

Interventions

CWSEI End-of-Year event
27 April 2010

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What is an "intervention"?

Typically, an intervention to help low performing students would involve:

- 1- Providing extra **review sessions**
- 2- Distributing additional **practice problems**
- 3- providing additional **office hours**
- 4- **Help rooms** where students can work together with TAs
- 5- Etc...

Typically not too effective though!!

High performing students avail themselves of these additional resources, but lower performance students DO NOT.

Many documented (and undocumented) interventions failed to improve performance of these lower performing students.

"Although most programs in which the thrust is study skills use University students, the effect on study skills are minimal"

*J. Hattie, J. Biggs, N. Purdie, Review of Educational Research **66**, 99-136 (1996)*

We successfully intervened with low performing students in two VERY different courses:

PHYS 250 (Modern Phys) May 2009

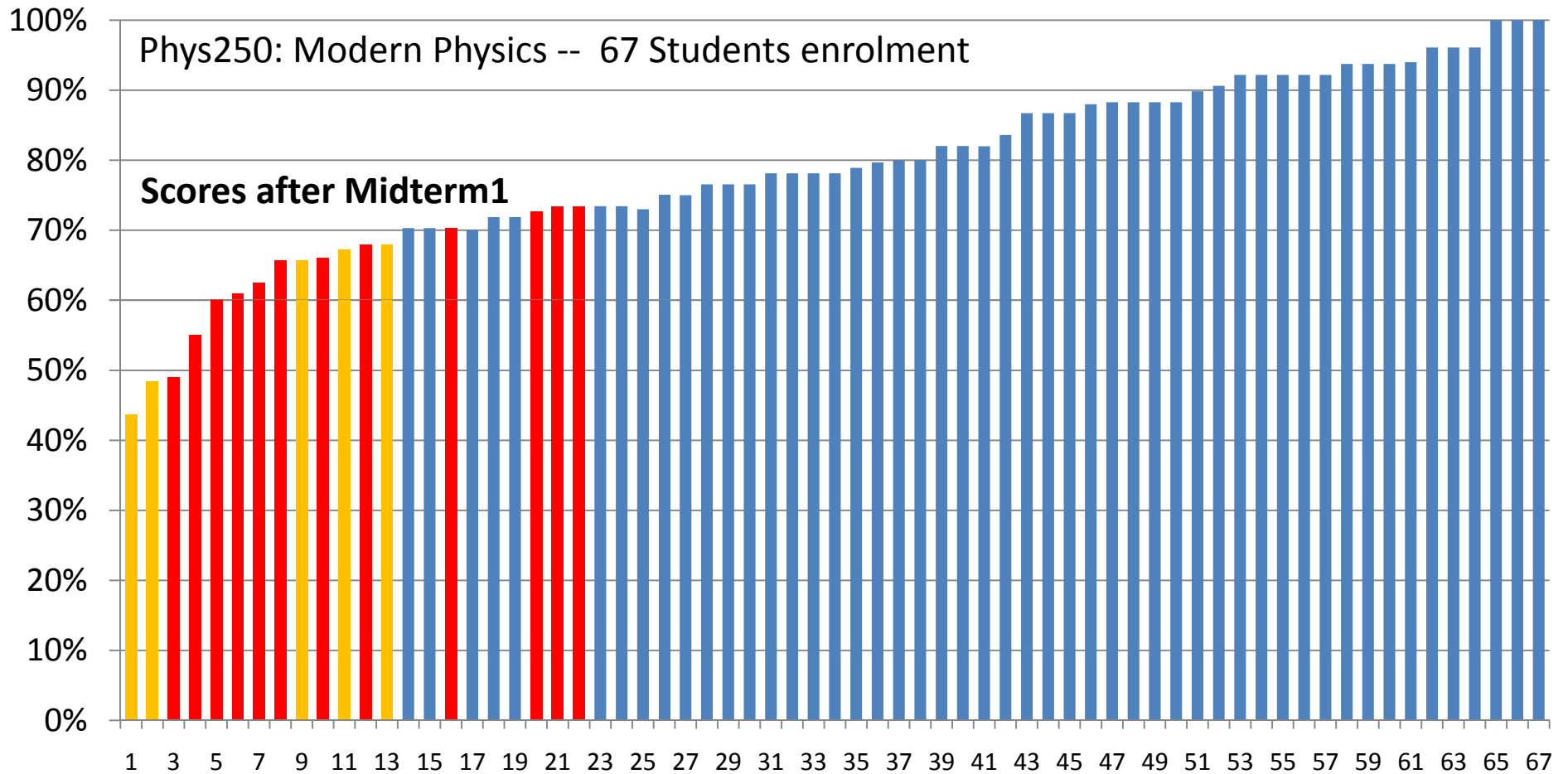
Student population: 67 second year engineering phys students

