Hi everybody.

Thanks for the feedback Thursday during the field trip / first project data collection. I’ve never had such a large response… and usually people don’t put their names on them…. Oh, then I realized that many of you may have interpreted the request for information as part of the graded classwork – my mistake. Nevertheless, I am grateful for the information and am attentively considering it. Additionally, I found your participation in the field trip to be the most creative and enthusiastic I’ve seen in the 4 quarters we have done this. It seemed fun… and in the 4:00 class, many students were analyzing data on their computers immediately! I find this impressive.

I’ve come to understand that some students have been trying to access videos directly from the PlayPosit website. Please don’t do this as they may not be displayed there. I have added a statement to the syllabus indicating that you should access the daily schedule on the wikispaces website. Thanks for bringing this to my attention.

I’m reading these while checking out the [new Santana Album on NPR](http://www.npr.org/2016/04/07/473083487/first-listen-santana-santana-iv?refresh=true)… yes I enjoyed them the first time around in the ‘70s.

You seem vividly aware of your adjustment process to this learning model and your responses to it span the whole range of emotions. *For example:*

“I really enjoy working through problems in groups and it has led me to meet some cool people and learn more about physics.” versus “dislike the constant social focus rather than a more academic group interaction.”

 “I joined a study session but I’m still not getting it.” versus “Things going well but I feel that we are not progressing very fast. I’m sure that will change but I feel a little stuck. Otherwise, I like the videos and feel like I’m learning to do physics in a new way.”

“I’m learning and I love the group dynamic.” versus

“I think everyone would do better if they felt comfortable and were not forced to talk to people they don’t know.” I agree this can be uncomfortable. I think that the ability to talk with people you don’t know will be crucially helpful for you in many future scenarios. If you are uncomfortable with this, I think it is all the more important to do it. I encourage you to find ways to lighten the discomfort. Please bring in food and a beer…. Well except the beer (which would have been allowed at MIT). Think creatively about how to make this a comfortable experience. Let me know if you have any ideas.

“I actually enjoyed this class a lot more than I thought….. With this sort of learning, I feel lost a lot more but it also feels a hell of a lot better when I figure it out. I have to think harder & often have to think in lots of different ways…. I should work on doing the problem sets earlier.”

While there is clear recognition of some benefits to our learning model, many also request a return to the increased structure of conventional instruction including worked examples, lectures; and well-defined objectives and expectations. For instance:

“I like the videos and find them informative but I’m having a really difficult time actually translating that information and being able to utilize it for the problems we are given. It’s also been difficult to understand what is expected of me for this lass, all direction we are given seem vague, which adds to the confusion. I’d really appreciate some more clarity in this class.”

The goal is to acquire a way of thinking you don’t yet have. So, how do I define a way of thinking that you don’t have? I do it through Big Exams!, and problem sets; and we clarify, practice, and discuss together. Conventional physics builds one thing at a time, assuming perfect understanding of what is before, like building a brick house on a strong foundation, layer by layer. Studies show people don’t learn like this. We really don’t learn to walk before we run… we just start running and stumbling and learning *because* of the stumbling and frustration that may accompany it.

If you want more worked problems, they are very nicely presented in the textbook – better than I can do them. I am here to help explain if more guidance is desirable.

Some folks perceive that this method requires more time and work than the conventional method: “It’s taken a lot of adjustment to get used to how this class runs. At first I was excited about approaching all the concepts at once, but now that we’re in the second week, I am realizing how much more time and effort I’ll have to put in this class if I want to get a good grade. It’s a lot of info to have to learn all at once, but I’m hoping that once I’m used to the workload, the work will pay off and I’ll be prepared for the next few classes in the series.” I don’t think that the learning model is the reason this takes so much work, but rather that it is *physics.* In fact, *more* students expressed that the class was too demanding when I taught conventionally. Likely many of you may find this the most demanding class you’ve had. However, in two years it won’t *still* be the most demanding class you ever took. I’m reasonably sure you will continue to grow with more challenges in your future classes. Student surveys indicate that students in my classes average the same amount of study time as students with other instructors.

“I feel like everything is taught under the assumption that we know what’s going on 100%, but that’s definitely gotten better and I’m able to keep up more now.”

“I am enjoying this style of a “flipped” classroom because I learn much better from working with my classmates than just listening to a lecture.”

