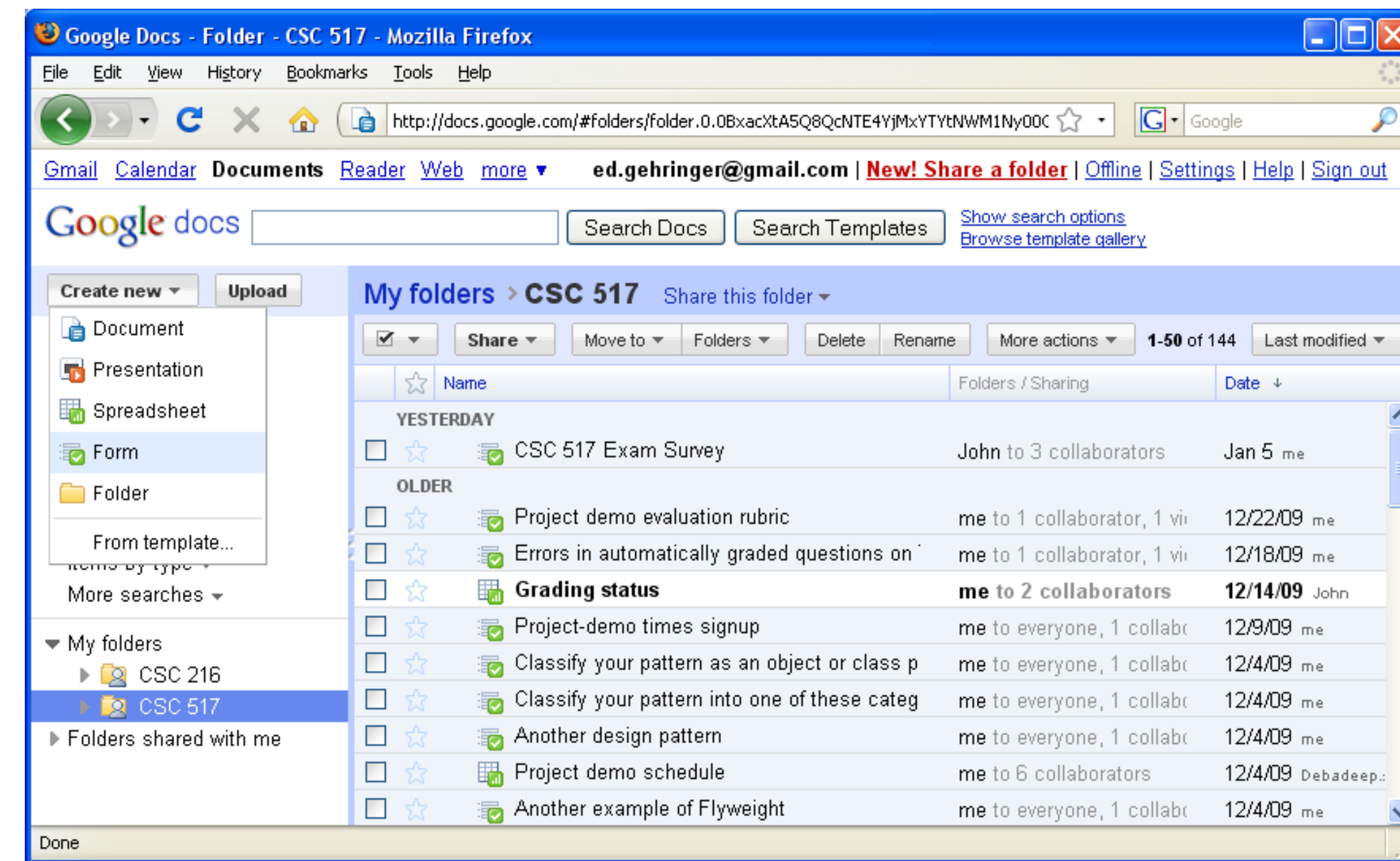
