Sec 1)	17	Lab Quiz Bonus (3% of overall grade)*
Fluid Mechanics Lab (Sec 2)	11	Lab Quiz Bonus (3% of overall grade)*

\*Our original intent was to offer a 0.3% bonus, but there was a typographic error in the assignment notification posted online. We had to honor the extra credit offered as announced.

Institutional data were obtained for all courses taught within the SOECS for the Fall 2014, Spring 2015, and Fall 2015 Semesters. Summer courses were not included in the analysis. The Office of Institutional Research provided the following data for each student enrolled in each course:

- Semester (Term)
- Course subject (Department offering course)
- Course number
- Course section
- Instructor
- Student identifier - a unique, random number assigned to each student in a given semester, such that their record would remain anonymous
- Completed course evaluation? (Yes/No)
- Student gender (Male/Female)
- Student overall GPA (0.0 – 4.0)
- Student major (included engineering, business, and other majors)
- Student class standing (Freshman, Sophomore, Junior, Senior, Graduate)

A total of 6230 records were obtained for this 3-semester period. Excel Pivot Table tools were used to analyze the data, although some post-processing was also performed to compile results. The average or aggregate course rating by the student was not included in the analyses.

Overall response rates for the SOECS, shown in Figure 1, range from 60 to 65%. The highest response rate was observed in Fall 2015. Fall 2015 response rates shown include results from courses for which interventions were used together with “no intervention” courses.

A comparison of response rates by course subject (the department in which the course is offered) is shown in Figure 2. A marked increase is seen in response rates in Civil Engineering (CE) courses in Fall 2015, when intervention mechanisms were applied. SEI response rates appear to decline consistently for Bioengineering (BE) courses, are relatively steady for Computer Science (CS), Electrical/Computer Engineering (ECE) and General Engineering (ENG) courses, and seem to vary somewhat randomly for Engineering Management (EM) and Mechanical Engineering

(ME) courses. Although the incentive of homework bonus points was used in Mechanics of Materials (an ENG course) in Fall 2015, the increase in response rates by the 37 students enrolled did not have a significant apparent effect on the overall response rate in ENG courses, in which a total of 739 students were enrolled.

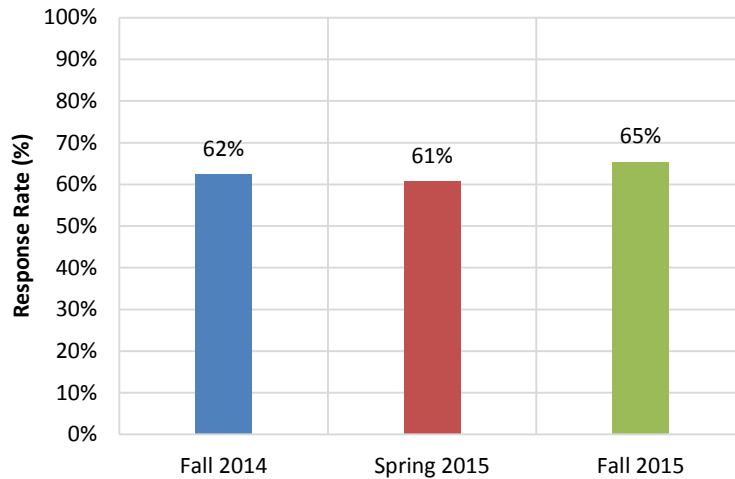


Figure 1. Fall 2014 – 2015 overall SEI response rates in the SOECS. Interventions were used in 7 out of 75 course sections taught in Fall 2015.