EOSC 112 (Fluid Earth: Atmosphere & Ocean) Sept 2009

Student population: 180 students, any year, any faculty

Who gets an intervention?

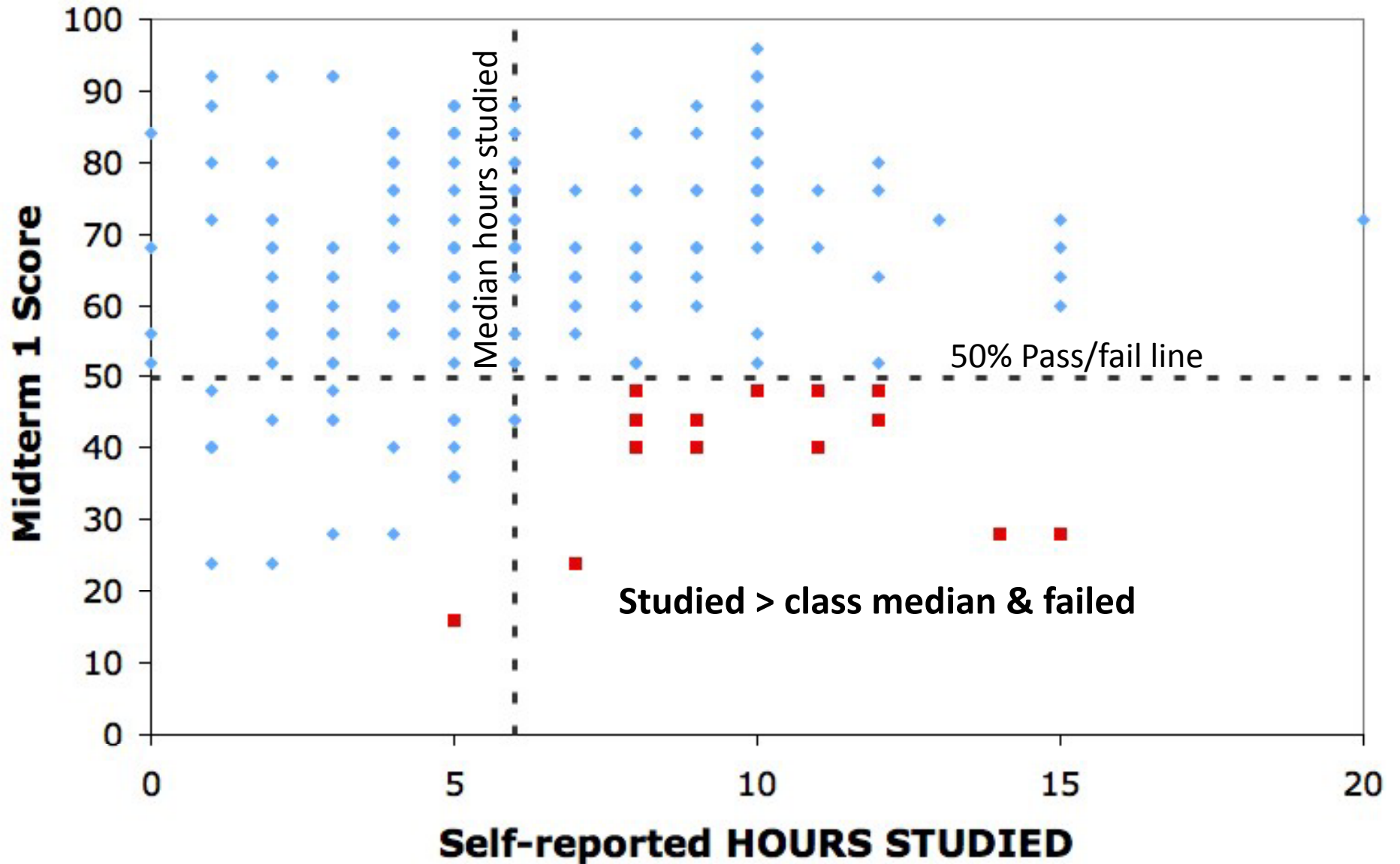