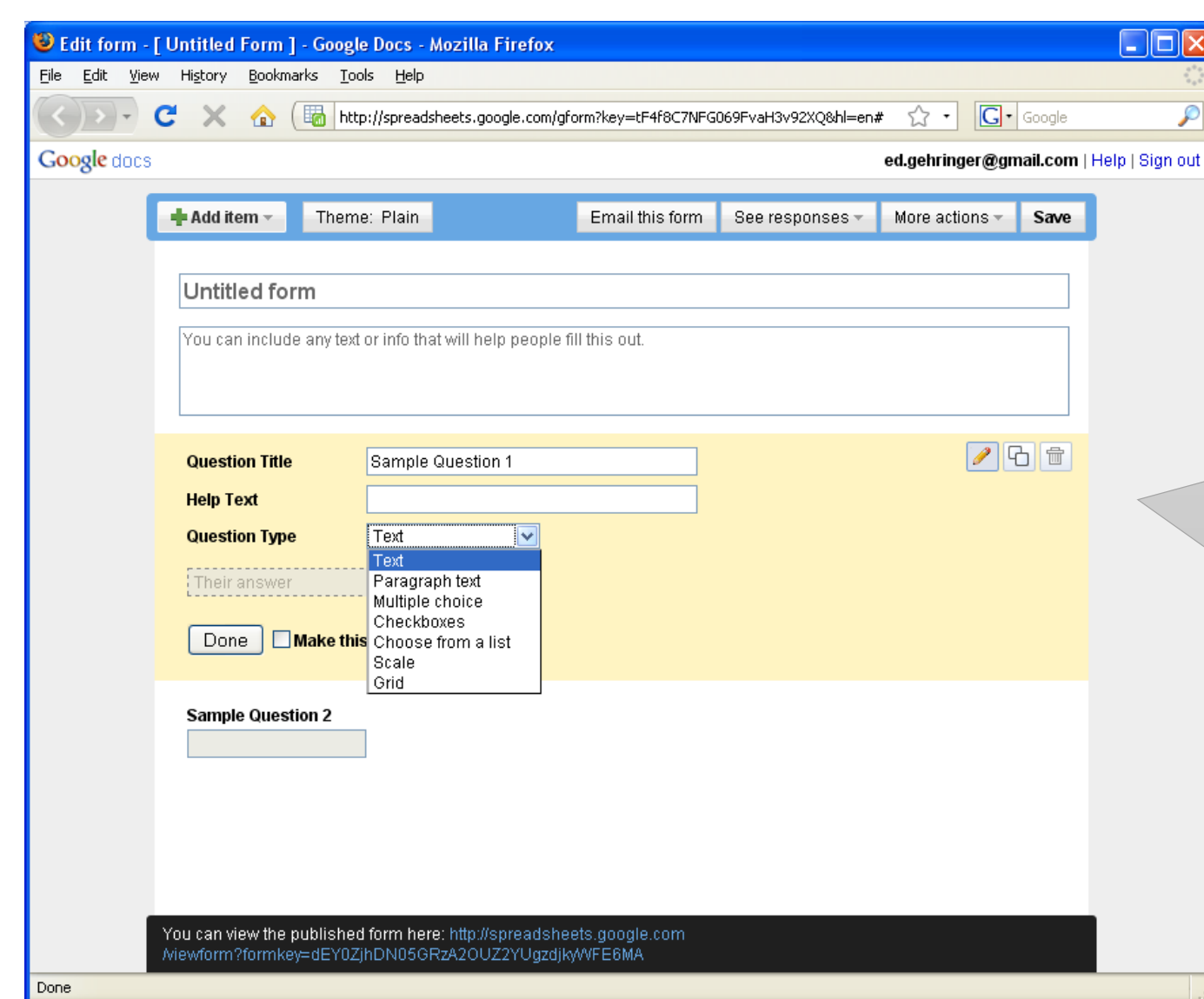


