Online assessment tool unlocks mastery learning for students

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April 28, 2022

PrairieLearn, an online assessment tool

- Facilitates rich and unconstrained question types
- Supports isomorphic questions and randomization
- Offers questions in different syllabus-driven contexts:
  - Practice problems incentivize repetition and enable mastery learning
  - Formative engagement, like projects, requires little randomization
  - Pre-class quizzes and in-class group work support flipped classrooms
  - Short exams that are more frequent at lower stakes and with second chances

PrairieLearn, an open-source platform

- Developed at the University of Illinois Urbana-Champaign in 2015 by Matt West et al.
- Built by faculty with development informed by education research
- Maintained as an open-source project with new features discussed and implemented by the developer community
- Allows sharing of question databases among users
- Integrates with learning management systems (e.g. Canvas)
- Makes designing randomized/isomorphic questions **FUN**

PrairieLearn at UBC

- Established Canadian-side server
- Used already in 21 courses across five programs (Applied Science, Computer Engineering, Computer Science, Earth and Ocean Sciences and Mathematics)
- Secured TLEF-funded content migration available n Summer 2022 for deployment as early as September 2022

PrairieLearn case study in CPSC221, 2020S1/2021W

- 185 (S1), 330 (W1) and 660 (W2) students, fully online
- ENTIRE student work managed with PrairieLearn
  - Weekly practice, required 95% participation (0% of grade)
  - 3 Programming assignments + 10 labs (~20% of grade)
  - 3 homework assignments (~12% of grade)
  - 5 (S1) or 8 (W1) small exams (~50% of grade)
  - Final exam (~18% of grade)