

# Cognitive Tutor: From University Research to Commercial Implementation

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Carnegie Learning



## Carnegie Learning, Inc.

- Founded 1998
  - Based on research in Cognitive Psychology and Computer science at Carnegie Mellon University
- ~100 employees
- Products
  - Mathematics
    - Bridge to Algebra
    - Algebra I
    - Geometry
    - Algebra II
  - Software, text and training
- Used by over 500,000 students in over 2000 school districts
- Proven efficacy – What Works Clearinghouse

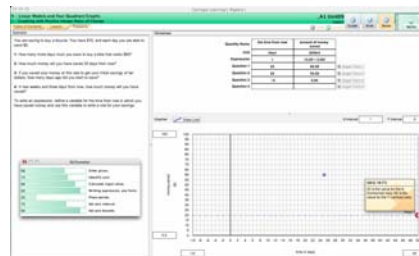


## Two major issues

- Transition from University
- Managing product improvement



## Transition from University



- Know what you have
  - Product idea
  - Prototype
  - Full product
- Transition people, not just product

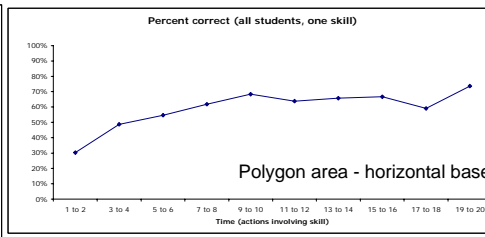
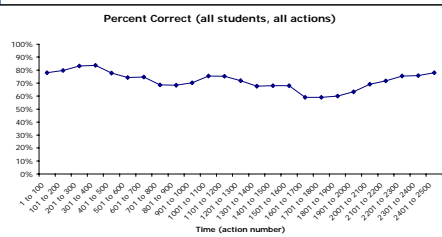


# Managing Product Improvement

- Research is about continuing improvement
- Connection to research team and other current research is essential



# Learning happens at the skill level



- Overall percent correct is constant
  - Students continue to be challenged by curriculum
- Percent correct goes up for individual skills
  - Skills accurately model knowledge being learned
- Now: >8000 students, 42 million observations (1 action every 7 seconds)



## Current research projects

- Basic and applied research
  - Science of Learning Center (NSF)
    - Tests new ideas in our courses (and others)
    - CMU & Pitt, 5 years, \$25M
  - Assistentment (Dept. of Education)
    - Statistical methods for predicting test scores
    - CMU & WPI, 3 years, \$1.5M
  - iTest (NSF)
    - Help teachers understand ed tech, build authoring tools
    - Southern University, 3 years, \$1.5M
  - SBIR (NSF)
    - Develop Cognitive Tutor Software Development Kit
    - Clear sighted, U. Tampa



## Current research projects

- Evaluations
  - Geometry (US Dept. of Education)
    - Rand
    - Baltimore County (8 schools)
    - 3 years, \$1.5M
  - Algebra I (US Dept. of Education)
    - Rand
    - Six districts (132 schools)
    - 5 years, \$6M