## Using Google Forms in the Classroom

1. Instructor creates a Google form with questions relevant to recently covered material.



2. Instructor adds questions to the Google form.



- Form Creation Strategies**
- Collect prose answers
  - Submit computer code
  - Steps in a derivation
  - Distributing work
  - Class roster

3. Students fill out forms during class.

Give the students a few minutes to fill out the forms.

Work with student responses:

- Identify common misconceptions
- Show combined/good solutions
- Use student responses in next examples

**Exercise 06.03: Condition Coverage**

Your username (sesmith5@ncsu.edu) will be recorded when you submit this form. Not sesmith5? [Sign out](#)

**Select your predicate \***

**Select your test type \***

**Write a test case for your predicate and test type. \***  
 If possible, you should use a test case we've already written.

**Where you able to reuse an earlier test case? \***

Yes, I was able to reuse an earlier test case.  
 No, I needed to write a new test case.

**Unity id(s) of person(s) you worked with.**

Send me a copy of my responses.

Never submit passwords through Google Forms.  
 Powered by Google Docs

4. Student answers appear in spreadsheet.

	A	C	E	F	G
1	Timestamp	Write a test case for your predicate and test type.	Select your predicate	Select your test type	Where you able to reuse an earlier test case?
2	9/7/2012 10:16:00	Input: getTriangleType(2, 2, 1); Expected Output: "Isosceles"	(a == b)	True Test	Yes, I was able to reuse an earlier test case.
3	9/7/2012 10:16:39	assertEquals("Scalene", getTriangleType(2,3,4));	(c == a)	False Test	Yes, I was able to reuse an earlier test case.
4	9/7/2012 10:17:20	getTriangleType(2, 3, 2) -> "Isosceles"	(c == a)	True Test	No, I needed to write a new test case.

## Classroom Response System Accountability

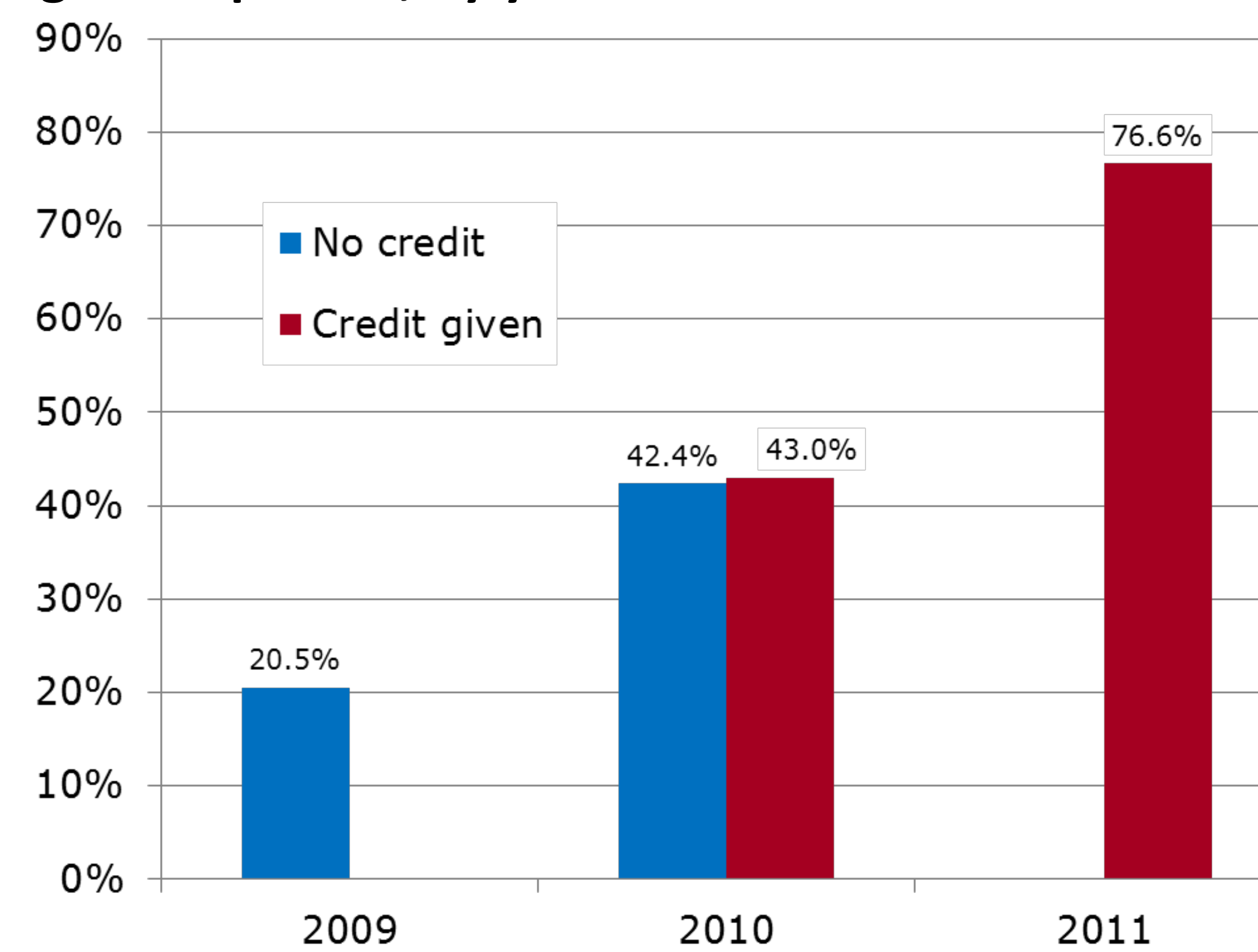
Study: Three years of CS2 (Fall semesters only)

Fall 2010—Accountability for Answers

Characteristic	2009	2010	2011
# Class Meetings	27	20	25
# Pre-quizzes	5	20	25
# Forms	46	86	86
Tracking Student IDs	No	Some	Consistent
Credit for Answering	None	3% of final grade	Questions enforce att. reqt.