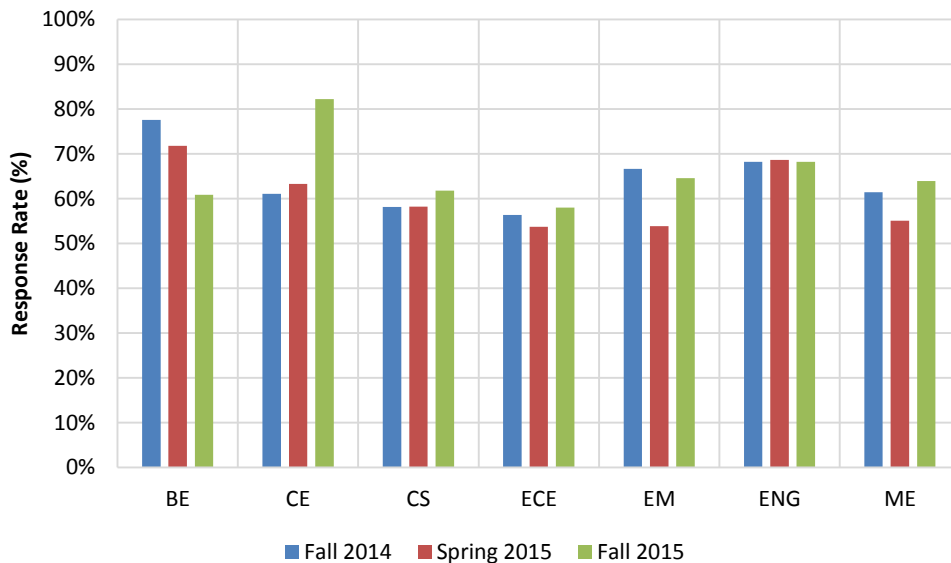


Figure 2. SEI response rates by course subject

Interventions were used in 7 out of 75 course sections taught in Fall 2015.

(BE = Bioengineering, CE = Civil Engineering, CS = Computer Science, ECE = Electrical and Computer Engineering, EM = Engineering Management, ENG = General Engineering, ME = Mechanical Engineering)

SEI participation rates for the courses in which interventions were used are shown in Figure 3. The response rates in Graphics, Fluid Mechanics, and Mechanics of Materials appear to have increased by 10% to 50% in Fall 2015 as compared to response rates in prior semesters, possibly

as a result of interventions adopted in Fall 2015. Graphics is taught in a computer lab each term, and although the course instructor did not allocate course time to complete the evaluations in Fall 2014, the response rate may have been high in Fall 2014 due to the instructor’s encouragement of students (mostly freshmen) to complete all their course evaluations. The Fall 2015 SEI response rates shown for Sustainability and Risk Analysis appear consistent with SEI response rates in the other courses. These two courses were not taught in Fall 2014 or Spring 2015.

As shown in Figure 3, similar SEI response rates were achieved with modest grade incentives and with time given during class to complete the evaluation surveys. An increase in response rates in Mechanics of Materials was observed between Fall 2014 to Spring 2015 from 50% to 72%, respectively, without any intervention by the instructor. The increase in response rate in Spring 2015 may be indicative of the average response rate prior to intervention, but further investigation regarding the composition of the course is necessary to identify any causes of this increase. With use of an intervention in Fall 2015, students in Mechanics of Materials had a response rate of 95%, exceeding response rates in both prior semesters. There appears to be a smaller increase in response rates for the Fluid Mechanics Lab as compared to the other courses included in the study, despite the typographic error offering students more credit than was originally intended. This surprising result may indicate that the response rate may be more strongly influenced by the existence of a bonus than by the amount of extra credit offered.

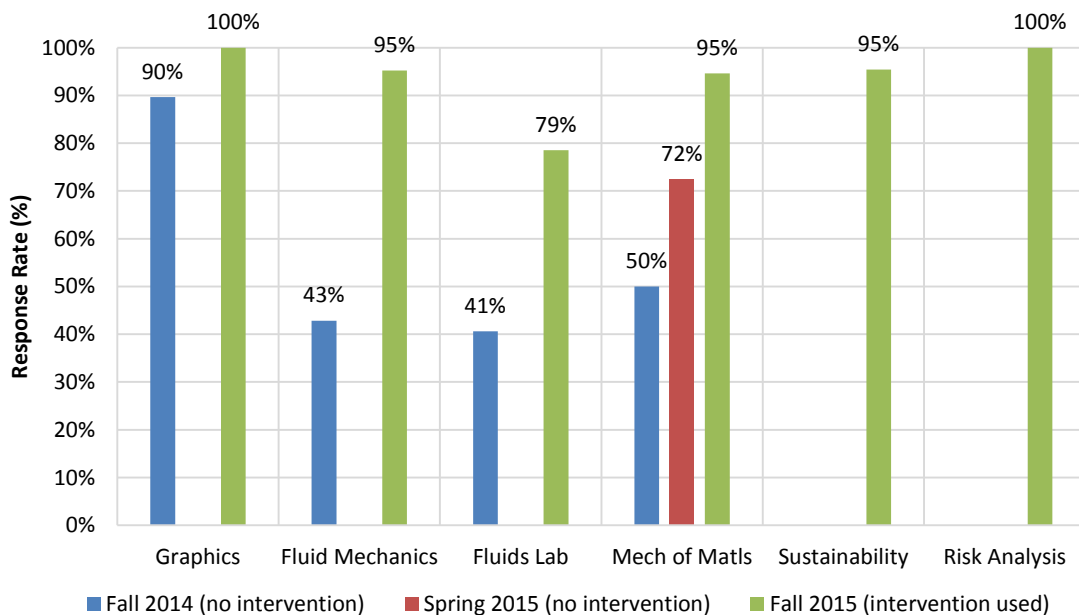


Figure 3. SEI response rates. Interventions were used in these courses in Fall 2015.

