

“FLEX LABS” IN FIRST-YEAR PHYSICS PROMOTES INCLUSIVITY AND EQUITY

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PROBLEM

Students with learning difficulties can often struggle in conventional classes. Factors such as strict time constraints place extra burdens on students (James et al., 2020), which can include limited time to complete tasks, and the requirement to remain on-task for long periods of time (or risk non-completion and possible failure) (Dounas-Frazer et al., 2021). These burdens can be exacerbated for students with learning difficulties who often experience longer information synthesis times, increased anxiety, and increased instances of cognitive fatigue; leading to a decreased capability to demonstrate knowledge.

Laboratory classes in first-year undergraduate courses are typically high-pressure environments, and it can be very difficult for course convenors and lab staff to adequately accommodate students with differing teaching needs. While recommendations typically include extending submission deadlines, in our first-year physics courses at UNSW Sydney, students do not submit lab reports and are instead assessed on task completion and marked in-class by lab demonstrators towards the conclusion of the two-hour lab class.

PLAN AND ACTION

To accommodate students with ELPs in our first-year physics lab classes, we introduced a new weekly “Flex Lab” class. The Flex Lab is only offered to students with ELPs, is four hours (as opposed to two), has significantly increased staff-to-student ratios, and works on a drop-in basis; the equipment for that week’s lab and demonstrators are available for the full four hours and students can use this additional time to either complete the lab in full or as a supplement to their normal lab class. Importantly, students can decide how they choose to use the Flex Lab, if at all.

We hypothesise that these accommodations mitigate time as a disabling factor in our laboratory experiments. Anecdotally, we have received feedback that the additional time affordances and better staff-to-student ratios have allowed better management of other disabling factors, such as reading difficulties or communication challenges.

FUTURE DIRECTIONS

We aim to formally interview students who have used the Flex Labs to understand which specific factors have benefited them the most, and, given that many STEM disciplines have lab classes, disseminate the findings more broadly.

REFERENCES

- Dounas-Frazer, D. R., Gillen, D., Herne, C. M., Howard, E., Lindell, R. S., McGrew, G. I., Mumford, J. R., Nguyen, N. H., Osadchuk, L. C., Principato Crane, J., Pugeda, T. M., Reeves, K., Scanlon, E. M., Spiecker, D., and Xu, S. Z. (2021, July 29) Increase Investment in Accessible Physics Labs: A Call to Action for the Physics Education Community. *American Association of Physics Teachers*, College Park, MD, Committee on Laboratories Accessible Physics Labs Task Force Report.
- James, W., Bustamante, C., Lamons, K., Scanlon, E. and Chini, J.J., (2020) Disabling barriers experienced by students with disabilities in postsecondary introductory physics. *Physical Review Physics Education Research*, 16(2), p.020111.

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