Section	Before First Midterm	Between Exams	After Second Midterm
001	Not required to log in	Required to log in	Required to log in
002	Required to log in	Not required to log in	Required to log in

## Tracking of Responses, by year



## Enhancements

Google forms, as a CRS, benefit from the following enhancements:

- Automated grading of multiple choice, true/false, and exact match short-answer questions;
- Charting of grades, answers, and correctness of answers;
- A student gradebook;
- Administrative tasks

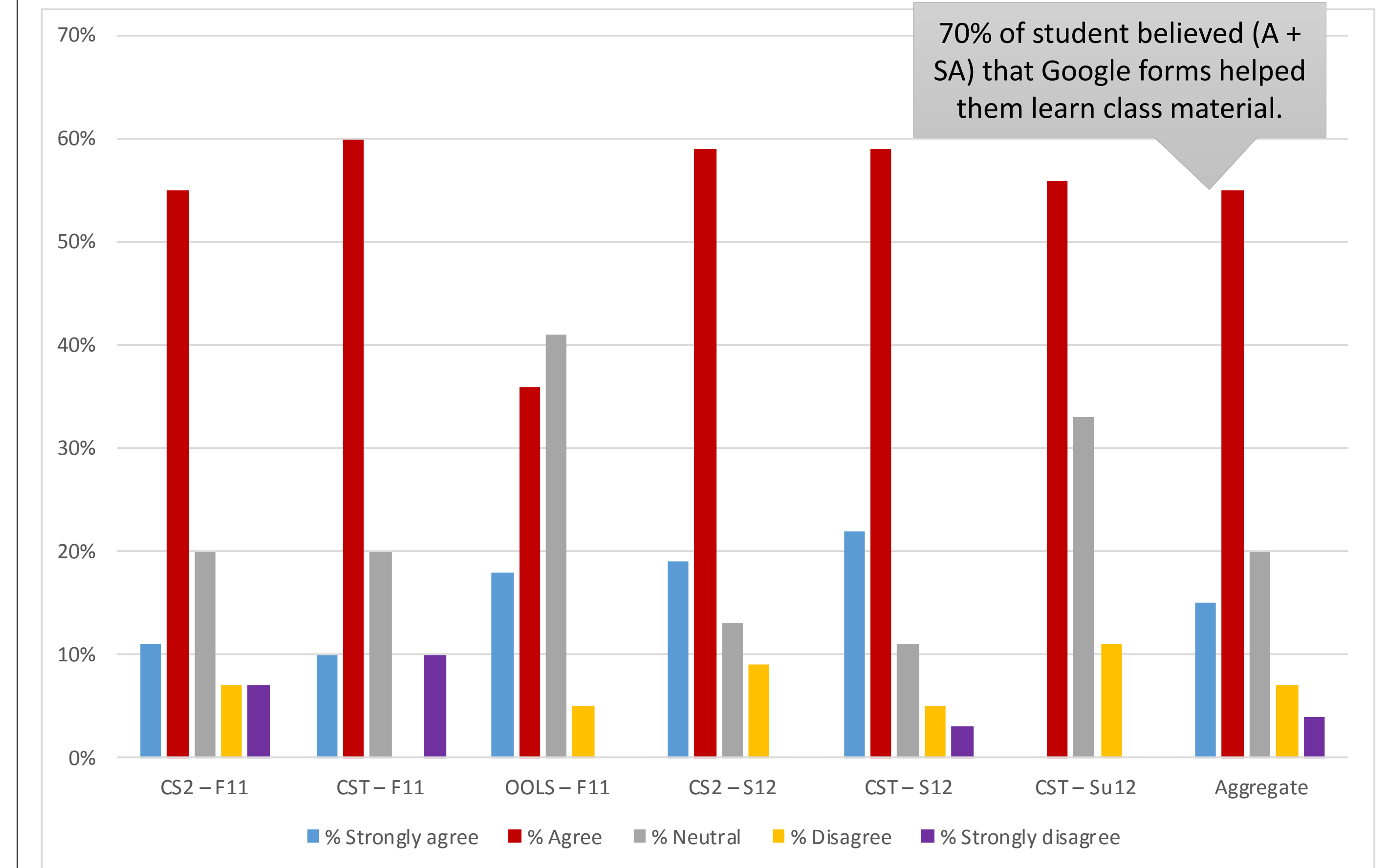
