

# Dissertation Summary

## An Intervention Strategy Designed to Reduce Math Remediation Rates at Community Colleges

April 2011  
Elisabeth H Knowlton, PhD  
Northcentral University

### **Problem: *The Remedial Math Dilemma***

- a. The number of entering college students placed in remedial math continues to increase. In 2007, over 70% of entering college students were in need of math remediation. By 2010, this number had risen to 75%. In other words,  $\frac{3}{4}$  of entering college students failed to gain access to college-level math.
- b. 85% of students do not prepare for the math placement test.
- c. Numerous students are possibly placed below proficiency level.
- d. Researchers identified assessment placement processes key contributors.

### **Consequences of Remedial Math Placement**

- a. Increases cost to students, parents, institutions and taxpayers
- b. Impedes educational advancement of students
  - i. Reduces the probability of completing a degree
  - ii. Increases time-to-degree
  - iii. More than 50% of students who place in remedial math drop out within the first year of college
  - iv. Only 10% of students who need two or more levels of remediation make the transition to college-level math
- c. Limits our nation's ability to compete internationally

### **Key contributors to Remedial Math Dilemma**

- a. Current assessment placement practices:
  - i. Enrollment more important than correct placement
  - ii. Placement based solely on college placement test (CPT) score
  - iii. Few colleges offer CPT retake option
- b. Currently used CPTs:
  - i. Lack standardization
  - ii. Lack alignment with K-12 standards
  - iii. Are norm-referenced tests, i.e. aptitude tests which compare students aptitude rather than measure content knowledge
  - iv. Incorporate insufficient number of questions (ACCUPLACER on average 17 questions, COMPASS 7-14 questions)
  - v. Provide a score only
  - vi. Do not identify deficiencies

## **Research**

Explore efficacy of a new intervention strategy:

- a. Utilize a new assessment tool, namely the new ALEKS Math CPT, which
  - i. is a criterion-referenced test
  - ii. is a web-based, artificially intelligent assessment and learning system
  - iii. measures student content knowledge
  - iv. identifies student deficiencies
  - v. includes sufficient number of questions (20-35)
- b. Avail students the opportunity to retake the placement test pursuant to review of material

## **Research Goal**

- a. Reduce remediation rates
- b. Improve student outcomes

## **Research Site**

- a. A community college in the Southwest (SWCC)
- b. First college to utilize ALEKS for assessment, review, retesting and placement

## **Design**

- a. Quasi-experimental quantitative study
- b. One-group pre-post design

## **Participants**

- a. 172 students self-selected to participate
- b. Study limited to students who scored below the cutscore for admission to college-level math

## **Results**

The 2011 research study included 172 participants who reviewed material, i.e. remediated deficiencies, and retook the CPT with the following results:

- a. 97% of students improved test scores
- b. 54% of students improved overall placement thereby reducing the number of remedial courses
- c. 29% of students sufficiently improved score to gain access to college-level math

## **Implications**

- a. Remediation of deficiencies and retake of CPT helps students achieve higher levels of success
- b. Current placement practices inflate the number of students placed in remedial math
- c. Students who placed in college-level math as a result of the intervention are as successful as those originally placed in the course

## **Limitations**

Several factors may have impacted findings:

- a. Student characteristics, i.e. volunteers
- b. Enrollment and testing processes at SWCC
- c. Confounding variables such as student motivation, time studied, etc.

### **Research Recommendations**

- a. Examination of a comprehensive research model incorporating confounding variables
- b. Examination of currently used cutscores
- c. Examination of placement policies
- d. Examination of effectiveness of pre-enrollment and advising programs at the high school level

### **Practical Recommendations for Community Colleges**

- a. Invest more time in assessment placement process, i.e. advise students to review material prior to test taking
- b. Collaborate with high schools to provide a more seamless transition between secondary and postsecondary education

### **Significance**

- a. This research addressed the widespread problem of math remediation
- b. Poor economic conditions create urgency to address the remedial math dilemma
- c. Improvements benefit students, parents, institutions, taxpayers, and the nation

### **Conclusion**

To address the remedial math dilemma community colleges are urged to:

- a. Use an effective assessment tool
- b. Invest more time in the assessment placement process
- c. Use a holistic approach to assessment placement
- d. Create a seamless transition between secondary and postsecondary education

### **Follow-Up Intervention**

- a. Dr. Knowlton designed and currently offers a Math CPT Test prep course for prospective college students to help students prepare for ALL Math CPTs to achieve a higher score and placement.
- b. She also offers a course for high school and college teachers designed to create an awareness of the remedial math dilemma. The course provides tools to better prepare prospective college students for the Math CPT and improve student success.