

# Integrating Research and Practice

*Accelerate outcomes by providing researchers with datasets and research problems for adaptive learning*

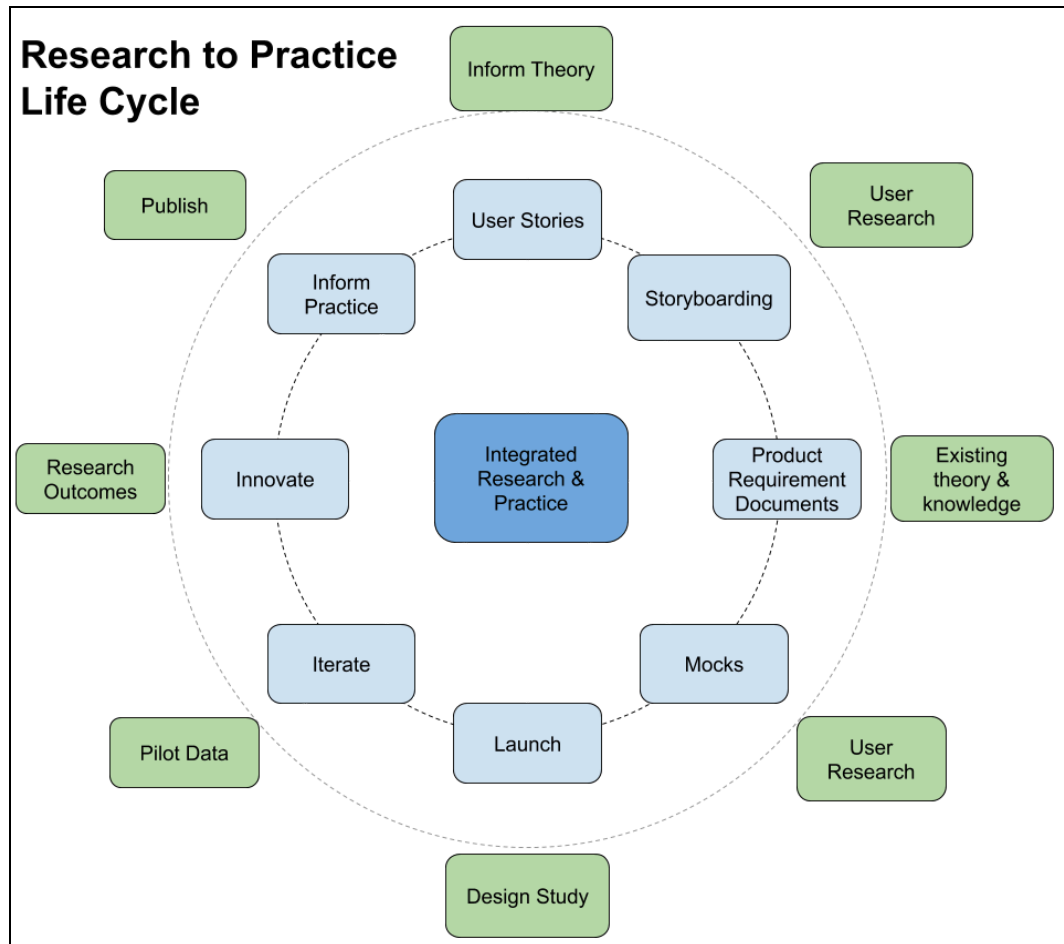
Gooru is developing a research portal at [research.gooru.org](https://research.gooru.org) (to be released by August 2020) where we list the research problems and share datasets from over 500K daily-active users of a Spoken-English Navigator. Gooru has established a framework for adaptive learning that identifies the various areas of research that contribute to accelerating the efficacy of learning. Gooru has documented its framework and lists the research topics in [Assured Learning with AI](#).

