Can I have a chance?

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Outline
- Background
- Topic/Issue
- Solution/Experience at WCU
  - Observation
  - Approach
- Conclusion
- Future Work

Education tasks
- 88% local students, 61% female
- Major, minor, and certificate educational programs in the CS department
- The CS department also offers
  - Internship
  - Research Experience for Undergraduates (REU) opportunities
  - Computer club
  - Invited talks and guest lectures

What do we do?
- Information available from
  - Personal website
    http://www.cs.wcupa.edu/~zjiang
  - International study
    http://www.wcupa.edu/admissions/sch_dgr/international/parents/chinese.asp
  - Google search “Zhen Jiang” West Chester University, or “蒋臻” West Chester University

Introductory computer education
- To provide computer technique support for non-CS majors
- To motivate students to take computer career

Research (selected records)
- INFOCOM paper
- Best paper award of IEEE conference
- INFOCOM TPC
- IEEE TR, JPDC publications
- Reviewer of IEEE TON
- Editor of AHSWN
**Topic**

- How to win the chance to apply my knowledge and skills?
  - What is the use of my learning?
  - Can I know this before I start to learn it?

**Education Solution**

- The companies are
  - Not looking for
    - anyone to meet the job description
    - the best of candidates today (or this time)
    - students from ivy schools only (WCU alumna at Vanguard, Verizon, SAP, etc)
  - More realistic: Looking for the profit of hiring this person, long term vs. short term

- The past record can help you get the interview only, but that is all. (i.e., no guaranty for winning the chance)
- To be qualified and to enhance/promote your ability in both class learning and research activity
  - Do I know it?
  - Do I want you know that I know it?
  - Whoever cares the grading of the final?
  - Do I really know it?

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**Our Approach**

- A success condensed training

- How?
  - What to train?
  - How to guarantee the success?
    - Know-know-know!

**Challenges and Issues in Existing CS Education (including WCU)**

- Insufficient consideration to the real need of computer
  - Systematic study?
- Lack of the interactions with other disciplines
  - Major study vs. non-Major study
- Exercises without reflecting the broad range of student concern and life experiences
  - Class work vs. industry project

**Our Approach (4 phases)**

- Phase 1: Motivation
  - Custom-off-the-Shelf (Wii-game like sensor)
  - Interesting real project (BIO lab work)
- Phase 2: Learning template (Do I know or how can I obtain the knowledge?)
  - Easy to repeat the success
  - From experience to knowledge
  - One success to extensions

- A success condensed training

- How?
  - What to train?
  - How to guarantee the success?
    - Know-know-know!
• Phase 3: Computer tool (I want you, the instructor, know that I pass the computer test, i.e., see I know it.)
  ◦ Force to learn the details
  ◦ Self-learning
• Phase 4: Competition opportunities (Do I really know?)
  ◦ College undergraduate research grant
  ◦ REU site (Jennifer Tsan, 2012)
  ◦ Research project experience (recruited RA)
  ◦ IBM, Bell lab, SIEMENS, etc.
Experimental results for program to analyze

- Many programming questions
  - Max
  - Min
  - Average
  - Curving
  - How long of this test (in days)?
  - …
  - How to design a temperature reader?
Template learning (to learn program development)

Pattern use in extensive work that requires analysis and thinking

Success of pilot work

- Happy ending in CSC 115, one of GE courses at WCU
List of awards that achieved by WCU undergraduates
- Technique paper writing
- Presentation in research day
- Presentation in conference
- Programming contest
- REU
- Successful career

Conclusion
- Know-know-know: An effective method to motivate people to explore more by themselves
  - To achieve more than the requested
  - To train the students to self-motivate themselves => prepare them for the coming opportunity
- Applicable for students in both learning and research work, e.g., Ph.D. study

Future Plan
- Recruit more CS/CE students
  - A method to quickly tell what is CS/CE, competing with attraction of CSI (Crime Scene Investigation) TV show, Discover Channel, National Geographic Channel to other science students.
- Fully support non-CS majors’ study and research with computer
  - An efficient method to learn quickly the materials with a significant technique depth in a short time scale.

Thank you!
- Questions and Comments