SEI response rates for courses with a Civil Engineering (CE) prefix taught in Fall 2015 are shown in Figure 4. Ninety one students were enrolled in nine different CE courses in which no interventions were used. One hundred twelve students were enrolled in the six different CE courses in which interventions were used as presented in Table 1. Comparing the SEI response rate of 69% with no interventions to 93% with interventions, the interventions appear to have had a significant positive effect on increasing response rates in CE courses.

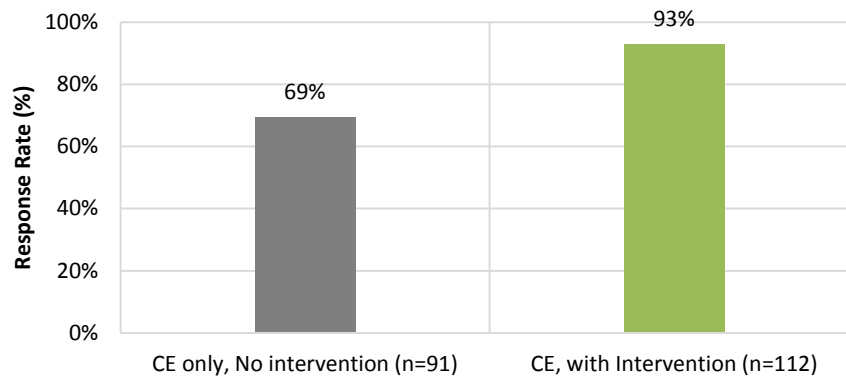


Figure 4. Comparison of Fall 2015 response rates in all Civil Engineering courses (n= number of students enrolled in intervention vs. no intervention courses)

Institutional data were further analyzed to determine whether student characteristics, namely major, grade point average (GPA), or gender had an effect on participation in end-of-semester evaluations. As shown in Figure 5, SEI response rates among Civil Engineering students appear to be highest in Fall 2015, likely because these students were enrolled in those courses in which interventions were used. A minimum 5% increase is observed in response rates among students majoring in Engineering Management and Mechanical Engineering between Spring 2015 and Fall 2015. The increase in responses may have occurred because some students in these majors were enrolled in the CE courses included in the pilot study. Further analysis is required to determine whether students are more likely to participate in the evaluations for courses within their own major. Low response rates were observed among graduate students. Further analysis is needed to identify reasons for this low response rate and to examine the effectiveness of using intervention mechanisms in graduate courses. Only a small number of students (11) were affected by the intervention used in the graduate course in Fall 2015.

SEI response rates were compared based on the students' overall grade point average (GPA) at the end of the semester, as shown in Figure 6. Analysis of data indicates that students with the highest GPA (3.5 to 4.0) also seem to consistently have the highest SEI participation rates. These observations can help address some concerns that only those students who expect to get low grades are more likely to provide input. Students with GPAs below 1.5 do not typically continue in upper division courses within their academic major and therefore participation rate data is limited and inconclusive with respect to this study. For instance, in Spring 2015, only 6 out of 15 students with GPA below 1.5 completed online evaluations.

Finally, analysis of data shown in Figure 7 yields a surprising result, namely, an approximately 10% higher response rate among female students than male students. We intend to investigate this phenomenon further to identify possible reasons for this observation, for example, whether a relationship exists with the student's GPA or major.



