AC 2010-1151: DAILY COURSE EVALUATION WITH GOOGLE FORMS

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Abstract

Student course evaluation has become a fixture of American higher education over the past two generations. It serves at least two distinct purposes: to provide superiors with a way to assess the quality of each instructor, and to avail the instructor a chance to improve, based on feedback from students. A third motivation is to give students a way to influence teaching. Almost invariably, the evaluation is performed once per term, and the end of each course. Both the instructor's and students' purposes, it would be much better if the feedback came at a point where instruction could be adjusted during the current term. It would be ideal be to collect feedback after each class. Until recently, the overhead of doing so was high enough to render daily feedback infeasible. But now, with Google forms, anyone can create and administer surveys for free, and with minimal investment of time. This paper reports on a semester-long experiment with daily feedback, and how it influenced instruction.

1. Introduction

For many faculty, student course evaluation is a stressful process. Student evaluations are often the primary means of evaluating teaching. They can have an impact on performance reviews, tenure, and promotion. Coming at the end of a course, they are *summative* in nature; that is, they measure what has occurred. There is no opportunity to adapt until the next time the course is taught, and even then, the set of students is entirely different. It would be much better if faculty could get feedback *during* the course instead of at the end. This kind of feedback is called *formative*, because its purpose is to "form" the instructor's approach to teaching the rest of the course.

Traditionally, course evaluation has been carried out with pencil and op-scan forms. In the last ten years or so, these evaluations have been migrating online [1, 2]. When employed in the usual way, at the end of a course, evaluations are essentially summative, though faculty may glean some advice about the next offering of the same course from reading the students' text comments.

It is unfortunate that course evaluation is so infrequent and so inflexible. The kind of feedback it gives faculty has proven ineffective when assessing *student* performance: "Feedback delivered once a year from standardized district, state, national, or international assessments is far too infrequent and broadly focused to be helpful [3]." The same could be said of course evaluation, as currently practiced.

There have been a few attempts to use evaluations formatively, by administering midterm evaluations [4, 5]. The usual practice is for the Teaching and Learning Center to, at an instructor's request, administer a mid-semester evaluation form to the students, and then to have someone meet with the instructor to analyze the results.

A number of universities have also provided facilities for students to submit anonymous comments on a class. However, these tools are rarely used by students, tend to attract emotional complaints, and do not provide a coherent mechanism for improving delivery of a course.

Some instructors have rolled their own midterm evaluations using LMSs or off-the-shelf survey tools. These have often proved cumbersome. Austin and Austin [5]'s LMS lacked anonymous response capability; instructors could see who had answered a question. Thus, if they logged in to view results at a time when only a single student had responded, they could figure out what that student had written. Second, substantial administrative support was needed: Instructors needed to import a Zip file into their Blackboard course in order to deploy the survey; the authors hosted a workshop to explain the process in detail. Oliver and Sautter [1] evaded the problem of anonymity by placing departmental administrators in charge of creating the surveys, but this required the creation of WebCT course sites for each discipline (presumably, the instructors were not already using WebCT for any other purpose).

But times are changing. Now, online survey programs supporting anonymous responses are available to the general public. Survey Monkey and Google forms are two of the most widely used. Using these tools, an instructor can learn in about 30 minutes how to set up a survey, and send the students e-mail invitations to take it.

Table 1. Questions on Daily Survey

1. Today's material contributes to achieving the course objectives.
2. The lecture portion of today's class was clear and easy to follow.
3. The exercise(s) today were easy to follow.
4. Today's exercise(s) helped me learn the material.
5. Did you work today's exercise(s) with a partner?
6. It was/would have been helpful to work with a partner on today's exercise(s).
7. Today's material was challenging.
8. Today's class increased my interest in the course.
9. List one or more things you liked about today's class.
10. List one or more things you disliked about today's class.
11. Name one thing that is still not clear from today's class.
12. The instructor shows interest in student learning.
13. The instructor has high standards for student achievement.
14. The assigned homework has helped me think deeply about the course material.
15. The exercises and homework help achieve the learning objectives for the course.

