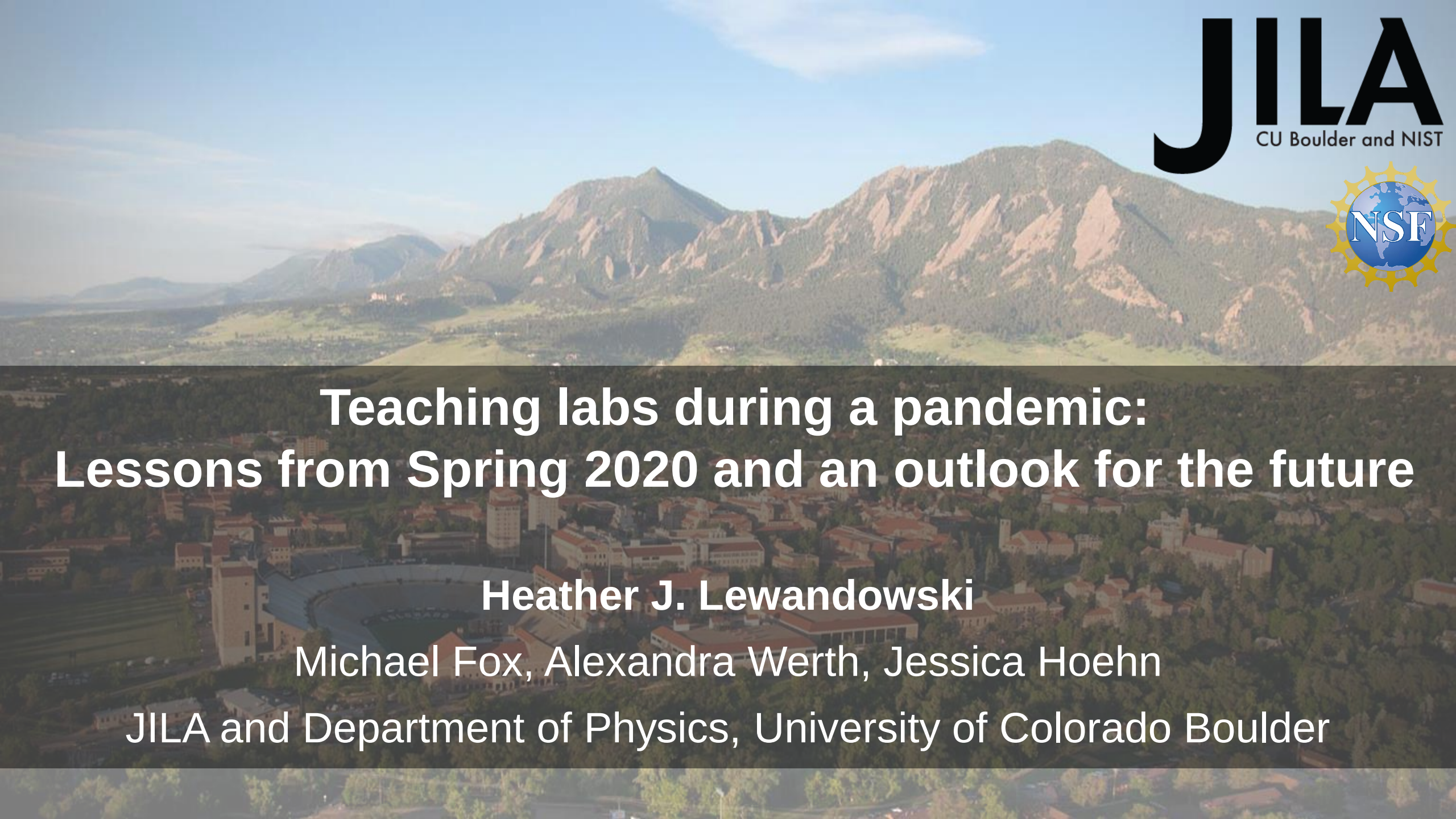

Teaching labs during a pandemic: Lessons from Spring 2020 and an outlook for the future

