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For more information on the faculty and the curriculum, contact the program co-directors, Neil Heffernan, 508-831-5569, or Janice Gobert, 508-831-5619.

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Graduates of WPI’s learning sciences and technologies program are prepared for rewarding careers as designers, programmers, consultants, and educational researchers in this growing field.
Prepared To Make A Difference

WPI’s graduate programs in learning sciences and technologies attract highly motivated, entrepreneurial graduate students ready to make significant contributions to a challenge of national importance: understanding and improving the educational process. WPI’s research in learning science and technologies is focused on the STEM disciplines—science, technology, engineering, and mathematics. In keeping with the WPI principle of integrating theory with practice, you will have the opportunity to go into real classrooms, researching the impact of educational technology with the input of both new and veteran teachers and students whose learning experiences—and future—will be enhanced by your efforts.

Throughout your WPI experience, you will benefit from the pioneering work of WPI faculty, whose scholarship includes cognitive science, which seeks to understand how each child learns, and computer science, which aims to understand and adjust tutoring to students in real time. Here you will be part of a close-knit, collegial community of researchers working on the leading edge of artificial intelligence, cognitive psychology, human-computer interaction, and educational data mining.

Assist and Assess for Mastery of Math

The National Education Plan cites the work of WPI’s researchers to combine online learning and assessment activities into intelligent tutoring systems designed to balance effective instruction with effective testing. Called ASSISTment to reflect a blend of tutoring “assistance” with student “assessment,” the system helps students learn mathematics by presenting them with problems, and offering carefully structured assistance as needed to keep them moving forward. Over time, the system “learns” more about the students’ abilities and becomes an even better tutor.

 Widely used in area school systems—and expanding statewide and nationally—Math ASSISTment is built around hundreds of standardized test items. Ongoing development targets integration with the mathematics curriculum used by individual school systems to provide tutoring that’s directly related to what students are learning in class. Committed to advancing educational technology and intelligent tutoring, WPI faculty members challenge graduate students to make their own exciting discoveries.

Expanding to Science, Mining the Data

With major funding from the U.S. Department of Education, the National Science Foundation, and other agencies, WPI’s learning sciences and technologies program is always investigating new ways to increase the impact of technology in the classroom. Over the past few years that work has extended to science education. Science ASSISTment supports students through the process of scientific inquiry and tracks their strategies as they complete complex science inquiry tasks. The goal is not just to teach content, but to have skills for scientific inquiry that will transfer across science disciplines.

Whether for math or science, the data that comes out of interactions between students and the software can be analyzed and used to design more effective educational software. Focused WPI research on educational data mining seeks to understand how students respond to educational software, and how these responses impact their learning. Research is under way to develop models for discovery about human learning and learners, and about their cognition, metacognition, motivation, and affect.

Research Areas

WPI’s learning sciences and technologies program is an interdisciplinary program with a range of opportunities for research:

- Artificial intelligence
- Learning with visualizations and simulations in science
- Cognitive psychology
- Educational data mining
- Human-computer interaction
- Pedagogy
- Instructional technologies
- Intelligent tutoring system design

Research Facilities

- Artificial Intelligence and Intelligent Tutoring Laboratory
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Transforming our nation’s education system
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ABOYD WPI
Worcester Polytechnic Institute, one of the nation’s premier science- and engineering-focused universities, holds firm to its founding mission to provide an education that balances theory with practice. World-renowned faculty in science, engineering, technology, business, and the humanities and arts inspire and prepare students to be innovators, entrepreneurs, and leaders. Engaged in cutting-edge, collaborative research, students and their faculty mentors make significant contributions to breakthroughs in fields such as biotechnology, clean energy, information technology, learning sciences, materials processing, nanotechnology, and robotics.

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DEGREE PROGRAMS
Master of Science
Doctor of Philosophy

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GRADUATE STUDY
LEARNING SCIENCES AND TECHNOLOGIES

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