2. The survey

In preparation for creating the survey, the author sought advice on POD@listserv.nd.edu, the listserv of the Professional & Organization Development Network in Higher Education, which is the professional organization for faculty development experts. Using their advice, the list of questions shown in Table 1 was created. It was submitted to the author's institution's IRB. Then the author created a Google form containing these questions.

It is very easy to create a Google form. First of all, you need a Google account. Your gmail account will work, if you have one. If you do not, you need to be invited to open one by a current gmail user.

You can log in at http://docs.google.com and you will be presented with a screen that looks something like this:
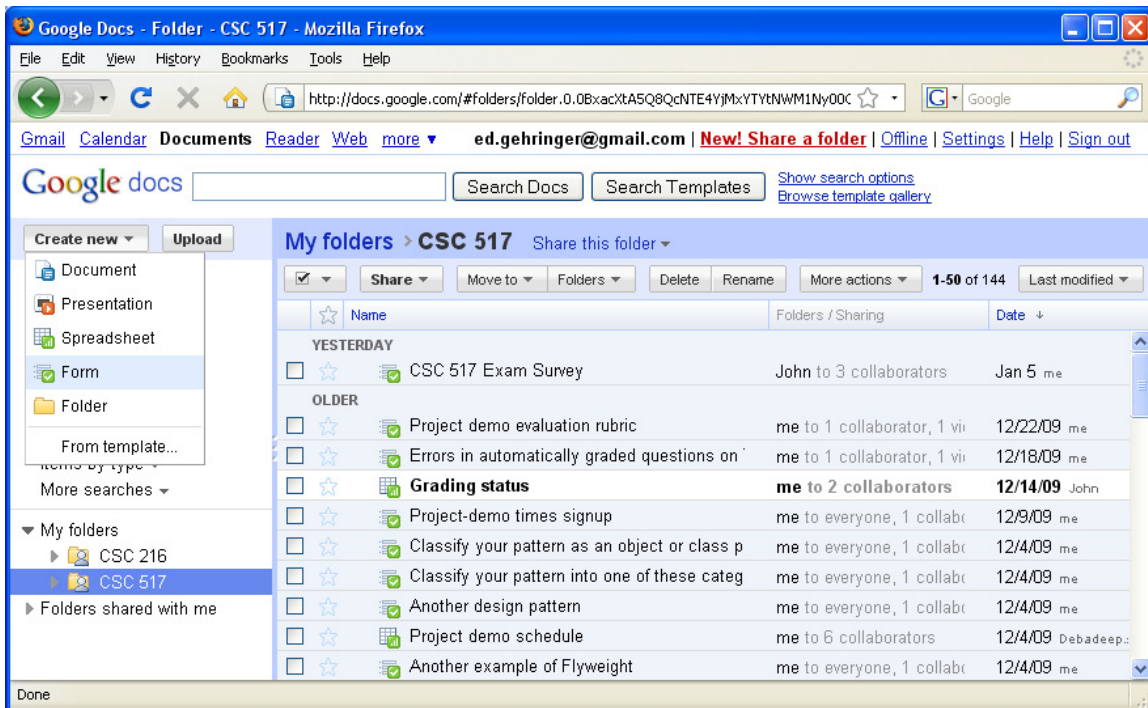
Figure 1. Creating a Google doc

Click on the "Create new" button and select the kind of doc you want to create. In this case, it is a Form.