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Overall goals

- Document the variety of creative approaches/strategies employed by instructors in order to create remote lab classes
- Determine the impact of the transition to remote lab classes on students' views of experimental physics

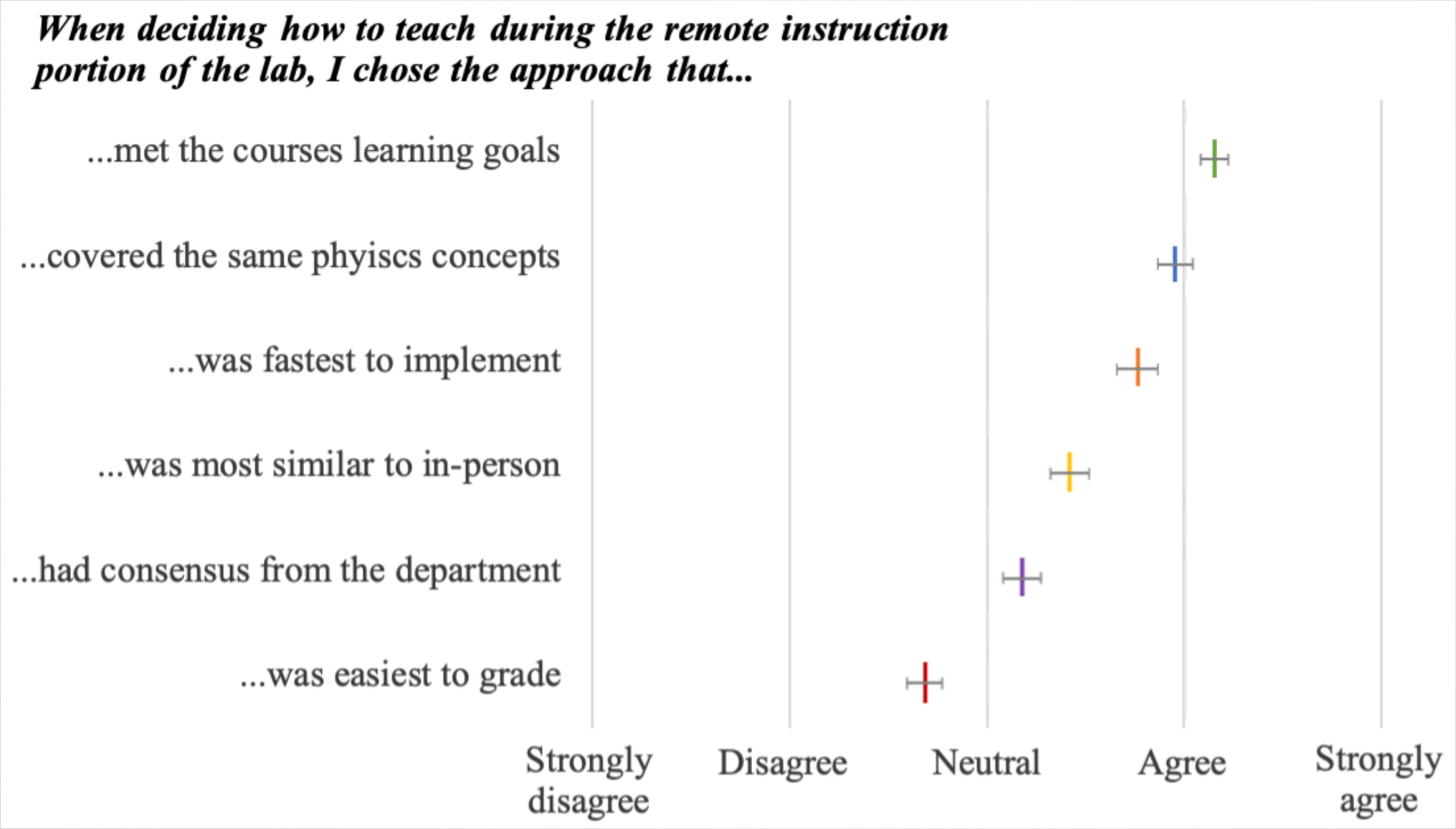
Data Collection in Spring 2020

- **Students**: questions about the transition to remote labs were added to the already running views of science survey
  (2200 students from 50 courses
  with ongoing interviews)