PHYS 250



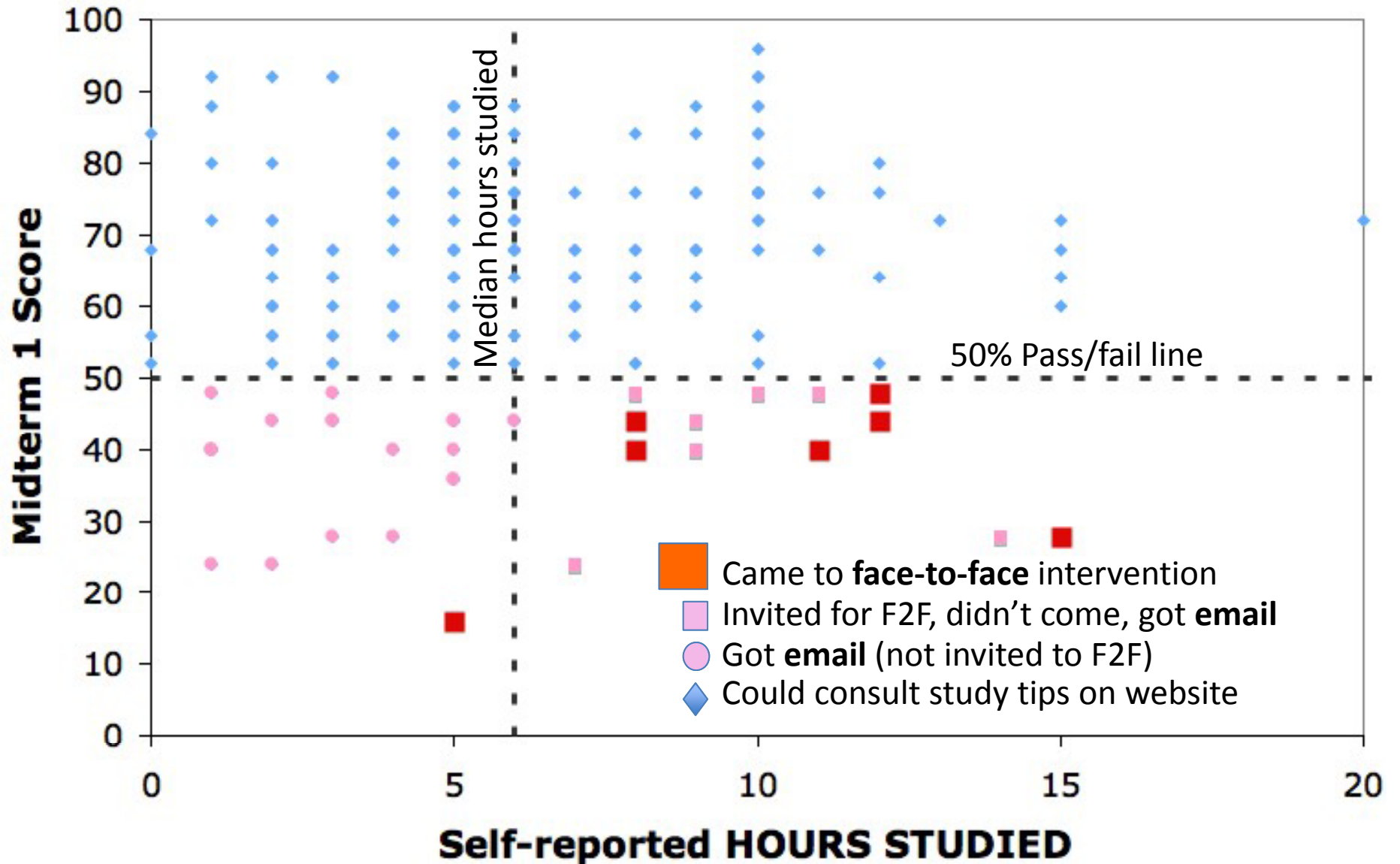
5 Students emailed, but did not respond

12 Students emailed, and **intervened with**

Who gets an intervention?