When you create a form, you are presented with a boilerplate form that contains two questions. You can change the title or type of each question. The figure at the top of the next page shows how to change the type of Question 1 to "Scale", which is used for questions to be answered using a Likert scale. You can add questions, as shown in Figure 3. If you have several questions to add, it is easiest to add them first, specifying the type as they are added, then edit the title and help text of each new question.
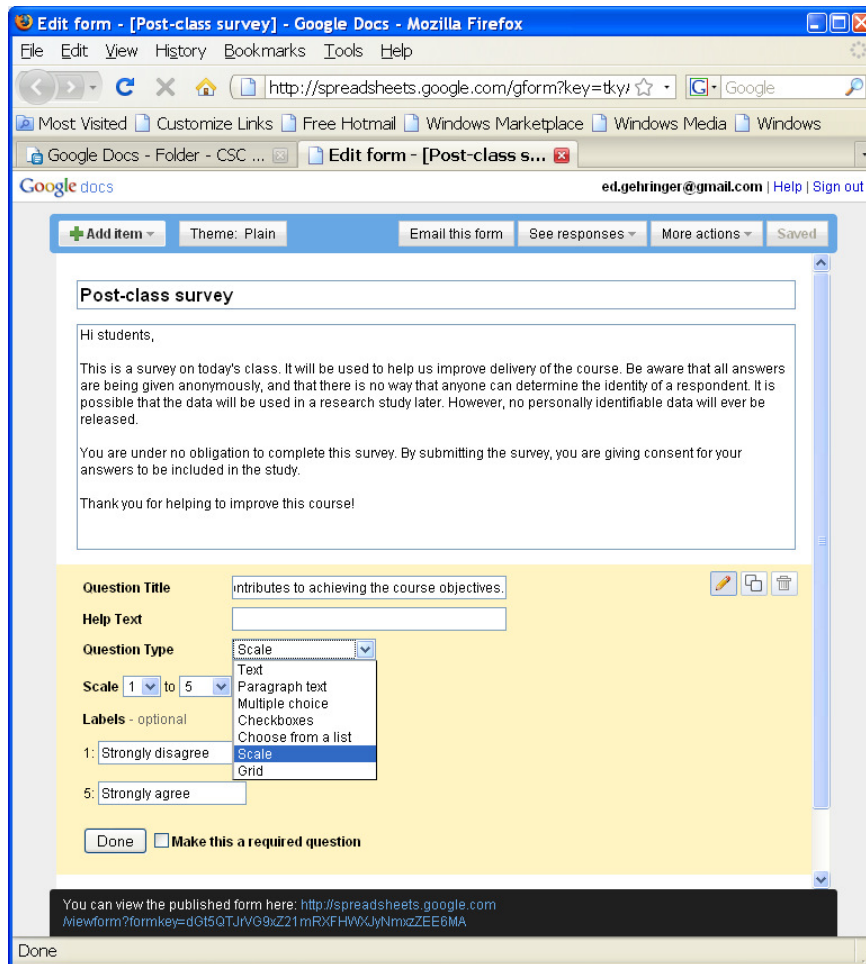
Figure 2. Editing a question on a new Form

Instead of creating your own form, you might like to borrow mine, which can be seen at http://tinyurl.com/post-class-survey-form. In order to copy it, you need to copy the associated spreadsheet, which is located at http://tinyurl.com/post-class-survey-results. To copy it, go to the Google docs File menu and select, "Make a copy …" Then use the Google docs Form menu to e-mail the survey to class members, or view the "live form" to see how it will look to them.

It is not a good idea to survey all students after every class. This produces "survey fatigue" [6], which lowers response rates. Research suggests that it is helpful to wait a period of time before surveying previous respondents again. I therefore decided to survey the students in round-robin fashion. Fortunately, my classes were fairly large. With 100 to 120 students in each of two classes, a survey was sent out to a dozen students after each (twice-weekly) class session. Any particular student was surveyed only two or three times during the semester. I implemented this very simply, by creating a spreadsheet of the students' e-mail addresses at the start of the semester. After each class, I took the next 12 addresses, wrapping around to the beginning of the list when I ran out. I did not attempt to remove students who had dropped the class. This caused no problems, as far as I could tell.
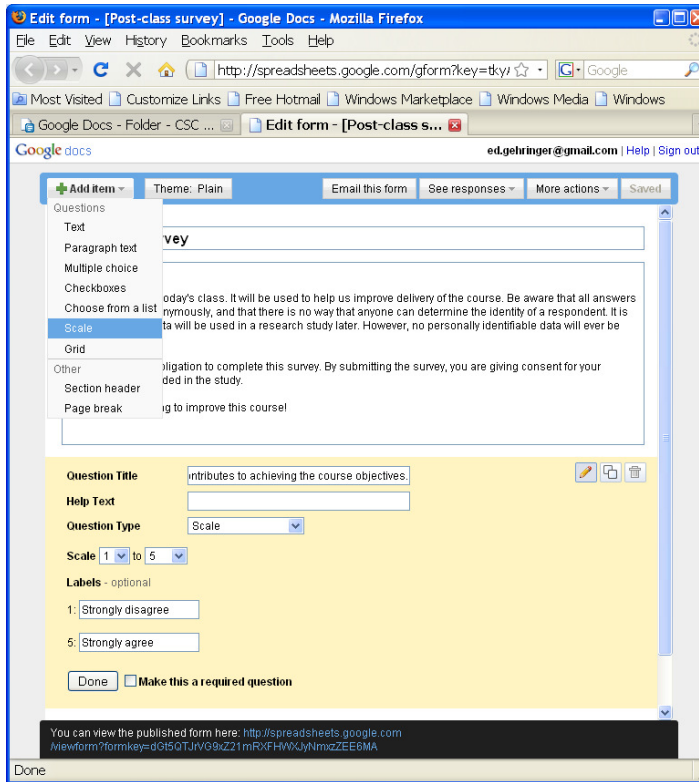
Figure 3. Adding a Scale question to a form

