

# The difficulties associated with integrating computation into undergraduate physics [1]

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(summarized by Marie Lopez del Puerto)

Dancy and Henderson [2]:

- Student Resistance
- Time Structure
- Departmental Norms
- Expectations of Content Coverage
- Lack of Instructor Time

A. Replicated results in computation context

- **Student Resistance:** [students] are rejecting learning something new, and activities they think do not belong in a physics class.
- **Time Structure:** semesters are the same fixed length.  
Instructors consistently mentioned that they had to focus a lot on the language they used around faculty members at their institutions when it came to bringing up integrating computation. They had to be careful that they did not frame adding computation in a way that would make it seem more important than what the faculty was already doing.
- **Expectations of Content Coverage:** was not as prevalent in the context of computation.
- **Time of Instructors:** The time of instructors is still valuable and the things that preoccupy them are still the same (e.g. large teaching loads and research).

B. New systemic forces for computation context

- **Lack of Instructor Knowledge:**
  - Lack of experience with coding.
  - Do not know how to design activities for students that are just learning.
- **Accessible Platform:** Choosing a platform.

[1] Ashleigh Leary, Paul W. Irving, Marcos D. Caballero, arXiv:1807.03581 [physics.ed-ph]

[2] M. H. Dancy and C. Henderson, AIP Conference Proceedings 790, 113 (2005).