Stanford



Candace Thille

Associate Professor (Teaching) of Education

Graduate School of Education

Curriculum Vitae available Online

CONTACT INFORMATION

- **Admin. Support**

  Mitch Gilmer

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Bio

BIO

Learning is complex. Decades of research in the science of human learning have produced results that could transform higher education; however, research findings have not often made a positive impact on teaching practice, educational technology design, or student learning. My mission is to build learning environments and data systems that not only facilitate the transfer of knowledge from learning research into teaching practice, but also engage researchers, practitioners and learners in making progress on our fundamental understanding of human learning. The focus of my work is in applying the results from research in the science of learning to the design and evaluation of open web-based learning environments for college level courses, and in using those environments to conduct research in human learning.

ACADEMIC APPOINTMENTS

- Associate Professor-Teaching, Graduate School of Education

ADMINISTRATIVE APPOINTMENTS

- Co-Director, Stanford Lytics Lab https://lytics.stanford.edu/, (2018-2020)
- Affiliate Faculty, Stanford Neurosciences Interdepartmental Program, (2015- present)
- Assistant Professor, Stanford Graduate School of Education, (2013- present)
- Director, Stanford Open Learning Initiative http://oli.stanford.edu/, (2013-2018)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Faculty Director for Adult and Workforce, Stanford Accelerator for Learning (2023 - present)
- Trustee, Educational Testing Service (2019 - present)
- Advisory Council Member, California Education Learning Lab (2018 - present)
- Director, Learning Science, Amazon (2018 - 2023)
- Advisory Board Member, The William E. Kirwan Center for Academic Innovation University System of Maryland (2018 - 2020)
- Co-Editor, MIT Press Learning at Scale Book Series (2017 - 2018)
- Steering Committee, Association for Computing Machinery Learning at Scale Conference (ACM L@S2018) (2016 - present)
- Program Committee Chair, Association for Computing Machinery Learning at Scale Conference (ACM L@S2017) (2016 - 2017)

- Advisory Council Member, Advisory Council of NSF Education and Human Resources (2014 - 2018)
- Board Member, American Association of Colleges and Universities (AAC&U) Board of Directors (2014 - 2018)
- Member, Assessment 2020 Task Force of the American Board of Internal Medicine (2013 - 2016)
- Advisory Council Member, Technical Advisory Council of the American Association of Universities STEM initiative (2012 - 2018)
- Fellow, International Society for Design and Development in Education (2010 - present)
- Founding Director, Open Learning Initiative, Carnegie Mellon University (2002 - 2013)
- Executive Vice President, West Coast Regional Managing Director, CFO, CIO, Consultant, Interaction Associates, LLC (1984 - 2002)

PROFESSIONAL EDUCATION

- Ed.D., University of Pennsylvania , Higher Education (2013)
- M.S., Carnegie Mellon University , Information Technology (2005)
- B.A., University of California, Berkeley , Sociology (1980)

Research & Scholarship

RESEARCH INTERESTS

- Adult Learning
- Artificial intelligence (AI)
- Assessment & Evaluation
- Collaborative Education Research
- Data Science
- Design-based research
- Educational Neuroscience
- Higher Education
- Human-Computer Interaction
- Learning Sciences
- Learning Technologies
- Lifelong Learning
- Quantitative Methods
- Workforce Learning

CURRENT RESEARCH AND SCHOLARLY INTERESTS

CIF21 DIBBs: Building a Scalable Infrastructure for Data-Driven Discovery and Innovation in Education: Funded by the National Science Foundation.
In collaboration with Carnegie Mellon, MIT, and the University of Memphis, we are creating a community software infrastructure, called LearnSphere, which supports sharing, analysis, and collaboration across a wide variety of educational data. LearnSphere supports researchers as they improve their understanding of human learning. It also helps course developers and instructors improve teaching and learning through data-driven course redesign.

The Learning Engineering Initiative: EdHub. Funded by the Chan Zuckerberg Initiative/Silicon Valley Community Foundation.
The EdHub project is a cross-sector initiative, to engineer the creation of a novel research and development hub in the Bay Area that is designed to integrate, by design, ongoing research in the Learning Sciences with ongoing approaches to enduring problems of practice within education.

Adaptable Learning Feedback for Instructors: The Open Analytics Research System (OARS). Funded by the Stanford VPTL Innovation Grant.

The activities and embedded assessments in online courseware provide support to students and generate fine-grained student learning data. The Open Analytic Research System (OARS) collects and models student learning data and and presents information to instructors in a dashboard to guide instruction and class activities.

Next Generation Courseware Challenge: A Partnership for Iterative Excellence in Online Courseware for College Learners. Funded by The Bill and Melinda Gates Foundation.