Who gets an intervention?



What does an intervention look like?

Intervention:

Email is sent out to the ones who scored at bottom 25% on Midterm 1

We sent 17 emails, and intervened with 12 students.

Took place about 1-2 weeks after Midterm 1.

One-on-one with one of the instructor, lasted about 15-25min each

Questions asked:

- 1- What did you think of M1? (Hard/easy, fair/unfair, blabla)
- 2- How did you prepare for it?
- 3- What do you think could be done to improve on M2?
- 4- **Volunteered our help to improve their performance on exams**

What does an intervention look like?

Intervention:

We asked them to carry out a **specific set of activities** in studying for future exams.

- 1- Review the homework problems and solutions
- 2- Go to the weekly (optional) problem solving sessions
- 3- Study the learning goals for the course they had been given with the syllabus
- 4- Review the assigned reading for the course

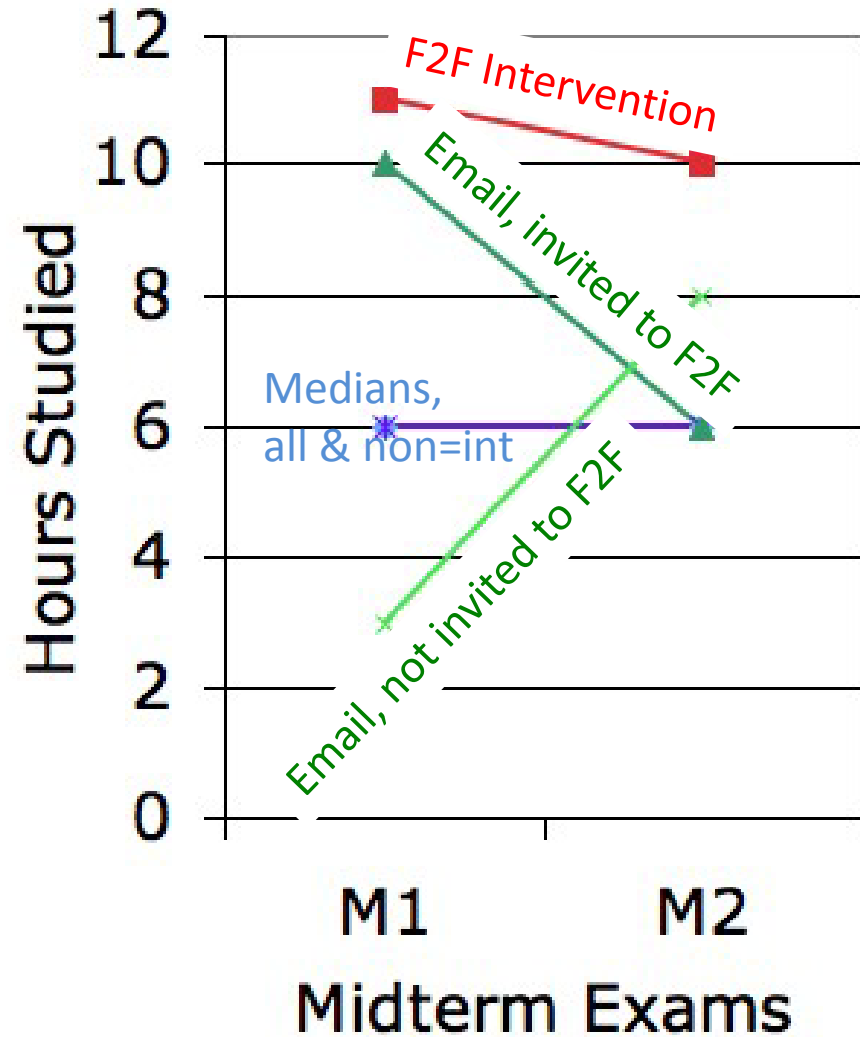
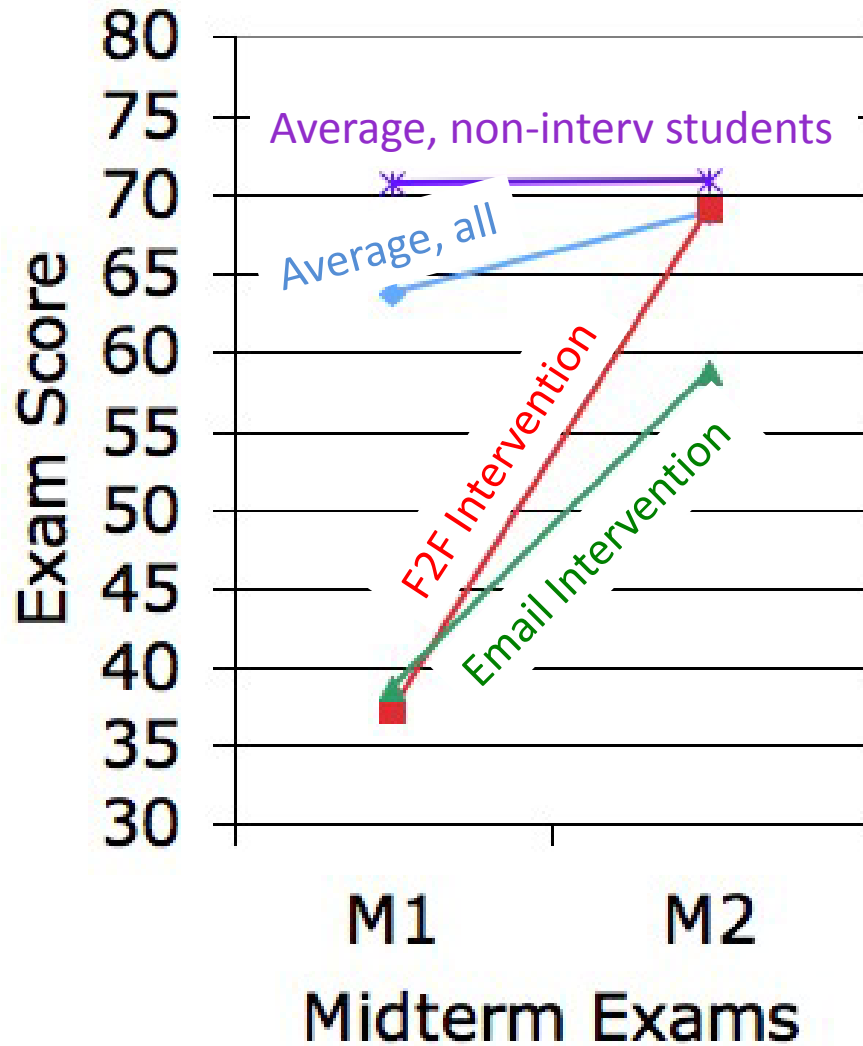
Each student was asked to agree to do these things when studying for the next exam and told we would be checking on their progress before the next exam.

