

# Redesigned College Algebra

Southeast Missouri State University

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# Why redesign the course?

- Developmental courses previously redesigned
- College Algebra already in transition
- High failure rate
- Reduce course drift

# How did we plan the redesign? What's important?

- Increase student success in course and subsequent courses
- Eliminate course drift
- Synchronous class
- Maintain standards for a college algebra course
- Instructor presentation of course material

# How to address the principles of course redesign?

- Redesign the whole course.
- Encourage active learning.
- Provide students with individualized assistance.
- Build in ongoing assessment and prompt (automated) feedback.
- Ensure sufficient time on task and monitor student progress.

# Modified Emporium Model

- Emporium Model—replaces lectures with a learning resource model using interactive software and on-demand personalized assistance
- But we still wanted to talk.....
- Short 10 to 15 minute, carefully planned presentations
- MyMathLab software
- Common student website

# Redesign Pilot

## Spring 2012

- Piloted redesigned course with all main campus students in sections that met between 8:00 am and 3:30 pm
- 357 students, 5 instructors, 9 sections
- **Too many students and instructors for pilot!**
- Modified emporium model
- Used MyMathLab for class work and homework exercises, but students took paper and pencil quizzes and tests
- Common Final Exam used as comparison
- Increase of 16% of ABCs on common final exam as compared to Spring 2010.
- Weekly collaboration among College Algebra instructors.

# Full Implementation Fall 2013

- All main and regional campuses use redesigned course
- Modified emporium model
- Slightly modified MyMathLab assignment structure
- Common paper and pencil quizzes and tests
- Common Final Exam still used as comparison

# Comparisons

- Compared 554 students in traditional Fall 2010 course to 575 students in redesigned Fall 2012 course
- Compared final exam scores
- Compared DFW rates