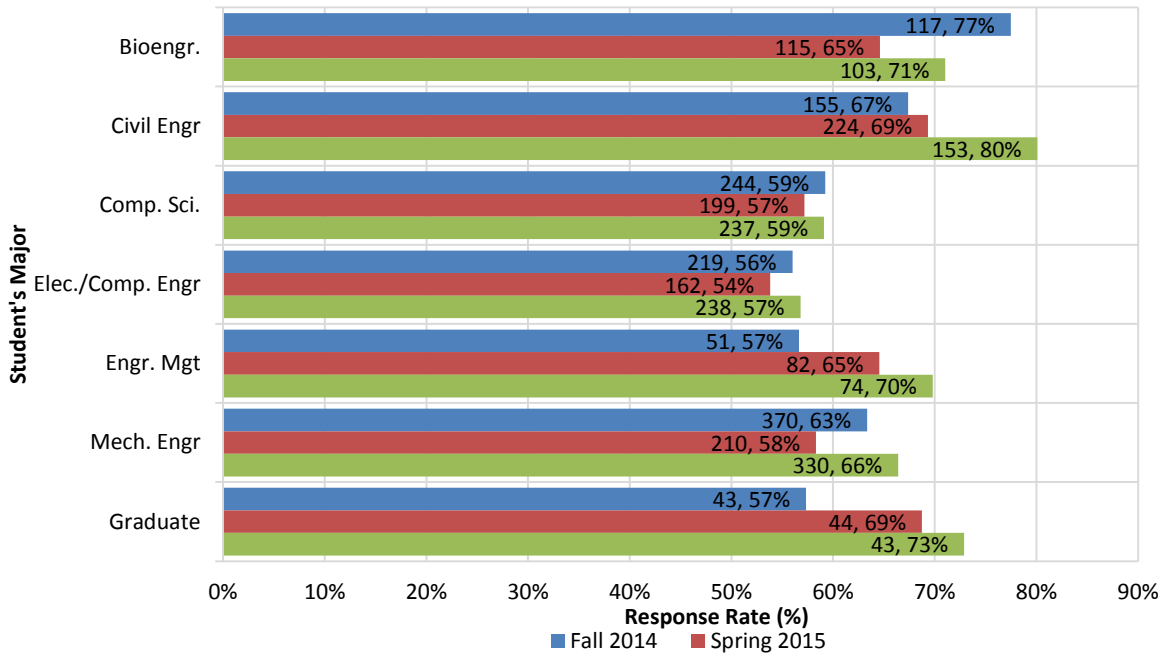


Figure 5. Comparison of response rates by student's major. The number of responses and percentage are shown on each bar.

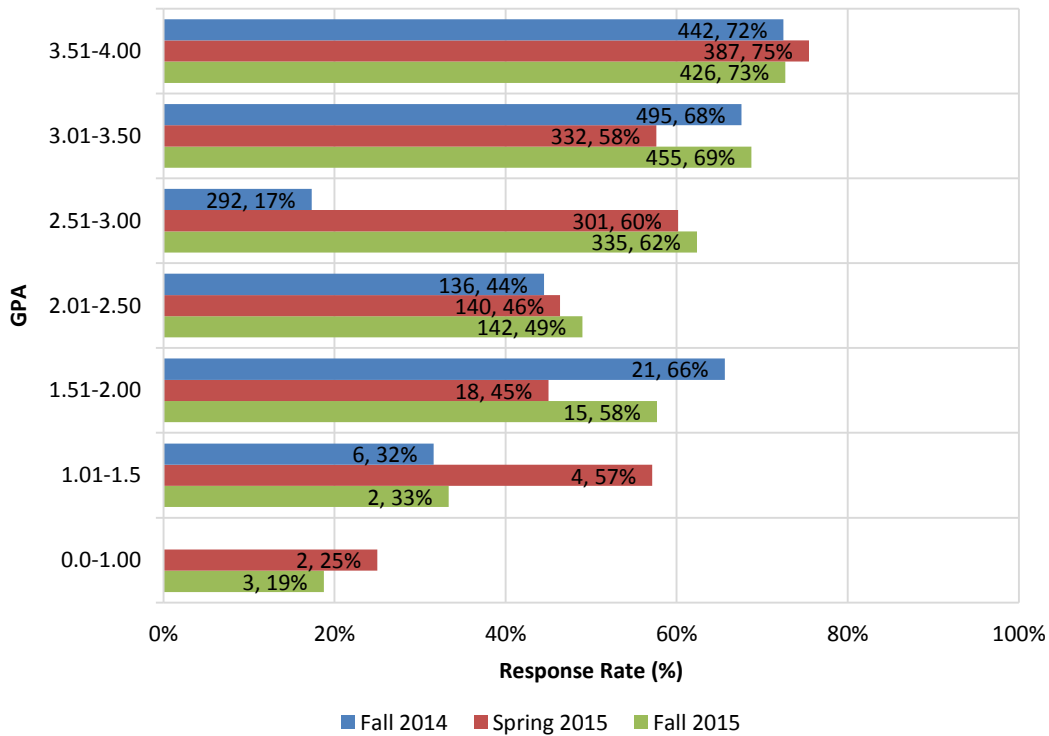


Figure 6. Comparison of response rates by Grade Point Average (GPA). Note: 6417 records were available in the updated data set used for this chart.