Did they do better after an intervention?

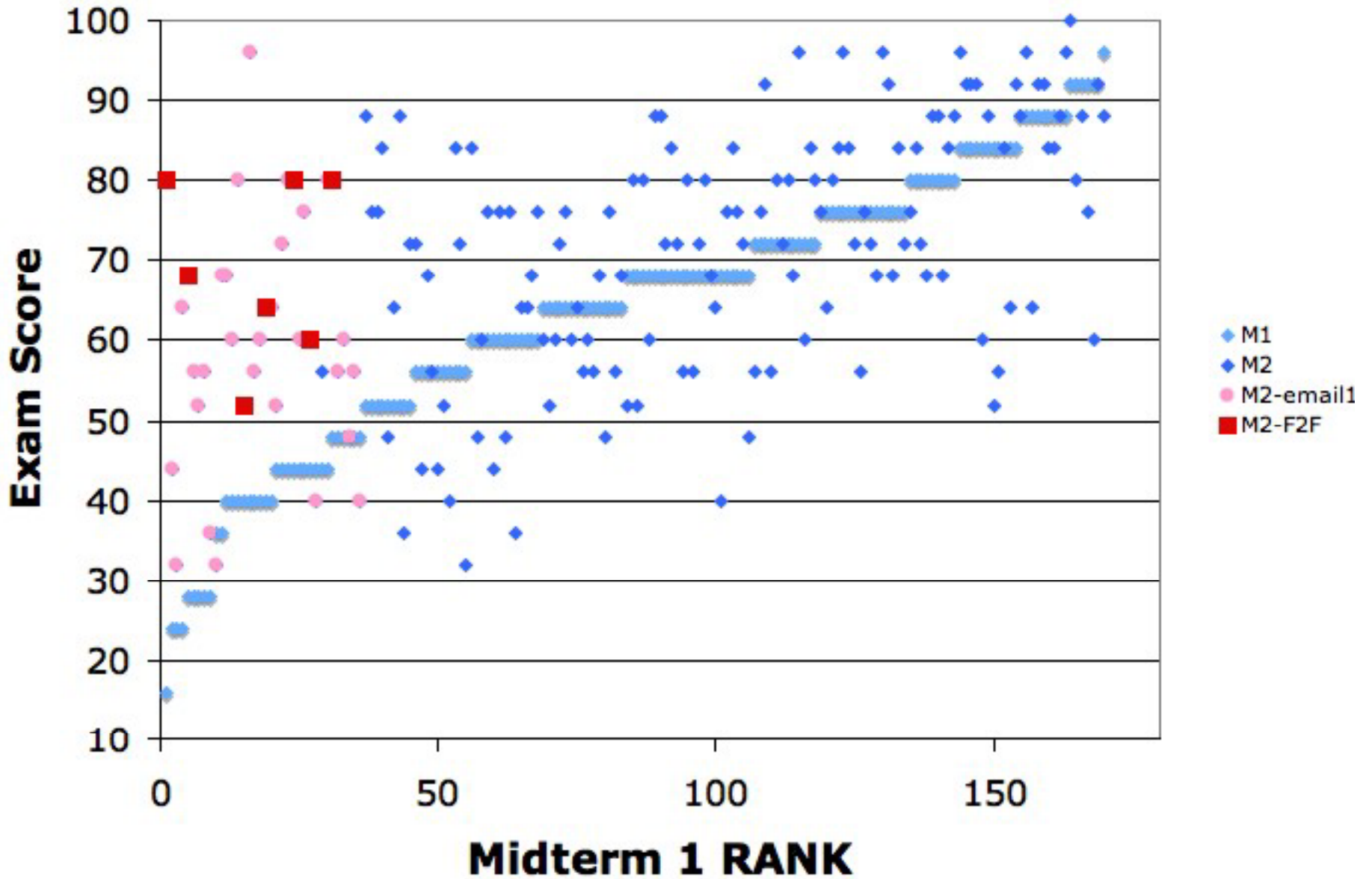
PHYS 250

	M1 (%)	M2 (%)	Final Exam (%)	FE - M1
10 students (with intervention)	64.5	83.4	72.6	8.1
Next 16 student (w/o inter. or email)	77.4	80.3	72.9	-4.5
Entire class except 10 intervened stds	81.5	83.1	76	-5.7

Do students do better after an intervention?