The OLI statistics courseware was created as an open educational resource (OER) on, the now proprietary, CMU OLI platform. In moving to Stanford, I moved the courseware to Lagunita, Stanford's OpenEdx platform so that it would once again be an OER and extended the capabilities of the Lagunita platform to support the OLI statistics course. In collaboration with multiple partner institutions, we have continued to expand and update the courseware and conducted several learning studies. We have conducted studies in "Mindset" with Carol Dweck's (Stanford Psychology) PERTS group. In collaboration with Emma Brunskill (Stanford Computer Science), we are implementing an adaptive problem solver that uses Bayesian optimization algorithms to automatically identify which items to include in a practice set, and how to adaptively select these items in order to maximize student performance on the specified set of learning objectives and skills. Additional RCT studies that we are currently conducting in the OLI statistics courseware at our partner institutions include a study on the impact of prompting and scaffolding learners to make strategic choices about their use of course resources; and a separate study that builds affect detectors into the courseware to test the impact of timing interventions to the affective as well as cognitive state of the learner.

Teaching

COURSES

2026-27

- Introduction to Data Analysis and Interpretation: EDUC 200A (Aut)
- Lytics Seminar: CS 407, EDUC 407 (Spr)
- Technology for Learners: EDUC 281 (Aut)

2025-26

- Introduction to Data Analysis and Interpretation: EDUC 200A (Aut)
- Learning Sciences and Technology Design Research Seminar and Colloquium: EDUC 291 (Win)
- Lytics Seminar: CS 407, EDUC 407 (Spr)
- Technology for Learners: EDUC 281 (Aut)

2024-25

- Introduction to Data Analysis and Interpretation: EDUC 200A (Aut)
- Learning Sciences and Technology Design Research Seminar and Colloquium: EDUC 291 (Win)
- Proseminar 3: EDUC 325C (Spr)
- Technology for Learners: EDUC 281 (Aut)

2023-24

- Introduction to Data Analysis and Interpretation: EDUC 200A (Aut)
- Learning Sciences and Technology Design Research Seminar and Colloquium: EDUC 291 (Win)
- Lytics Seminar: CS 407, EDUC 407 (Spr)
- Lytics Seminar: GSBGID 307 (Spr)
- Technology for Learners: EDUC 281 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Hansol Lee, Xi Jia Zhou

Doctoral Dissertation Advisor (AC)

Marcos Rojas Pino

Master's Program Advisor

Caroline Bellacosa, David Chang, Tyler Matteson

Doctoral (Program)

Luna Laliberte, Marcos Rojas Pino

Publications

PUBLICATIONS

- **Replicability of neural responses to speech accent is driven by study design and analytical parameters.** *Scientific reports*
  Strauber, C. B., Ali, L. R., Fujioka, T., Thille, C., McCandliss, B. D.
  2021; 11 (1): 4777
- **Reinforcement Learning for the Adaptive Scheduling of Educational Activities**
  Bassen, J., Balaji, B., Schaarschmidt, M., Thille, C., Painter, J., Zimmaro, D., Gamest, A., Fast, E., Mitchell, J. C., ACM
  ASSOC COMPUTING MACHINERY.2020
- **The heart of educational data infrastructures-Conscious humanity and scientific responsibility, not infinite data and limitless experimentation** *BRITISH JOURNAL OF EDUCATIONAL TECHNOLOGY*
  Johanes, P., Thille, C.
  2019
- **Exploring the Impact of the Default Option on Student Engagement and Performance in a Statistics MOOC**
  Brunskill, E., Zimmaro, D., Thille, C., ACM
  ASSOC COMPUTING MACHINERY.2018
- **OARS: Exploring Instructor Analytics for Online Learning**
  Bassen, J., Howley, I., Fast, E., Mitchell, J., Thille, C., ACM
  ASSOC COMPUTING MACHINERY.2018
- **Incorporating Learning Analytics in the Classroom** *New Directions for Higher Education*
  Thille, C., Zimmaro, D.
  2017; 2017 (179): 19-31
- **Community Based Educational Data Repositories and Analysis Tools**
  Koedinger, K., Liu, R., Stamper, J., Thille, C., Pavlik, P., ACM
  ASSOC COMPUTING MACHINERY.2017: 524-525
- **The Future of Data-Enriched Assessment.** *Research & Practice in Assessment*
  Thille, C., Schneider, E., Kizilcec, R. F., Piech, C., Halawa, S. A., Greene, D. K.
  2014; 9: 5-16
- **MOOCs and Technology to Advance Learning and Learning Research Opening Statement: MOOCs and technology to advance learning and learning research (Ubiquity symposium)** *Ubiquity*
  Thille, C.
  2014; 2014 (April): 1
- **Open Learning Initiative courses in community colleges: Evidence on use and effectiveness** *Mellon University, Pittsburgh, PA. Available online: http://www. hewlett. org/sites/default/files/CCOLI_Rep ort_Final_1. pdf*

Kaufman, J., Ryan, R., Thille, C., Bier, N.
2013

- **The open learning initiative: Enacting instruction online** *Game Changers: Education and Information Technologies*
  Strader, R., Thille, C.
  2012: 201-213

- **Changing the production function in higher education** *Making Productivity Real. American Council on Education*
  Thille, C.
  2012

- **Technology: Conducive and disruptive roles in improving student success and college completion** *21 st-#CENTURY COMMISSION On the Future of Community Colleges*
  Thille, C.
  2012: 82

- **Cold Rolled Steel and Knowledge: What Can Higher Education Learn About Productivity?** *Change: The Magazine of Higher Learning*
  Thille, C., Smith, J.
  2011; 43 (2): 21-27