

# Challenges and Pedagogy/Curriculum

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# What is data science? What is doing data science?

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Take a minute to think about how you might define it and then discuss with your neighbor(s) (5 minutes)

We will be reporting out!

# What is physics? What is doing physics?



Take a minute to think about how you might define it and again, discuss with your neighbor(s) (5 minutes)

And again, we'll be reporting out!

# Thinking about definitions of physics and doing physics, what do you hope undergraduate students will learn and be able to do by using data science? Some questions to consider:

- Where do you see data science enhancing what undergrad students learn? What in data science do you see enhancing student learning?
- If you do have to cut material, what would you cut?
- What will students need to know to do  $x$  data science skill?
- If you don't think students in the particular course can use data science in a physics context, are there things they can do to prepare? Some core ideas?
- What careers are students being prepared for? Is that a goal? A primary goal?

You'll be in groups: **1s**, Intro physics (majors and non-majors); **2s**, intermediate physics (~sophomore/junior); and **3s**, advanced (~junior/senior) to discuss with your neighbor(s)

10 minutes to discuss and as always, we'll report out

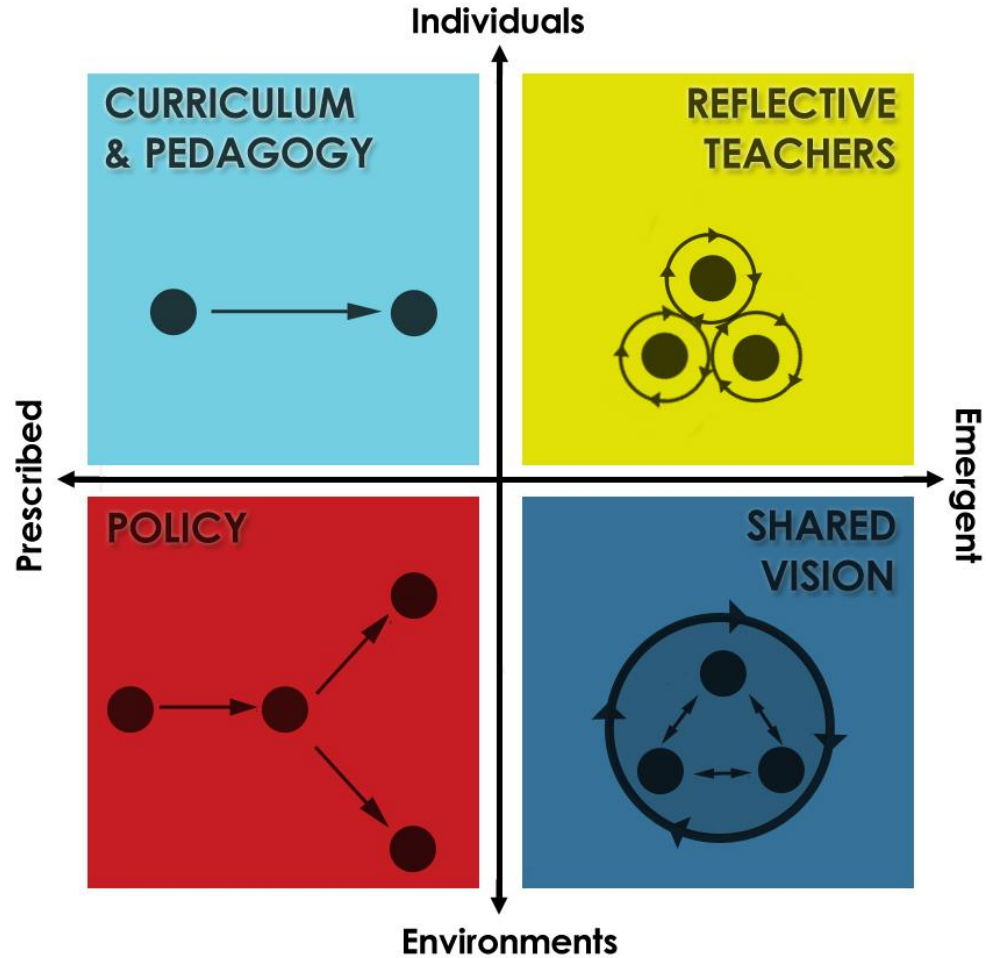
(If I'm clairvoyant or experience is predictive of the future worked...)

We started thinking about defining what is data science and physics (and doing data science and doing physics), which is a challenge. There isn't one "shared vision" (yet?)

We also started thinking about what we're teaching and how things are compatible, which is- complicated.

There's a lot to do! But it's possible.

Figure: Four types of Change Strategies.  
Adapted from Henderson, Beach, and Finkelstein (2011); image credit to Alexis Knaub.



## Now what?

Thinking about all the challenges we discussed, take a few minutes to reflect and consider **one** way you hope to address a challenge. It could be learning more, defining what you are hoping to teach, trying out a module, talking with other colleagues in your department to make a concentrated effort, changing your entire course...

Feel free to share here:

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# This is really the beginning...



It may be heavy on the philosophical side, but

Seriously, the definitions matter!

*In daylights, in sunsets  
In midnights, in cups of  
coffee. In five hundred,  
twenty five thousand,  
six hundred minutes  
How do you measure a  
year in a life?  
Rent, Seasons of Love*

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But what do you do in the classroom once you have some definitions and goals? What do you teach, content-wise? How do you teach these things?

Stay tuned for Friday!

**Questions,  
comments  
masquerading as  
questions ???**