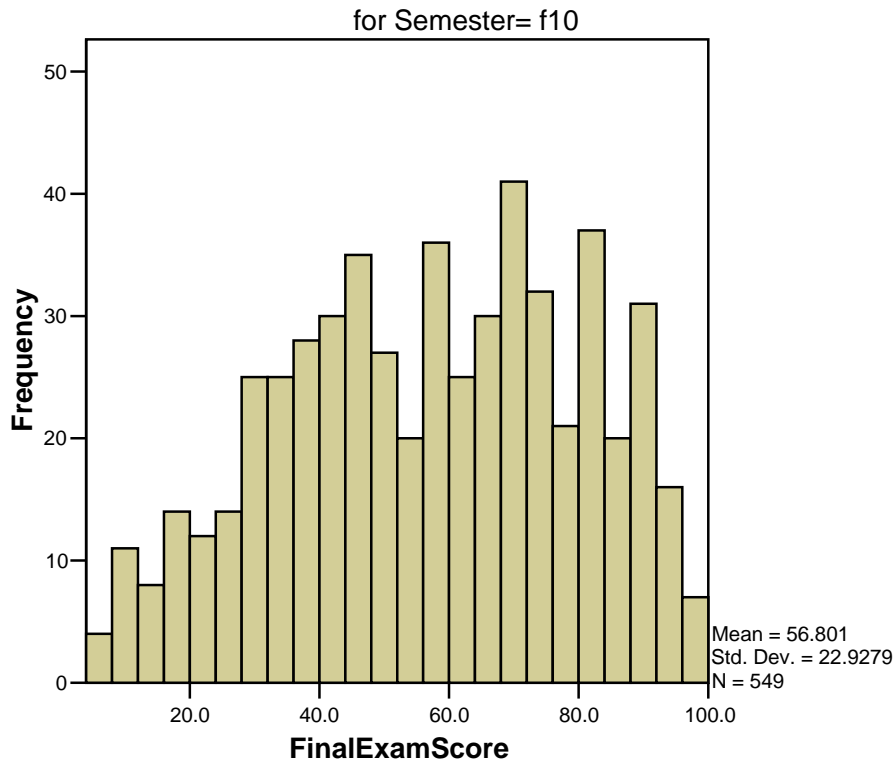


# Final Exam Scores

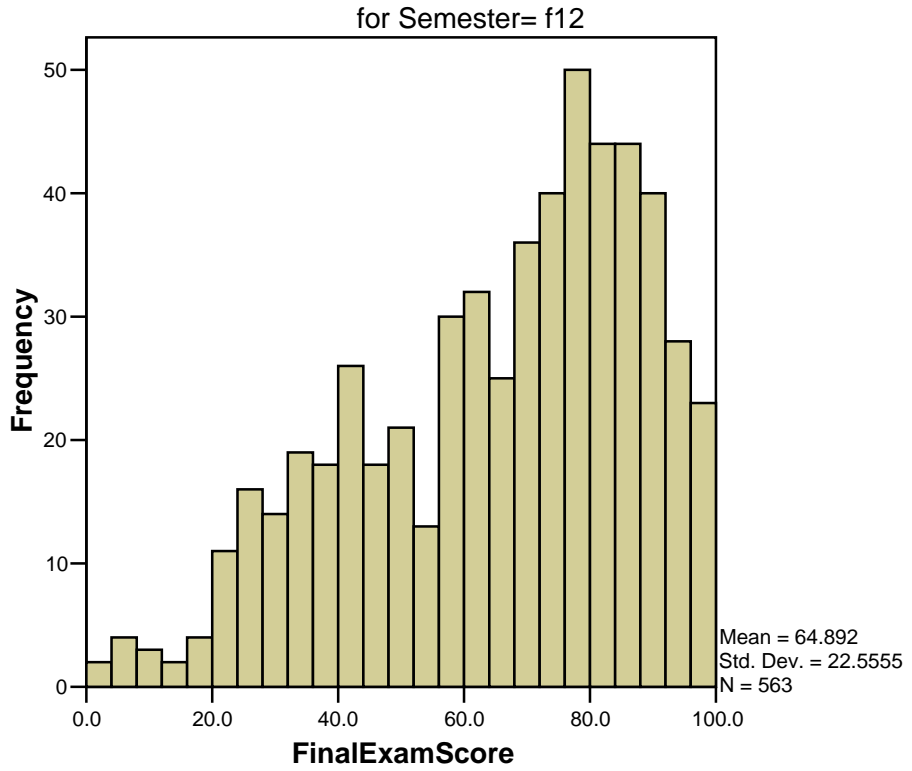
- Increase of 8.1% in mean final exam score; significant with a p-value of less than 1%
- Increase of 12% in the median final exam score
- Much higher percentage of ABCs in the redesigned course

# Final Exam Score Distribution

Traditional Fall 2010  
Histogram



Redesigned Fall 2012  
Histogram



# Grade Distribution

## Traditional Fall 2010

<b>Grades</b>	<b>Percentage</b>
A	18.54%
B	22.12%
C	22.27%
D	10.01%
F	9.87%
X (didn't complete course)	7.17%
W	10.01%

## Redesigned Fall 2012

<b>Grades</b>	<b>Percentage</b>
A	14.58%
B	17.71%
C	16.02%
D	10.12%
F	10.84%
X (didn't complete course)	7.71%
W	23.01%

DFW rate increased significantly, but course drift was eliminated and grade inflation was greatly reduced.

# Successes

- Regular collaboration among College Algebra instructors.
- Elimination of course drift. All instructors gave the same assignments, quizzes, tests and final exam.
- Students were actively engaged “doing math” during the entire class period.
- Evening study sessions held on a regular basis were well attended.
- A realization among the students that mathematics is hard work, but the format of the redesigned course gives students the tools to be successful.

# Observations

- Students were awake and engaged and thinking about math. Very little Facebook or texting.
- Nice blend of explanation and independent work time.
- Able to work with students one-to-one before they leave the classroom.
- Students that were willing to work hard understood the expectations of the course and were successful.

# A Student's Evaluation

I really liked College Algebra this semester because:

1. MyMathLab gave great examples on how to solve problems and offered extra help to solve the problems step-by-step.
2. I liked the set-up of the class. The lecture at the beginning of the class was better because it was short enough to grasp the main concept of the session plus it helped me stay focused on the subject. Long lectures tend to drag and it makes me lose focus.
3. I also liked the fact that in-class assignments were given. It gave me extra practice to make sure I understood what was just taught.
4. The grading scale was good. Doing the math homework helped benefit me in both learning and earning points for the work that was done. Not to mention, how the final was graded was good because it didn't make me feel like all the hard work that I put into homework and exams was thrown down the drain.

Overall, I would rate this College Algebra experience as excellent!

## Another student's evaluation

I personally think the MyMathLab system worked well. I did end up relying a lot on the examples option so that reliance could be changed. I think that the lecturing part of the course should be kept the same as that helped my understanding of the topics. It was a good course overall and worked well with the in class tutoring. I would have liked MyMathLab to explain some solutions in smaller steps as there were times I was confused with how things added together to get the answer.

# Important

- Instructors must believe in the redesign
- “Sell” the redesign to students
- Math students at this level need to believe you want them to be successful.
- Must constantly tweak class.



# Future Improvements

- Reduce DFW rate while maintaining high standards.
- Plan, plan, plan.... and train, train, train....before the semester starts. Instructors need time to adjust to a new way of delivering the course.
- Again tweak MyMathLab assignment structure.
- Constantly evaluate the best use of class time.
- Explore ways to actively engage students.
- Paper textbook option

# Students Comments

- At first I really didn't like the MyMathLab program. I sometimes found it frustrating because it always wanted the answer a certain way or form. I understand that this was to help us remember and know how to write our answers, but it still caused quite a few headaches.
- I thought that MyMathLab was a great program. My only problem was that I depended too much on viewing the examples to complete the homework. However I really liked that with MyMathLab I could work problems as many times as I needed and all the resources that were available to help me study.
- I'm not a fan of the e-text. I prefer a book. The e-text is just not user friendly.

# Cost Savings

- More consistent use of non-tenure track instructors to teach the course
- Main campus maximum class size of 44 due to size of computer classrooms
- Possible future larger computer classroom

# Contact Information

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