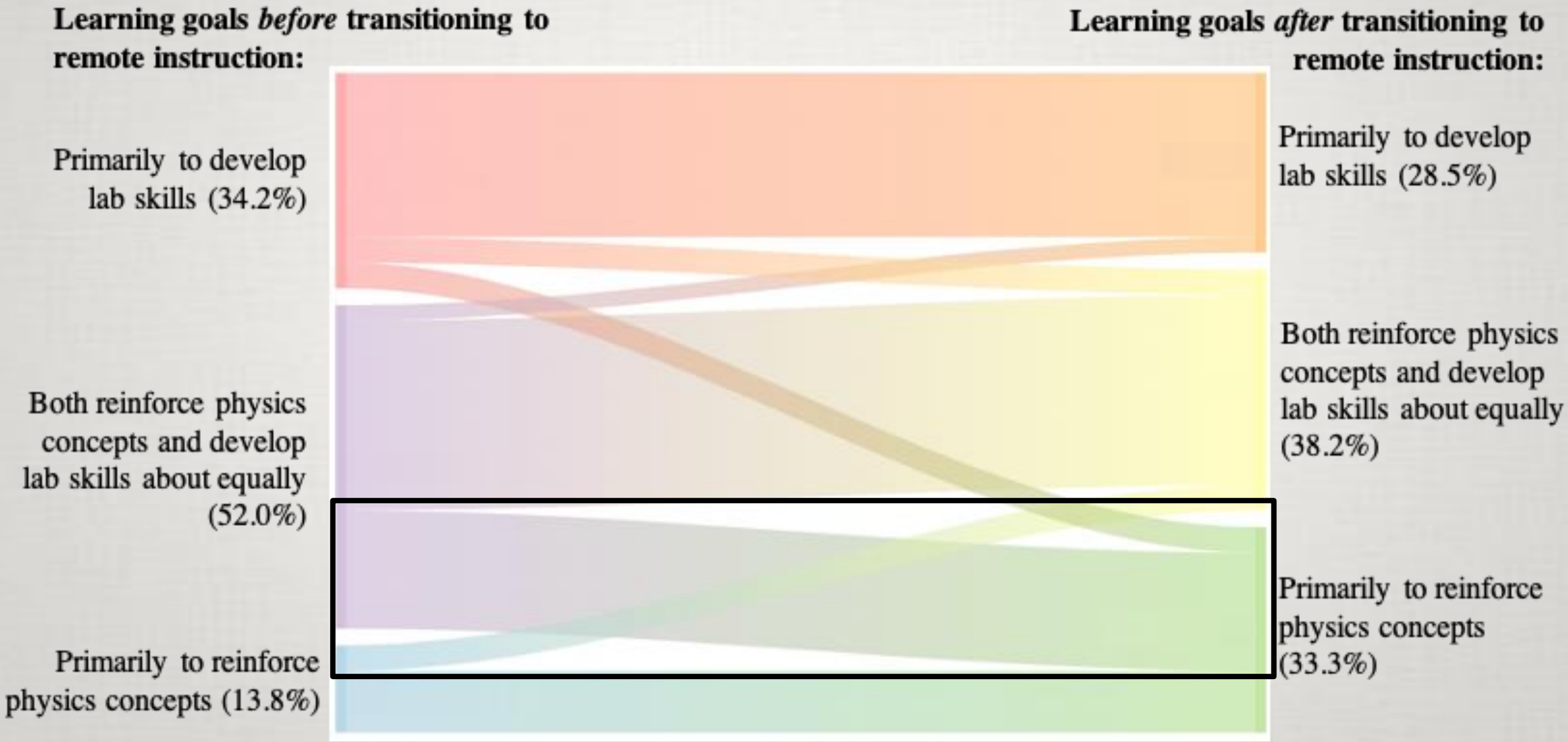
- **Instructors**: survey about their lab courses with follow-up interviews
  (survey: 106 instructors/129 courses
  Interviews: 12 instructors)

