

Finding a way to make

homework helpful & valued.

IPHY SEI &

Human Anatomy Working Group

Human Anatomy Course (IPHY 3410)

The Course:

- Large lecture introductory course in IPHY major
- ~200-250 / class ... no TAs
- Introduced homework for the first time in Spr08

The Homework:

- Homework given out as PDFs one week ahead of time
- Students submit all homework in CU Learn
- All questions are multiple choice
- Question formats include: identification of structures, clinical applications, organization of information, comparing/contrasting systems or structures
- Questions target known misconceptions and difficult material

HOMEWORK DESIGN

Spr08

- 4 assignments (1/exam period)
 - 10 pts each
- no incorporation into course

Fall08

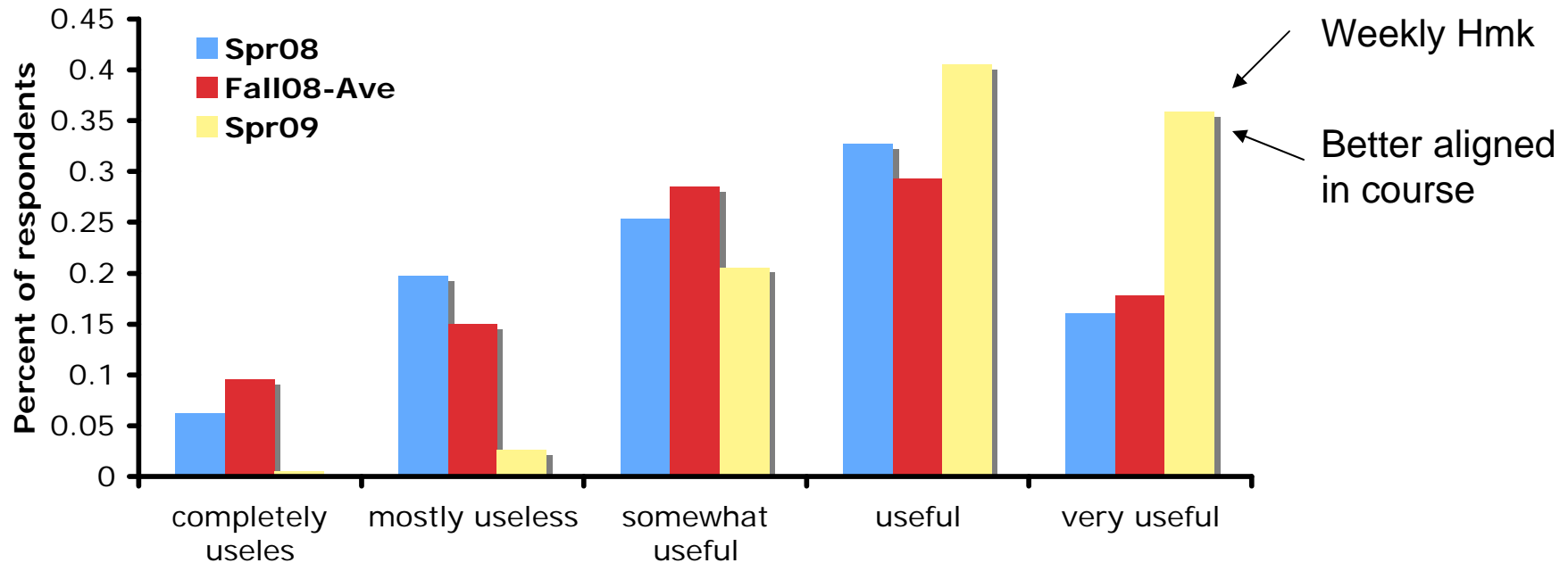
- 8 bi-monthly assignments (2/exam period)
 - 10 pts each
- little to some incorporation into course