## Limitations

Google's App APIs change frequently; scripts require frequent updates

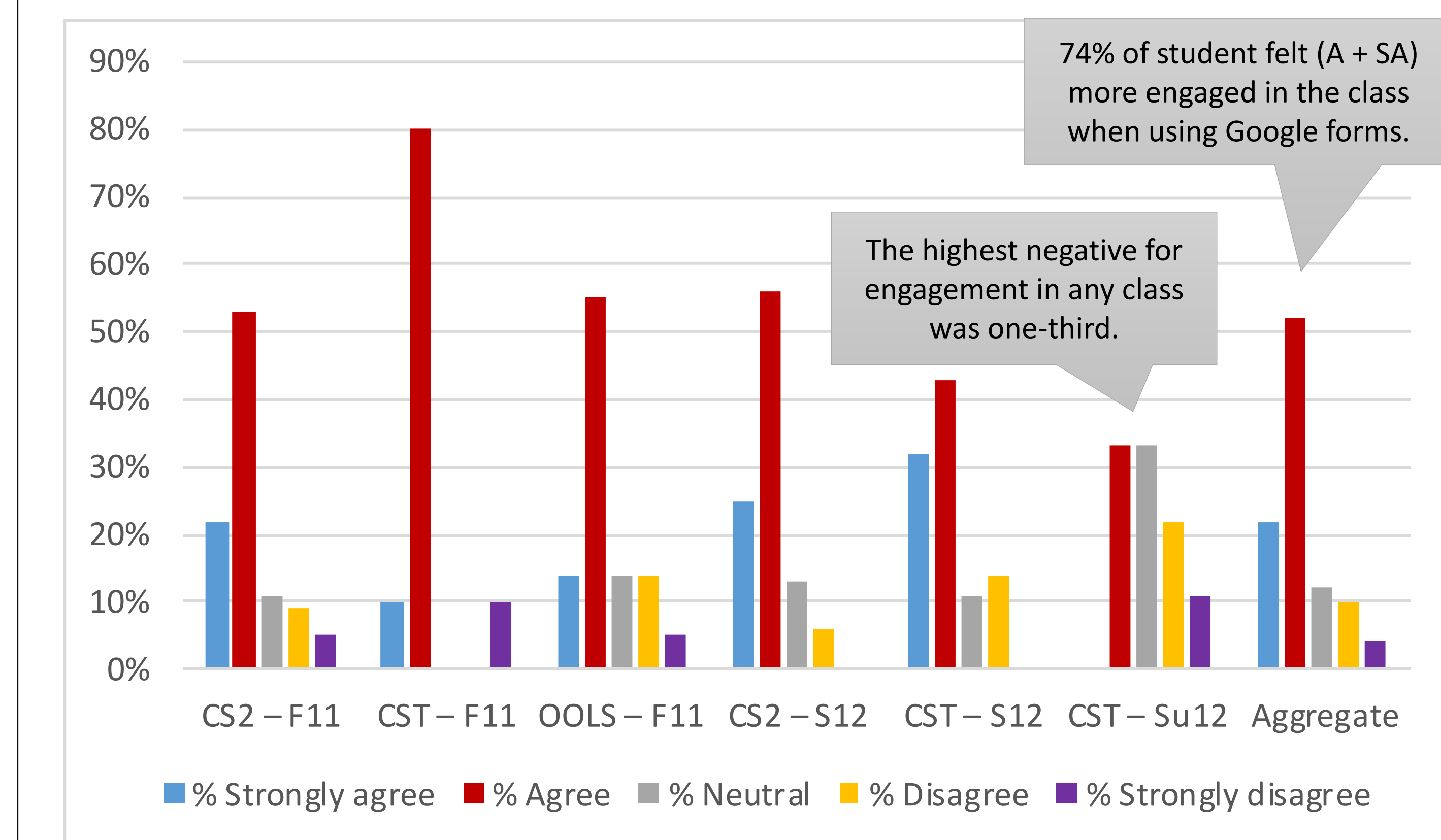
## Student Perception Survey Results

CS2	CST OOLS (2)	CS2	CST	CST (2)	Agg.	
F11	F11	F11	S12	S12	Su12	All
74	75	107	92	106	44	498
74%	13%	21%	35%	35%	20%	33%

Did the use of Google forms as an enhanced classroom response system help you learn the course material better?



In responding to the Google forms, did you feel more engaged in the class?



IRB #2183

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