The left side of the slide features a decorative design consisting of several vertical stripes in shades of light blue and teal, and a cluster of five teal circles of varying sizes arranged in a roughly circular pattern.

COLLEGE ALGEBRA REDESIGN AND THE AMATYC CROSSROADS STANDARDS

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OUR STORY

- College Algebra Redesign Team formed in Spring, 2009
- Goal – increase student success rates by promoting active student learning



FIRST PRIORITY

- Achieve and maintain faculty support
 - Open and constant communication
 - Seek and consider all faculty input
 - Seek departmental approval at every turn
 - Constant assessment of goals and objectives



PART I: BACKGROUND RESEARCH

- Common course outline vs. state specs
- Generation Y research
- Redesign projects at other schools
- Evaluation of current course
- Recommendations of AMATYC and other professional organizations



AMATYC STANDARDS FOR INTELLECTUAL DEVELOPMENT

Students will...

- Engage in substantial mathematical **problem solving**
- Learn through **modeling real-world situations**
- Expand mathematical **reasoning skills** as they develop mathematical arguments
- Connect Math to **other disciplines**



AMATYC STANDARDS FOR INTELLECTUAL DEVELOPMENT

and...

- **Communicate mathematics** (read, write, listen to, speak)
- Use **appropriate technology** to enhance thinking, solving, judging
- Engage in experiences that encourage **independent, nontrivial exploration**
- Translate among **numerical, graphical, symbolic & verbal** representations



Wow!



HOW DO WE GET OUR STUDENTS DOING ALL OF THIS?!?!

We follow the...

The **AMATYC Standards for Pedagogy**

“Students should understand Mathematics as opposed to performing memorized procedures.”



AMATYC STANDARDS FOR PEDAGOGY

Mathematics faculty will...

- Model the use of **appropriate technology**
- Foster **interactive learning** through student writing, reading, speaking, and collaborative activities
- Involve students in **meaningful mathematics problems**



AMATYC STANDARDS FOR PEDAGOGY (CONT'D)

and...

- Use **multiple instructional strategies** (interactive lectures, guided discovery, questioning, collaboration, etc.)
- Provide learning activities that promote **independent thinking** and require **sustained effort**



**WOW
AGAIN!**



HOW DO WE DO ALL OF THIS?

- What **specific** strategies do we use?
- How do we **train/help faculty** to do all of this? How do we get them to “**buy in?**”
- How do we find the **time** to do all of this?



MORE QUESTIONS...

- Will this require **too much** paper **grading**?
- How can we expect our **adjuncts** to do all of this?
- What will our redesigned **classroom** actually **look** like?



PART II: THE SPECIFICS

- List of ideas – focus on top choices
- Choose a textbook
 - Interface with course goals
 - Topical coverage
 - Learning management system
 - Student-friendly
 - Customizable



THE SPECIFICS (CONT'D)

- Common final exam that assesses the standards
- Activities & projects “pool” - shared & accessible – our best – your best
- Determine specific classroom components



CLASSROOM COMPONENTS:

1. Common topical/sectional coverage
2. Real-world introductions for major topics
3. Common online assessments
4. Cooperative learning activities & projects
5. Emphasis on applications & multiple approaches to problem solving
6. Carefully planned, interactive lectures
7. Common grading scale & final exam



PART III: SUPPORT FOR FACULTY

- Professional development
- Orientations
- Mentors
- Detailed topical outline (learning objectives, applicable text pages & exercises, notes)
- Sample syllabi with daily schedule




SUPPORT FOR FACULTY (CONT'D)

- Activities & projects pool - accessible location
- Sample introductions for major topics
- LMS master course with online homework & quizzes, ready-to-use
- Sample daily outlines (detailed for 50-minute & 75-minute class periods)
- Instructor Resource Manual



INSTRUCTOR RESOURCE MANUAL

Table of Contents

- I. Components of redesigned classroom
 - II. Sample syllabi (*including timelines for 2 days/wk & 3 days/wk*)
 - III. What to cover from textbook (*sections, reading assignments, exercises & suggested activities & projects*)
 - IV. Real-world introductions to major topics
 - V. Using multiple points of view to problem solve
- 

RESOURCE MANUAL (CONT'D)

- VI. Guidelines for using activities & projects
- VII. Sample activities & projects
- VIII. Getting started with the LMS
- IX. Rationale for assigning graded homework
- X. Common final exam general information
- XI. Common final exam skills list



RESOURCE MANUAL (CONT'D)

- XII. Graphing calculator skills list
- XIII. Scatter plot & regression instructions
- XIV. Sample tests
- XV. Interpreting and writing about mathematics
- XVI. Common course outline
- XVII. Course goals *(from the MAA/CUPM subcommittee, Curriculum Renewal Across the First Two Years)*



RESOURCE MANUAL (CONT'D)

XVIII. AMATYC's Crossroads Standards
for Pedagogy

XIX. Other resources (*College Algebra
Redesign Team contact info, S-drive, etc.*)



PART IV: IMPLEMENTATION PROCESS

First phase:

- Pilot ten sections
- Continue developing and refining resources
- Institute common final exam



IMPLEMENTATION PROCESS (CONT'D)

Second phase:

- Analyze exam results
- Continue developing/refining resources
- Continue to train more faculty & increase # of redesign sections
- Provide mentoring for faculty
- Analyze success data
- Analyze residual data



	Percent Passing Final Exam	
	Redesign	Traditional
Fall 2010	58.0%	26.4%
Spring 2011	58.6%	24.6%
Fall 2011	58.2%	28.5%
Spring 2012	47.9%	28.8%



Overall Success Rates

	Redesign	Traditional
Fall 2010	61.9%	48.6%
Spring 2011	58.5%	53.3%
Fall 2011	61.3%	53.8%
Spring 2012	51.5%	47.9%



Overall Retention Rates

	Redesign	Traditional
Fall 2010	81.6%	79.6%
Spring 2011	83.5%	82.0%
Fall 2011	86.2%	83.6%
Spring 2012	82.5%	78.4%



Residual Data: Fall, 2011 to Spring, 2012

	Redesign	Traditional
P(A, B or C in PreCalc, Trig, Survey Calc given A, B or C in Col. Alg.)	81.9%	81.8%
	75.1%	72.9%
	<i>(With W's & I's)</i>	



IMPLEMENTATION PROCESS (CONT'D)

Third phase (now!):

- FULL redesign (58 sections) this fall
- Continue with...
 - Data analysis
 - Professional development
 - Activity/project development
- Revisit AMATYC's Standards



ANY QUESTIONS?

Recommended website:

beyondcrossroads.amatyc.org/

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