“…It’s nice that you can be really flexible with the amount of work you put in outside of class. As for myself this quarter, I’ve really quickly built up an addiction to coffee but IT TASTES SO GOOD and IT’S SO USEFUL”

“Usually before class I try to take a nap and drink a lot of water in between classes and I have found it keeps me focused.”

“Sometimes it is hard for me to watch the videos and not be able to ask you questions right there but the class is fine.”

“I’ve been watching the videos and taking notes but I haven’t devoted enough time to the problem sets. I’m going to devote more time to them.”

“I like the initial discussion when class begins because we get to talk about the videos and whether or not we’ve started the PS. This allows us to compare our struggles + solutions.”

“I am watching videos 3 times. I do most of the homework in workshop. I text my classmates to discuss concepts I don’t understand.”

“At first I thought the class would be way harder than it needed to be. I see now that the group work is only positive.”

“I have enjoyed being able to watch videos and see examples and diagrams within the videos. However, I get confused by the questions in class. It might be because I’m used to being given a problem to solve directly.”

“Honestly didn’t really know what to expect going into this. After the first [Big Exam] I felt more confident. I’m a visual learner so the examples help a lot. Still unsure of how this class will work for me, but I’m going to try to make it work for me.”

“I’d like it if more equations were brought up (i.e. the 4 kinematic equations). We will use them. Until then, it is important that you develop a working knowledge of how the basic kinematic formulas work, so Please focus on them. Also maybe incentives to completing the problem sets.” Yes, I’ve wrestled with this issue, as I described in the “syllabus” video. If we put points on the problem sets, more students will complete them, but my experience is that focus is all wrong. I see a huge difference between actually *doing* something and just trying to *get something done*.

Large call for more structure and exact solutions, “I wish we’d do some problems step by step as a class sometimes.” *And* “I would like to practice more problems in class rather than just going over a couple but I do like how well you explain each problem.” I believe and have read studies promoting the following: One can learn physics by compiling a library of pattern recognition between problems and formulas, *or* one can learn physics through conceptual contemplation. I present you with probably about 1/3 as many problems I did with my students 5 years ago, but expect that you’ll spend much more time with each problem than they did and demand a more fundamental conceptual understanding than they were able to get through rapid pattern recognition. We use conversation to build this conceptual understanding, which should allow you to solve a much wider variety of problems than people who learn through pattern recognition of many problems.

“The group work is definitely making me a better physics student. The class time is really enjoyable, filled with collaboration.”

“I sometimes feel that during class we are spoken to and interacted with as if we are elementary school children, which isn’t an ideal learning atmosphere for me.” Sorry about that. I think my demanding interaction rather than just speaking to you may feel patronizing. I think you could feel micromanaged in this process. I think that students who are more involved will learn more and enjoy more… unless they feel insulted. Hmm… OK, I’m willing to listen to alternative ideas if you have any to present.

“I think that the Big Exam! Has been the most helpful think in gauging my understanding.”

“I think this class really exemplifies the “Learn by Doing” philosophy.

“I also appreciate that only large exams go onto our final grade to reduce stress.”

“The classes are very fun because of the enthusiasm ☺”

“I also like how you build on concepts and how you deal with units because it helps me actually understand where units like Newtons and Joules comes from.”

“I thoroughly enjoy the class. The mood of the class is very lively. Interactions with classmates is extremely easy. What I could work on is look at the problem sets more often”

“Was confused for a while on how you were really approaching the subject itself. That’s a lot more clear after two weeks.”

“I am starting to adapt to this learning method & trying to study/teach more concepts myself, which is difficult.”

“I originally was super skeptical of the flipped setting, but I’m trying to make it work. It’s too soon to tell if it is working, but I do like the groups.”

“I need to be more proactive with the problem sets because I often have other homework and procrastinate on the problem sets.”

“I enjoy the class, it’s very interesting and the teaching style is unique. I have found that the perfect combination of coffee and sleep is the key to success this quarter.”

“I like that we can go back to the videos anytime to review and that we have time to talk in class about the different problems and how we can solve them.”

“Things are going pretty well right now. I really like the group interaction. It helps me build my confidence and trust myself and my answers.”

So important: “I’ve been getting better sleep and am not waking up in the middle of the night. I’ve been a lot calmer too.” Tell me how I can help this happen.