International Collaborations - Guzdial

- ***Interest in working towards programming as a powerful medium for all students***.

- **Computing education research is the study of how people come to understand computing and how we can make it better.**

- Multi-institutional, multi-national (MIMN) studies

  - McCracken Working Group, Leeds (Lister), Bootstrap and Scaffolding Working Groups.

- Meeting elementary and secondary school needs internationally

MIMN Studies

- Invented by Mike McCracken: How do we establish global educational challenges that are not due to local context?

    - Original MWG study: Ask students to build a calculator. Average score 27 out of 110 points.

    - Raymond Lister led the Leeds Working Group that identified challenges students faced in using loops and arrays.

    - Commonsense Computing group showed that students can solve programming problems without knowing programming.

- **Next steps**: I am not aware of MIMN which included students from China.

Meeting school needs for CS

- We have been in contact with (and in some cases, advised) the US *CS for All*, UK *Computing at School*, Danish, Israeli, New Zealand's, Australian, and German efforts to bring CS education to all children in primary and second schools.

- **Next Steps**: Few have looked at these as international research issues.

  - How are curricula and student programming activities similar across national borders? Where are they different?

  - What are the challenges to growing CS Ed internationally?

    - For example, what are the best practices for recruiting and preparing CS teachers?