Spr09

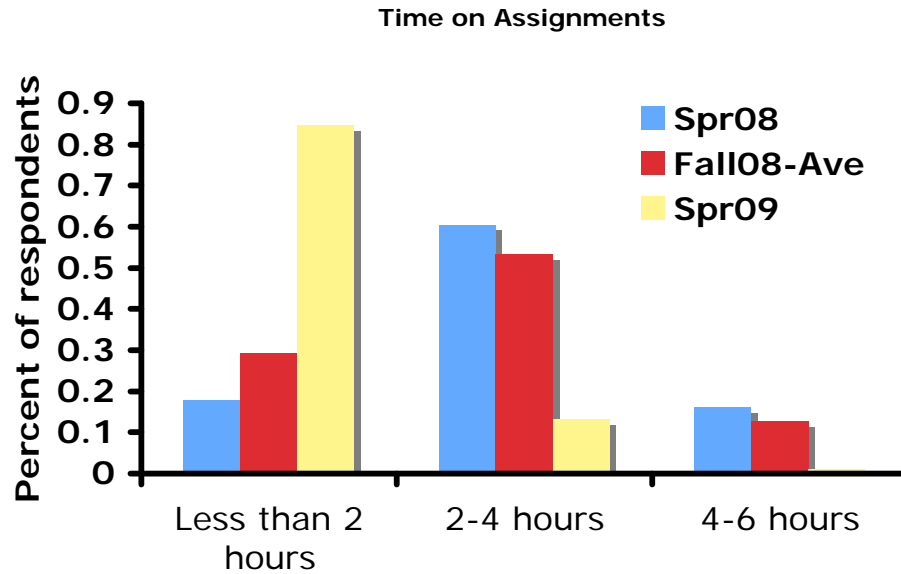
- 16 weekly assignments (~4/exam period)
- 5 pts each (& slightly higher points/question)
 - greater incorporation into course:
 - 1) Difficult homework questions asked again as clicker questions in class
 - 2) Aligned homework level of homework with exams (application questions)

Overall, more students in Spr09 found the homework useful.

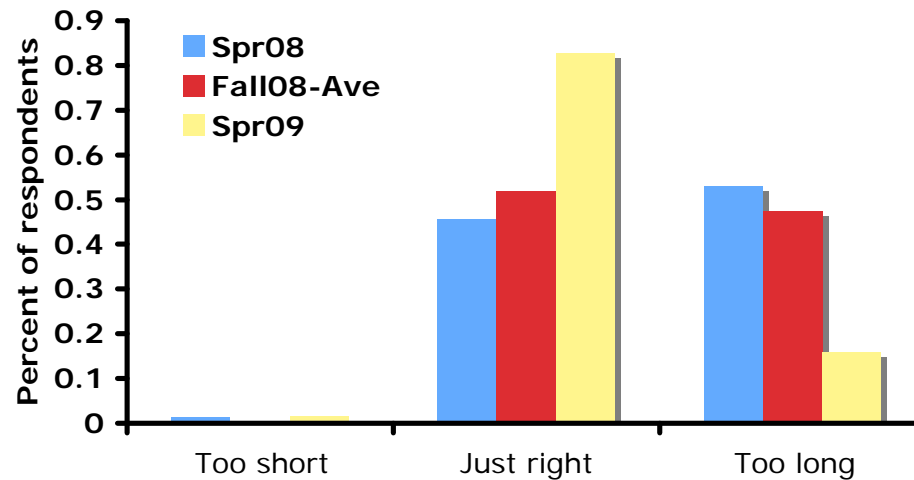
How useful for learning were: Homework Assignments



Students prefer shorter weekly homework assignments.