Instructor data

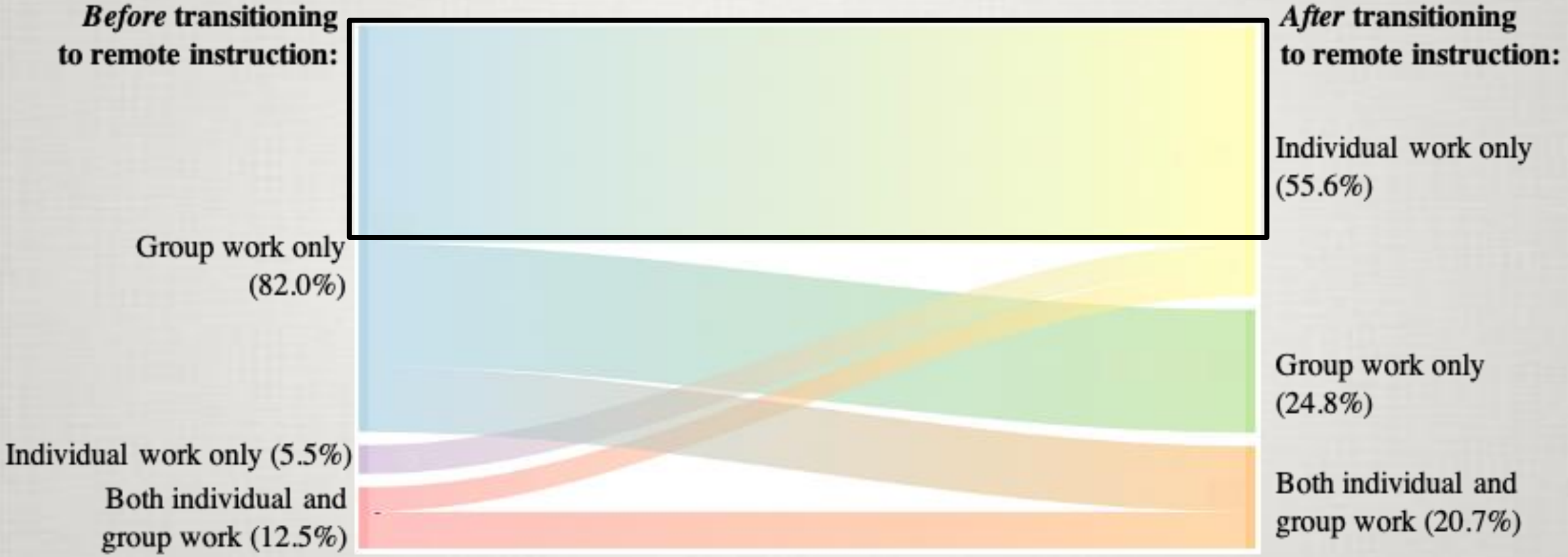
Motivations for Instructor Choices



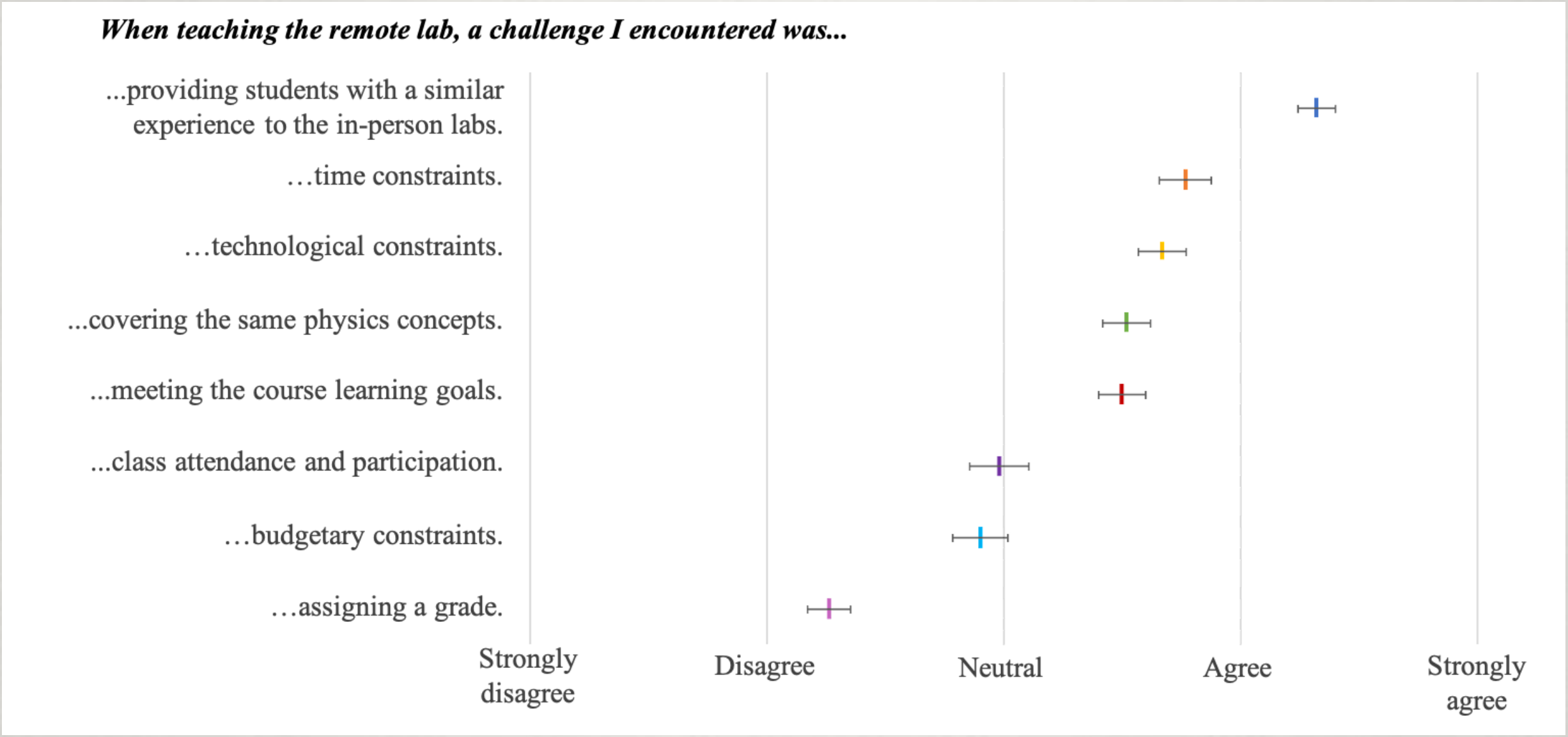
Shifts in Course Learning Goals



Group vs. Individual Work

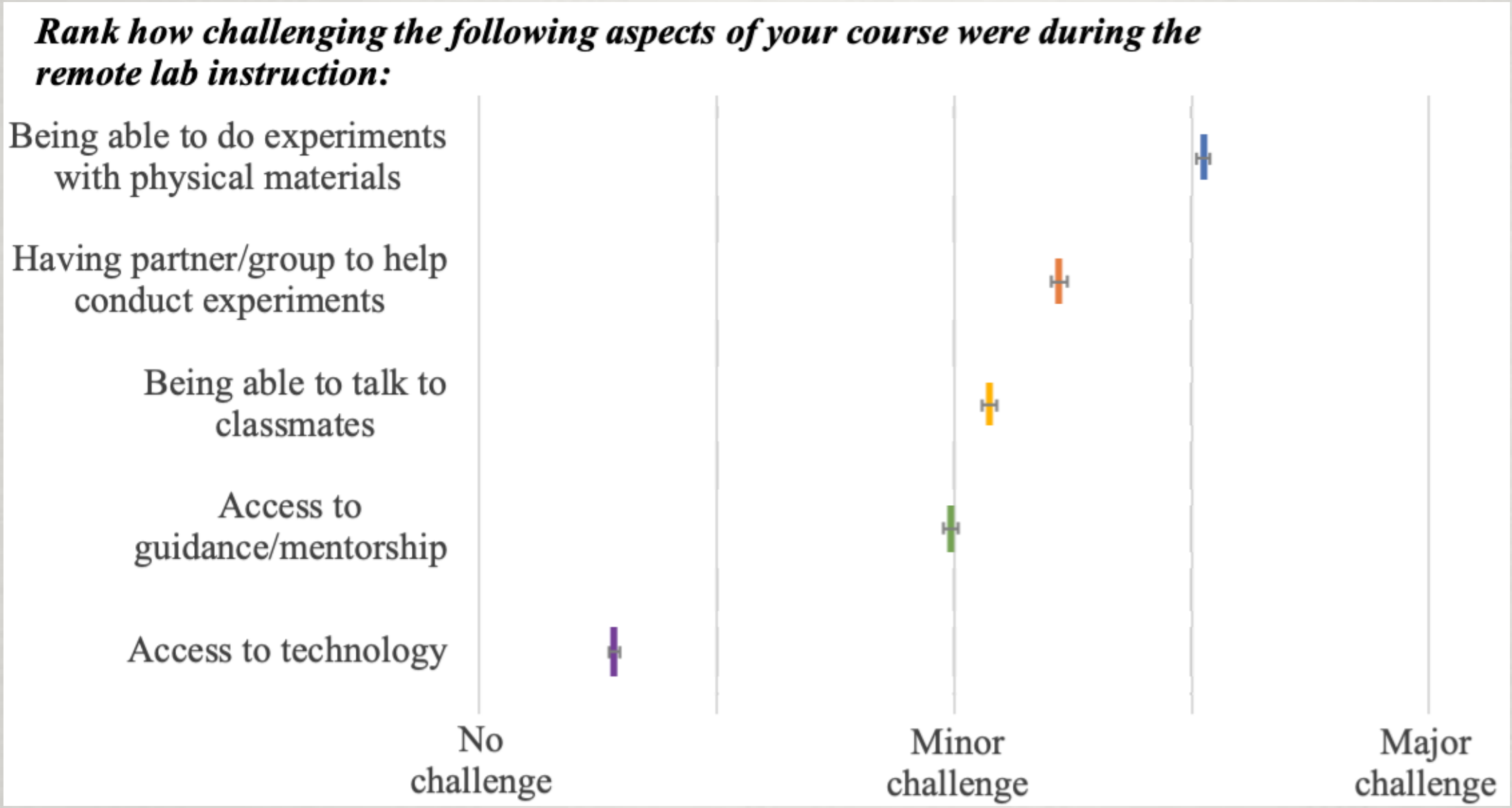


Instructor Challenges

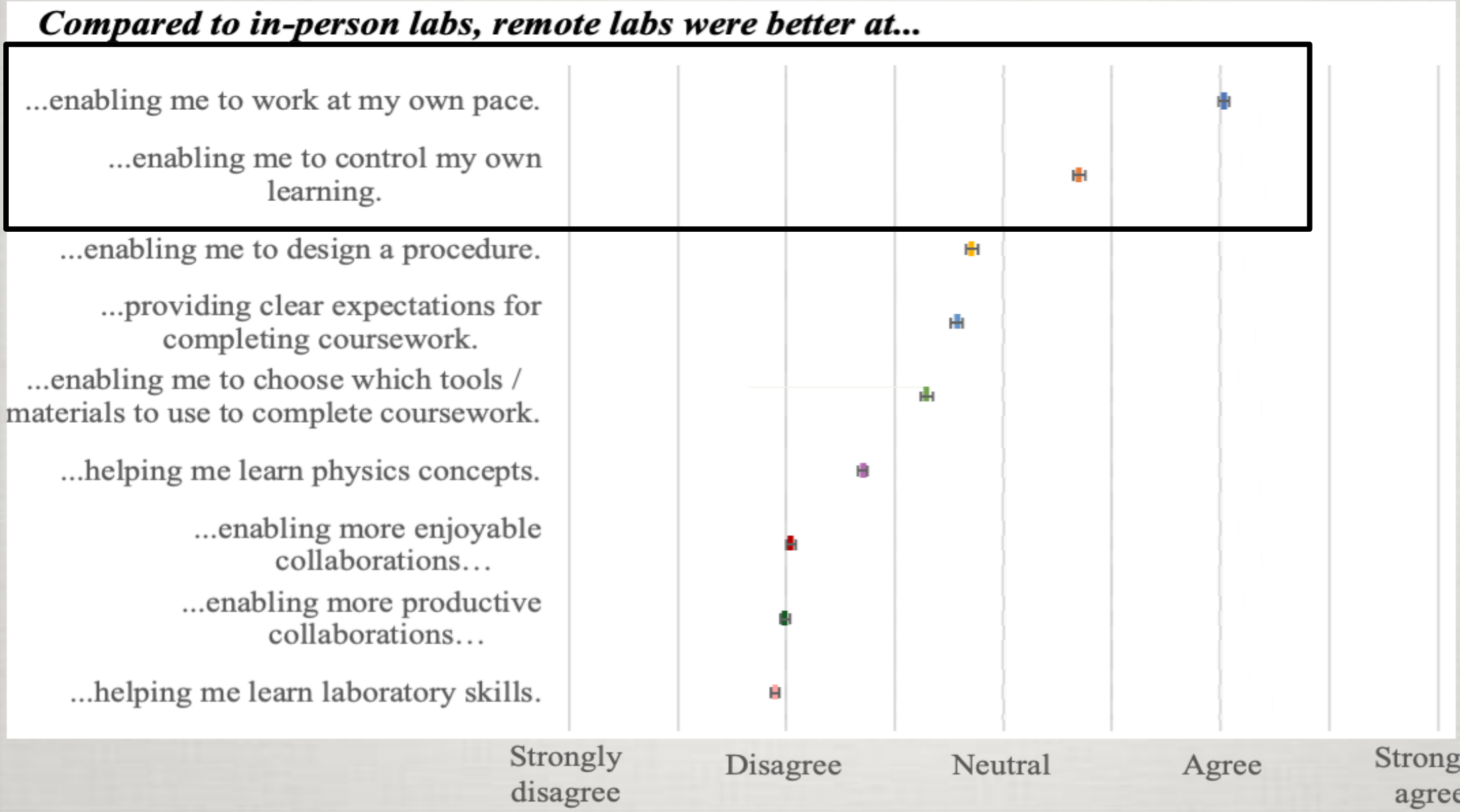


Student data

Student Challenges



Students' views of remote labs



Considerations for Remote Labs

1. Re-evaluate your learning goals. What do you care most about that your students learn?
2. Do not assume that all students have access to cell phones, household materials, and fast internet.
3. When deciding which materials or technological tools to utilize in a remote class, consider the accessibility for students with cognitive or physical disabilities.
4. The flexibility provided by open-ended projects, if managed successfully, work well in the remote environment.
5. Synchronous, short meetings with small lab groups anecdotally worked better than longer meetings with larger groups to foster collaboration.
6. This was, and still is, a new situation for everyone, so things will go wrong -- that is okay.
7. Flexibility and empathy go a long way to having a positive outcome for all.

Full Report with more ideas on the arXiv

https://arxiv.org/abs/2007.01271