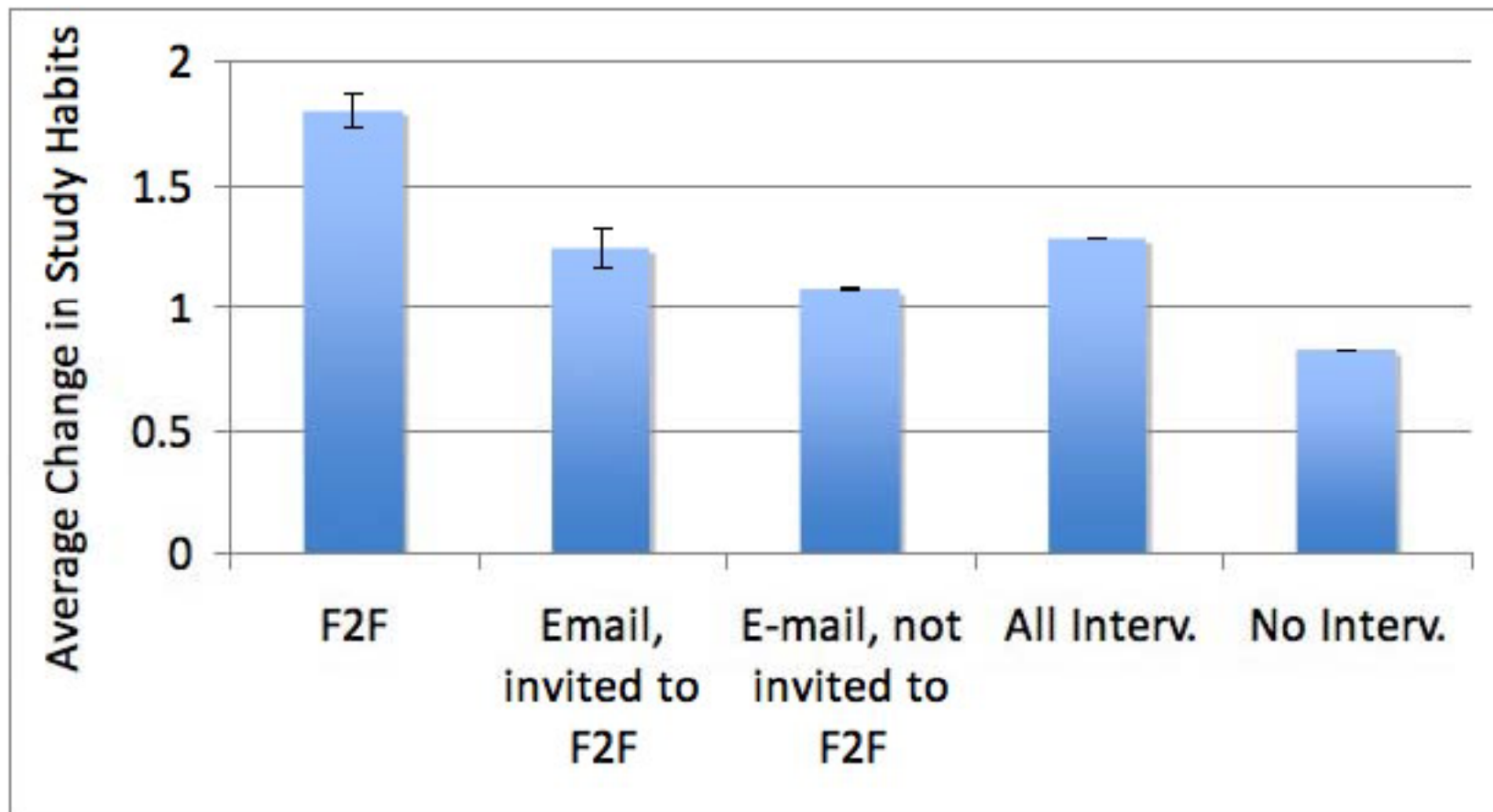


Do students do better after an intervention?



Intervention students report changing study habits

2 = Changed study habits "a lot"
1 = Changed study habits "a little"
0 = Did not change study habits



How do we know the intervention was responsible?

PHYS 250

Previous results clearly established that intervention had large effect, but it does not say why. For instance.....**did they really change their study habits or simply worked much harder for the rest of the term?**

At end of semester, we conducted interviews with the “**10 student intervened group**”. For comparison, identical interviews were carried primarily with those students scoring in the next higher quartile after the first midterm (“**control group**”).

To avoid biasing the student responses, the interviews were carried out by a third person who was unknown to the students and followed a very strict and limited script.

- 1- *How do you typically prepare for exams in science and eng courses here at ubc*
- 2- *How did you prepare for midterm 1 in phys250*
- 3- *How did you prepare for midterm 2 in phys250 -- did you change anything in the way you prepared for M1 Vs M2? If so, what?*
- 4- *What study advice would you give another PHYS250 student in our course for him/her to do well in the course.*
- 5- *What study advice would you give another student in OTHER science and eng courses for him/her to do well.*

Conclusions and Suggestions for interventions:

- These results demonstrate that student performance should not be considered something outside of the instructor's control
- Can make a dramatic difference in performance with minor but appropriately targeted intervention to improve study habits.
- Course needs to be structured with all components aligned (learning goals, assignments, assessments,...