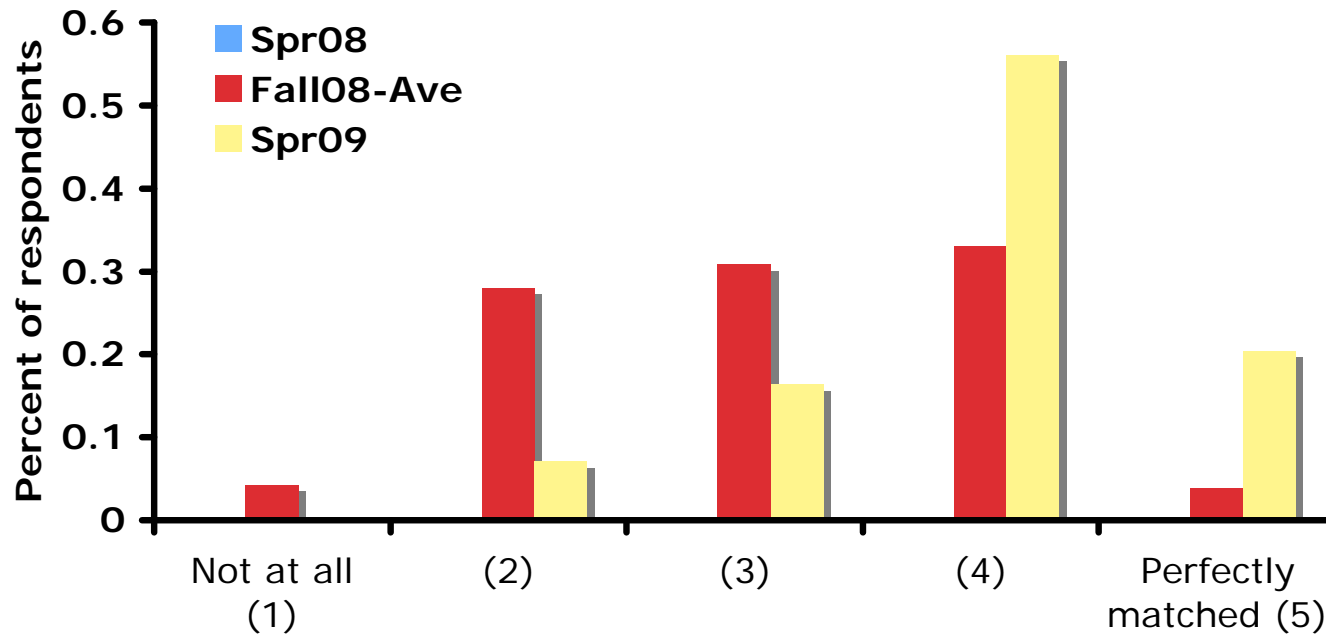


How would you rate the length of homework assignments?



Despite roughly the same homework, more students in Spr09 felt the homework matched the lecture topics.

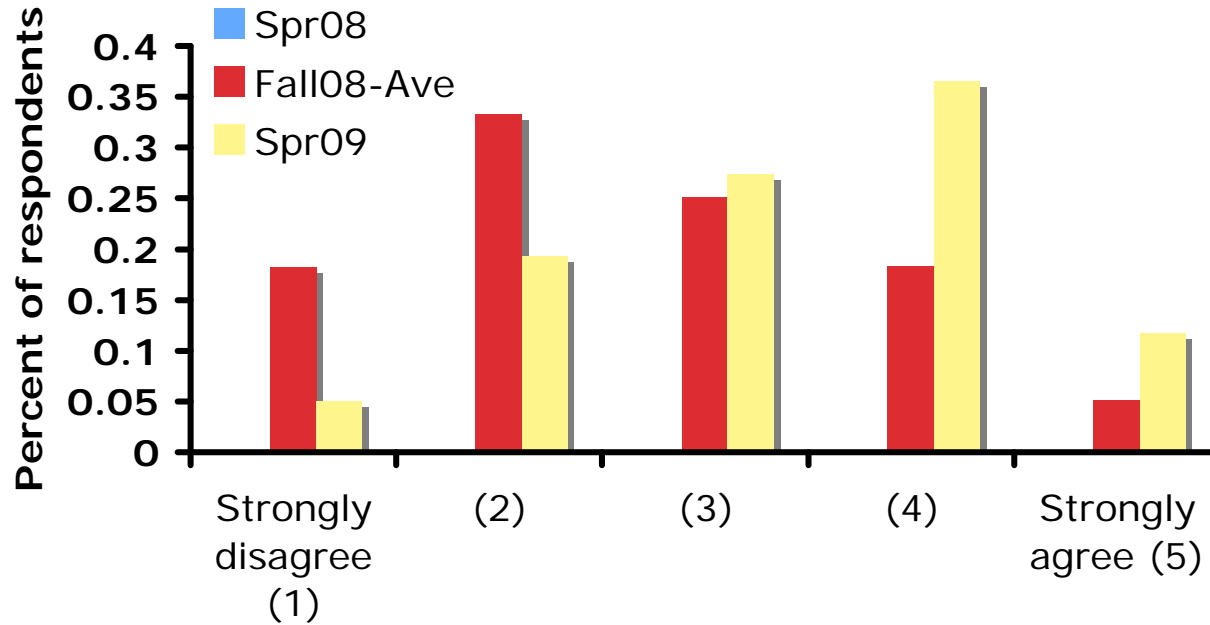
Does homework match lecture topics?