Thus, students were e-mailed a link to the form shown in Figure 4. Response rates were above 50% before fall break, but fell off considerably after that, as Table 2 shows.[*]

Table 2. Survey response rates

	Before FB	After FB
Undergrad class	56%	31%
Graduate class	45%	19%

The "undergrad class" was CSC 216, Programming Concepts—Java, a second-semester programming class taken mostly by sophomores. The "graduate class" was CSC/ECE 517, Object-Oriented Languages and Systems, a course in program design and object technology. The lower response rate in the graduate class may be due to
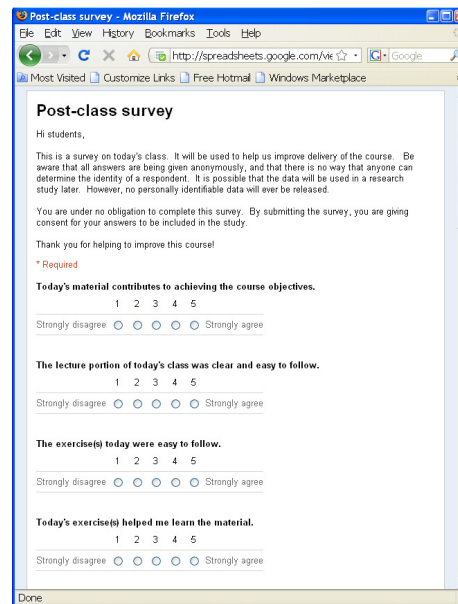
Figure 4. Survey form, as seen by students

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[*] The difference in number of responses per class period before and after break was strongly significant for both classes ($p = 5.1 \times 10^{-5}$ and $p = 3.6 \times 10^{-5}$, respectively).

the fact that about 1/3 of the students were distance-education students, who might not have watched the class before they were asked to fill out a survey on it.

When only one or two responses were received to a survey, I sent the twelve students a reminder, noting that the response rate was low, and asking them to fill out the survey if they had not already done so. However, this was done on a basis that was rather hit or miss. I sent a reminder if I happened to notice a low rate, but I didn't always check in time. In retrospect, it might have helped if I had been more forthright about how I was using the results of the surveys. I mentioned it only two or three times in each class, mostly early in the semester.

3. Adaptations

During the semester, I made several changes in how the class was run based on the results of the surveys. The question that provoked the most useful responses was, "Name one thing that is still not clear from today's class." In the undergraduate class, feedback caused me to spend more time describing—and answering questions on—a programming project, and to explain Java interfaces a second time, I also discovered that an active-learning exercise that had worked well the semester before did not work at all in this year's class; though I couldn't revisit it this semester, I will be sure to modify the exercise before using it again.

In the graduate class, I learned that I needed to provide further explanation on why we were developing a rubric in class to use for evaluating student contributions to the class wiki. I found that design patterns were much more confusing to students than I expected; fortunately, the class seemed to catch on after two or three classes.

