Research/Discussion: *Who Does Physics, Who Doesn't, And Why?*

Introduction

One of my goals for this physics class is to give students a "better sense of why things happen as they do". Up until this point, that's focused on physical laws; in our net unit we're going to focus on the field of physics itself. In this unit, you will explore the demographics of who does physics in our country. This research will inevitably bring up questions, and we'll be talking about those in class over the next few weeks.

Homework and Reflection

Each night, you'll be asked to do some homework assignment.

In addition, each night I'll ask you to set aside ~10 minutes for reflection. This part of the homework is meant to help you process what's on your mind as you move through this project. This project will affect you each differently and so having a personal part of the assignment seems vitally important.

You can do this processing however you like: some people write in journals, some talk with friends or family, some go for reflective walks, etc. **Do what works for you** but do it: **this is a required part of this unit**. Past students have said it's valuable.

The Project

During the day in class, we will discuss what you've learned in the previous night's homework and take our conversation a little deeper. Here's a basic outline, subject to change as we move through this:

	In class	Research/Reading
Before	N/A	Finding physicists, Pre- Survey
Day One	Research Debrief, stats	Statistical research
Day Two	Addressing results	MIT Article, Choice Reading
Day Three	Discussion of MIT article	Choice Readings
Day Four	Discussion of Macintosh	IAT
Day Five	Discussion of IAT (pm: adults!)	Poster Project
Day Six	Next Steps	Evaluations/Post-Survey
Day Seven	Closure	Kudos

Please don't forget, also, to do your reflection each night.

Being Upfront

Let me be transparent: this is a different direction for us to go, and maybe a less comfortable one. But it is, I believe, a conversation worth our time, relevant to physics, and previous students have almost all agreed. Over the years I've been asking, 67% said it was worthwhile, 27% said it was somewhat worthwhile, and 5% said it was not worthwhile.

Why in a physics class, though? Because learning about the culture of a field is learning about the field and because these are ideas that cross disciplines. Whether or not you go on to study physics, having an understanding of how people end up doing what they do (and, more broadly, how our society functions) is a critical aspect of learning and thinking critically. In other words: why *not* a physics class?

Discussion

The nightly homework is meant to frame and inform the discussions we will then have in class. Because these conversations are meant to be challenging, it helps to have some agreed-upon structure to help make these our class a "brave space", a place where we can take risks together.

As we have these discussions, I ask that you adhere to these Discussion Guidelines:

- Move Up/Move Back: know yourself, balance your listening and talking.
- Use evidence (data, personal experience, readings, etc.) to support your claims
- Speak honestly. All perspectives are valid, and all perspectives are partial.
- We're wired to flee discomfort, but discomfort is cool. Take risks, make mistakes.
- Your intentions may not be the same as your impact. Own your impact.
- We must make sure everyone feels safe. But *safe* isn't the same as *comfortable*.
- Anonymity: what's said (and by who) stays, what's learned can leave
- We're all in this together.

We will briefly discuss these in our next class. If you have any concerns or questions or any guidelines that you want to add to the list, please share them when we do.

Your Homework Tonight

You'll learn about two physicist from under-represented identities, one who did their work before 1950 and one working today. We're going to be talking about race in this unit, so I'd encourage you to focus on physicists from under-represented races (Black, Hispanic/Latinx, American Indian or Alaskan Native, Native Hawaiian or Alaskan Native, multiracial), but if you're motivated to learn about an under-represented identity other than race, go for it. Be sure to use several sources in your research, and document your sources (you'll need them later)!. For at least one of your physicists, write short answers in your own words to the following, to be handed in:

- What search terms did you use? What websites did you use?
- What do you have in common with them?
- What was the path that brought each to physics? What inspired/motivated them?
- Were there obstacles they say they overcame in their career path? (You may not find an answer to this. If you look closely but can't find one, say this.)
- Summarize their research in your own words in a few sentences. Look up anything you don't understand!

Don't forget also to fill out the pre-valuation and to do your reflection. (You can reflect on what whatever you're feeling/thinking. If you'd prefer a prompt: How did you feel when you were first given this assignment? What did you expect your research to find?)

An Important Note

Our discussion will be focusing on how race relates to physics in the U.S. We do this because it's particularly illustrative, but that focus means we'll focus less on other scientific minorities: women, the economically disadvantaged, the physically disabled, etc. We have to focus because of time restrictions, not because of lack of relevance. Much of the conversation we have is in some ways – though certainly not all –applicable to other minorities, as well, and we'll explore connections as we find them.

I believe that you will find tonight that it's more difficult to find information about physicists from certain races, both historically and today. This points us to the big question of this project: why is this? Why, percentage-wise, are there dramatically fewer physicists from some races than others? Starting next class, we will begin to discuss this. Is it because they're students are not interested in physics? Not capable? Something else?

This is a complex topic, and these weeks will challenge us all. But we will approach the question like scientists: formulating hypotheses, doing research to test them, and maybe revising our hypotheses. I hope you'll come to this project ready to be brave, to be challenged, to learn together, and to finish it in a different place than you began.