- **83% of questions (n=146) were exactly the same or only had slight modifications.**
 - 8% were major modifications of questions to the same topic.
- 9% were new questions that replaced questions that had been removed.

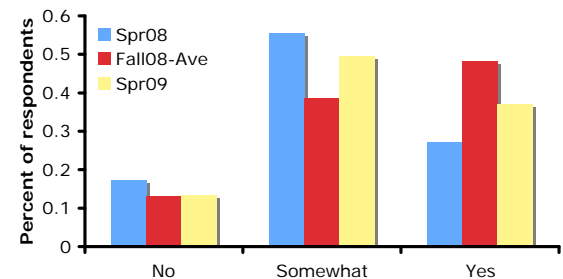
Students in Spr09 feel the homework is aligned well with exams.

Homework provides adequate practice for the questions on the exams.



Note: This was not evident when asked on a 3-pt scale.

Does homework help you prepare for exams?



LEARNING EXAMPLE

Homework Question

4. How many synapses does a nervous signal have to cross when moving from the spinal cord to activate an effector organ for each of the three following divisions of the efferent nervous system?

Efferent Nervous System Division	# Synapses (0, 1, 2, 3, or 4)
a. Somatic motor	
b. Sympathetic division of ANS	
c. Parasympathetic division of ANS	

Only 47% of class got somatic motor (corresponding to the concept survey questions to the right) correct.

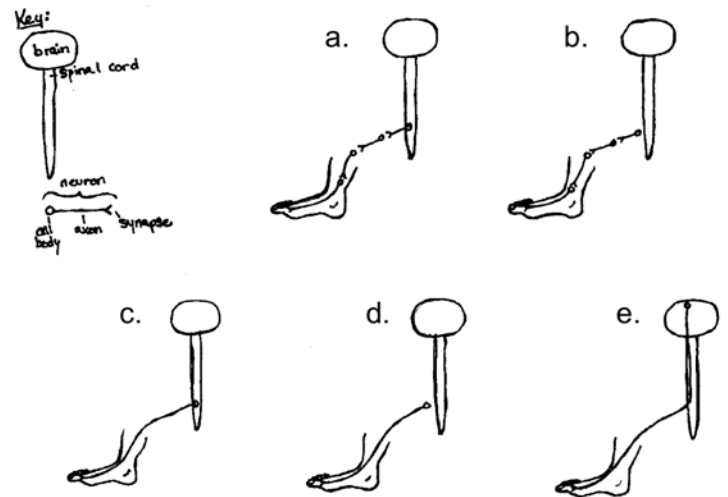
(This question can be answered by looking up the answer in the text or notes.)

Asked question in class as clicker question the day after homework was due.

Discussion revealed confusion over what a synapse was, how many are in a row, and how neuron series are different in the periphery vs. the central nervous system.

Concept Survey Question

1. Which diagram correctly depicts the general location of the motor neuron(s) that signal(s) your toe to wiggle?



Fall08 (Instructor 1) LG = 19%

Fall08 (Instructor 2) LG = 19%

Spr09

LG = 32%

Conclusions

- 1) Students value shorter, more frequent homework assignments.
- 2) Students value homework more when they can see its alignment with the course on topics and on exams.
- 3) Bringing in discussions about homework difficulties into the lecture (in the form of clicker questions) revealed additional misunderstandings and confusions and perhaps led to greater learning gains in some topics.