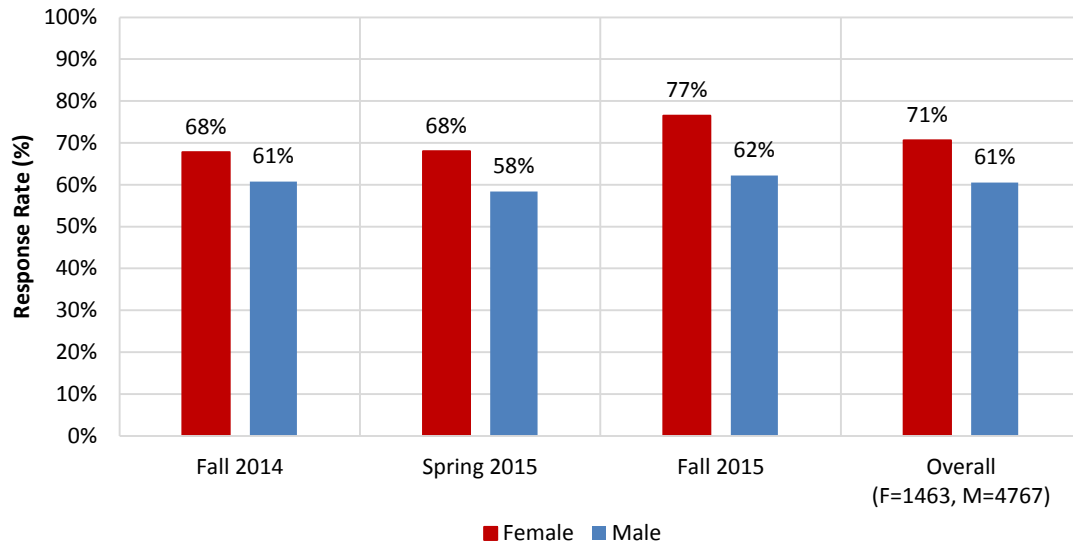


Figure 7. Comparison of response rates among male and female students

## Conclusions

As described extensively in the literature and as shown by results of a pilot study, interventions can help achieve SEI response rates equivalent to rates obtained when time is allocated during class to complete evaluation forms. In this study, intervention mechanisms used included allowing in-class time to complete evaluations and offering extra credit for completing the evaluations. An overall 93% SEI response rate was observed in Civil Engineering courses in which interventions were used, compared to 69% for the ‘control’ courses – all other Civil Engineering courses in which no intervention was used. For each of the courses examined, SEI response rates were markedly higher when interventions were used than response rates in those same courses in previous semesters. Analysis of SEI participation data examined for the three semester-period indicated consistently higher participation rates by female students and by students with higher grade point averages. Although online SEIs provide many advantages over in-class traditional paper-based forms, low participation rates can reduce their usefulness. Interventions can help promote student participation to address the issue of low participation rates.

## Future Directions

Preliminary discussions with some faculty members within the SOECS have revealed little to no consensus on ways to increase response rates. Some faculty members support use of interventions while others view their use as inappropriate for various reasons, particularly when academic grade incentives are offered. Logistical issues also persist: prior to Fall 2013, all faculty administered the paper version of SEIs in class. However, with transition to online SEIs, in-class completion of SEIs is only possible in those course and lab sections taught in a classroom with computers. Anticipated next steps include presenting the analyses to the SOECS Faculty Council to identify possible alternative approaches that are consistent with the culture at University of the Pacific. These data and analyses will also be presented to the University Provost with a recommendation

that similar analyses be performed within other academic units, i.e., the College of Arts and Sciences, School of Business, etc. Although the SOECS faculty can adopt solutions for our own internal purposes and as an extended pilot study, we believe that this issue needs to be addressed at the institutional level.

Results of this study have prompted several issues that require further investigation, such as low response rates in graduate courses and differences in response rates by gender. Additionally, this pilot study was conducted in Fall 2015 by three Civil Engineering faculty members who have relatively similar teaching styles. Although not included in this paper, we intend to examine the statistical significance of these results together with SEI response data obtained in Spring 2016, anticipating that some faculty in other SOECS programs will choose to adopt interventions.

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