

The Gordon A. Cain Center for STEM Literacy at LSU

History, Mission, Achievements, Future

James J. Madden
Louisiana State University

1992—1998

- The “Center for Math and Science Literacy” was created around 1993 within the LSU College of Education as a research center to be led by a prominent math educator. The intended leader became seriously ill and was never hired.
- Around 1995, Melinda Oliver (a chemistry educator) became director. She led a group of faculty from Biology, Chemistry, Education, Geology and Mathematics in several projects funded by LaCEPT (NSF/Louisiana Board of Regents) aimed at enhancing undergraduate training for STEM teachers.
- Outside the Center: around 1996, Math 1201 (Number Sense for Elementary Teachers) and 1202 (Geometry) were added to the LSU Catalog. Dick Anderson designed the courses, while instructors Lynne Tullos, Nell McAnelly, Debra Kopsco (and eventually others) designed the pedagogy of “directed problem solving.”

1998—2000

- “LSU Community of Scholars” grant (Lafayette/Madden) attempted partnership between Departments of Math and Curriculum and Instruction. Locus of authority was ambiguous
- Dick Anderson (then senior adviser to LaSIP/LaCEPT) assembled a “Math and Science Education Research Group,” with STEM faculty membership from across Louisiana, with the goal of defining and initiating a serious research agenda.
- In 1999, Madden obtained NSF CCLI funding to lead a team of instructors creating content for a Data, Statistics and Probability Course for elementary teachers. Frank Neubrandner (math) led the grant activities between fall 2000 and spring 2001.

2000 G. A. Cain Center

- Deans of Education, Basic Sciences, Arts and Sciences and Agriculture and propose an inter-collegiate center, to be housed in the LSU Office Academic Affairs.
- \$3 million from Gordon A. Cain Foundation create endowment for the new center as well as a “triple-endowed Cain Chair.”
- Chemist Frank Cartledge was appointed as the first Director.

Cain Center work in Undergraduate STEM Education

- 2001: Louisiana Governor's Blue Ribbon Commission calls for redesign of all teacher training programs.
- Provost Dan Fogel, Math Professor Frank Neubrandner, Dean of Education Barbara Fuhrman and a large faculty committee advance a plan to transfer degree programs for secondary teachers from Education to the content departments.
- 2003: A committee consisting of faculty associated with the Community of Scholars Grant and the Cain Center obtain NSF STEM-TP funding to launch new degree programs (predicting 80 graduates/year by 2006)
- 2006—present. NMSI (UTeach replication) funding; GeauxTeach.

MathVision Lab (2002—) (subsidiary of Cain Center)

- Mission:
 - foster mathematics education research and outreach,
 - address systematically the training and support of mathematics teachers
 - improve mathematics instruction at all levels.
- Projects:
 - In-School Math Labs (Board of Regents). Cooperate with four schools to fund enhanced math programs, including space dedicated to math activities.
 - Assessing K-5 Math and various other summer PD workshops funded by LaSIP (see below)
 - Secondary Math Teams (NSF)
 - GK-12. Graduate students assist teachers in schools or provide special opportunities
 - Glen Oaks Partnership. Assist school turnaround.
- Lessons:
 - In partnerships, **understand existing authority structures...**
 - Meaningful research in math education is rare and extremely hard to conduct...
 - Cultures are extremely hard to change...

Cain Center Work in Professional Development

- Between 2003 and 2013, the Cain Center received funding from LaSIP (Louisiana Board of Regents) for several extended professional development workshops
- Cain Center was a major contractor of districts receiving USA/Louisiana DoE MSP funding for PD workshops (Nell McAnelly)
- Presently, the Center supports PD for Common Core Implementation in New York (Nell McAnelly)
- Advice to mathematicians: It is rewarding to work directly with math teachers, but enabling practicing teachers to provide professional development increases impact.

Cain Center Work in Graduate Programs

- Louisiana Math and Science Teacher Institute
 - 30-hour professional masters degree (**MNS**) for STEM teachers granted by the LSU College of Science
 - Supported since 2009 by an NSF MSP Institute Grant
 - Goal: Academic program is the hub of a professional community of STEM teacher peer leaders
 - Approx. 70 graduates since 2009; 50 more are currently enrolled.
- Central Louisiana Academic Residency for STEM Teachers
 - 36-hour certification + residency + MNS
 - Supported by USDoE, Orchard Foundation and Rapides Foundation.
 - Goal: place superior teachers in (very) rural schools
 - Approx. 35 graduates and 25 more in pipeline.

Cain Center Entrepreneurial Activities and Contracts

- LSU College Readiness Program
 - Supports computer-based math courses in middle and secondary schools by training teachers
 - Creates income for Cain Center through dual enrollment offerings
 - Integrated with graduate programs for STEM teachers
- Core Advancement LLC
 - Develops and markets professional development
 - Staffed by graduates of the graduate degree programs
- West Feliciana Partnership
 - Amazing new funding model: Graduate assistantships for Louisiana Math and Science Teacher Institute to be paid by districts (\$35K/year)
- Common Core – EngageNY Curriculum Project

Cain Center Future

- New Partners
 - Louisiana District Cooperative
 - Baton Rouge Youth Coalition
- Goals:
 - Be Pragmatic! Develop within our “ecological niche” by detecting and meeting concrete, immediate needs defined by districts.
 - Be Idealistic! We are defined by our uncompromised commitment to spreading knowledge.
- Hats off to the Cain Center Managing Director:
<https://www.math.lsu.edu/~neubrand/>