[Gooru](#) is a 501(c)(3) non-profit organization with a mission to honor the human right to education. Gooru, inspired by global programs that consistently produce strong outcomes, developed [Navigated Learning](#) - an approach that promotes learning equity and excellence. Gooru, working with researchers and lab-schools, has co-created the free and open Learning Navigator - a “GPS” for learners ([Navigator Overview](#)) that provides real-time actionable insights to all other stakeholders ([Mission Control](#)). Analogous to Google Maps, Navigator works on the principle that to navigate a learner, we have to first locate them in terms of their current knowledge, skills and mindsets, present them with a personalized “route” using full variety of distributed resources to their learning destination and recommend “reroutes” based on their performance data from the learning activities. Navigator is an integrated research to practice platform that is designed for scale and to be inclusive. Sixty-two collaborators across disciplines, geographies, and learner abilities leverage the Navigator to reach over 7 million users ([Navigator Impact](#)) in Education (US K12, India Primary, China K12, and US Colleges), Skills Training (India and Morocco), and Professional Learning (US DoD, Silicon Valley Tech Company).

The Research to Practice Accelerator is intended to utilize a platform that integrates research and practice to accelerate research informed by practice in the learning, data, cognitive, and computer sciences; Experts from other sectors have made a compelling case that research that influences practice often begins in practice settings; through observations of the unexpected, new ideas and theories are generated. Exposure to routine practice also provides opportunities to identify ways in which research knowledge can be crafted into improvements in practice. Also, problems of practice do not know disciplinary boundaries. Tackling them effectively requires a practice context in which researchers with a variety of areas of expertise can work collaboratively to solve problems.

Gooru has established a research-to-practice lifecycle that informs the platform at every stage of design, development, and implementation. Moreover, we can only change things that we measure. With Navigated Learning, we can measure all facets of learning and amplify education and skills training using a real-time data backbone to create personalized, adaptive learner journeys. We can provide in the moment actionable insights to all stakeholders in the learning ecosystem to track learning and struggles. Stakeholders will be able to coordinate their efforts to accelerate outcomes for learners. It is important to understand and measure where the learners

are today, and then pursue an approach to leveraging human experts such as instructors and AI to navigate them. To fill gaps and upskill, the complex learning space and diverse learners have to be better understood across facets - such as soft skills, industry skills, and core subjects such as math and science.



By integrating research and practice, the two inform each other at each stage in the research and product development cycle. It creates a closed loop information gathering approach to validate the data and learning science that informs the system and product design and moves the academic fields forward with rich, large learning data sets. It establishes a rich environment for transdisciplinary convergence research. Researchers for all disciplines can work together on major research projects to better unpack the complexities of learning. Similarly, the projects will inform and ensure Navigator is designed, implemented, and validated with science.

Here is a brief listing of some of the current and recent projects.

- **Data Science.** We work closely with data scientists from around the world including International Institute of Information Technology - Bangalore (IIIT-B), University of California, Berkeley and University of Illinois, Urbana-Champaign. The projects span a variety of topics in data science, such as developing algorithms for student social emotional

learning, creating machine learning techniques to auto generate competency graph orderings, and using big data to precisely locate the learners in multiple dimensions.

- **Learning Science.** One key learning science project is an NSF DRK-12 grant with Professors Nancy Songer and Tanya Dewey. Life Right Here and Everywhere is focused on supporting middle school students to develop Next Generation Science Knowledge using authentic science activities in their schoolyard and the Navigated Learning tools. Students interact with a full spectrum of learning activities, including machine graded and rubric graded tasks, with a focus on constructing scientific arguments.
- **Content Innovation.** Content innovation and collaboration projects provide learners of all ages (e.g. early childhood students to lifelong learners) access to highly curated content in any language and in any subject. For example, CSU has developed a College Readiness Navigator course using open education resources that are available in Skills Commons making already created content widely accessible to learners in a navigator experience. Additionally, Gyan Prakash Foundation has created math content for students in primary schools where only teachers have intermittent connectivity on smartphones. Using the flexibility of Navigator, they are able to locate each learner on an individual skyline.
- **Implementation.** There are currently over 6 million Navigator users across the world. Math Navigator is live in lab schools in the US (5 districts) and India (7 States) with over 200,000 learners as of Winter 2020. It is also being used beyond the K12 environment in skills development, professional development, and DoD training and courses.
- **Lab Schools.** The Lab Schools are a core component of the research to practice life cycle. In addition to the instructor and learner feedback through frequent check-ins, we collaborate on projects, such as a Teacher Professional Development course focused on using data and technology effectively in a classroom and creating an ELA Navigator course.