4. Results

Table 3 summarizes the responses to the Likert questions on the survey (5-point scale, 5 = "strongly agree").

In most respects, the graduate class was more enthusiastic than the undergraduate class. They gave somewhat higher scores after fall break, whereas the undergrad class gave slightly lower scores after fall break. Both classes thought the material after fall break was more challenging than before. Both classes showed waning interest as the semester went along, likely a reflection on their increasing busyness with homework and projects. The highest scores were received for the question, "The instructor shows interest in student learning," which is gratifying.

It is difficult to capture the benefit of this exercise in a single table. Much of the value lies in what I found out about the pace of specific classes during the semester, and the response to individual active-learning exercises. I determined, for example, that students in the undergrad course thought the lectures on graphical user interfaces contributed most to achieving the course objectives; they felt that binary search trees contributed least. Observations such as this are quite useful to the instructor, but of little interest to a general audience. In any case, the data will yield a treasure trove of guidance when I teach the same courses next fall.

Table 3. Numerical results from daily surveys

	Undergraduate class (CSC 216)			Graduate class (CSC/ECE 517)		
	Avg. Std. dev.	Before fall break	After fall break	Avg. Std. dev.	Before fall break	After fall break
1. Today's material contributes to achieving the course objectives	3.75 0.95	3.93 0.83	3.45 1.06	4.00 0.78	3.96 0.78	4.10 0.77
2. The lecture portion of today's class was clear and easy to follow.	3.50 1.12	3.59 1.07	3.35 1.18	3.68 0.95	3.63 0.91	3.82 1.06
3. The exercise(s) today were easy to follow.	3.55 0.99	3.66 0.97	3.37 1.00	3.68 0.99	3.50 0.98	4.14 0.88
4. Today's exercise(s) helped me learn the material.	3.30 1.12	3.35 1.03	3.22 1.27	3.61 0.91	3.50 0.85	3.89 1.01
5. It was/would have been helpful to work with a partner on today's exercise(s).	3.33 1.13	3.53 1.07	3.00 1.15	3.17 1.14	3.29 1.16	2.86 1.04
6. Today's material was challenging.	3.12 1.03	3.08 1.08	3.18 0.95	3.44 0.91	3.41 0.98	3.52 0.69
7. Today's class increased my interest in the course	3.02 1.08	3.15 1.01	2.80 1.17	3.63 0.94	3.68 0.95	3.52 0.91
8. The instructor shows interest in student learning.	4.17 1.02	4.45 0.73	3.70 1.25	4.24 0.81	4.24 0.76	4.24 0.95
9. The instructor has high standards for student achievement.	3.93 0.90	4.07 0.78	3.71 1.04	4.25 0.79	4.18 0.81	4.41 0.73
10. The assigned homework has helped me think deeply about the course material.	2.98 0.93	3.03 0.86	2.90 1.05	3.66 0.93	3.63 0.90	3.72 1.03
11. The exercises and homework help achieve the learning objectives for the course.	3.29 0.95	3.45 0.80	3.04 1.12	3.85 0.98	3.89 0.96	3.76 1.06

4. Future work

All of the development so far has been done with plain Google forms. Much more is possible through some programming with Google spreadsheets. The results can be tabulated by class session, allowing us to identify sessions that were particularly effective. The instructor can categorize classes according to type of material covered, and the spreadsheet can show results by category. Google charts can be used to visualize trends. In Spring 2010, the author is working with an undergraduate student to develop a better infrastructure for presenting the results of daily evaluations [7].

5. Summary

There are great benefits in seeking daily feedback on teaching. Information arrives in time to be put to immediate use. Feedback becomes something to look forward to, rather than to dread. This paper has presented the results of daily course evaluation by a single instructor in a single semester. The form that was used is available to anyone who wants to use it, at http://tinyurl.com/post-class-survey-form. It can be copied by visiting http://tinyurl.com/post-class-survey-results. This technique requires minimal work to set up, less than five minutes per class. Results are instantly available in a spreadsheet, and formulas can be written to analyze the feedback. There is seemingly no reason why others cannot adopt and profit from this technique.

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