To Pre-Algebra and Beyond without & with Technology

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History

- “Developmental Mathematics”
- 4 credits (3 lecture + 1 lab)
- Calculator for 2nd half
- 48% Quizzes; 20% Lab Participation; 20% Final Exam; 12% Attendance
Complaints:

- Students come unprepared to continuation courses
- Success rates in continuation courses as low as 19%
- Grade rubric flawed
- Course title
Complaints Cont’d:

- Multiplication facts not taught
- Calculator used as a crutch
- Content not updated (since 1993)
- Content not organized in units
- No homework = no practice
Path

- Developmental Mathematics
- Beginning Algebra
- L/A Math (Intro Stats)
- Algebra Sequence
What We Needed:

- Updated Content
- Additional Topics
- Study Skills
- Homework Assignments
Specific Goals:

- Multiplication Facts
- Number Sense
- Estimation
- Reading Mathematics
- Writing (about) Mathematics
Most Importantly...

- Add Metacognitive Overlay
  and
- Maintain College Level
New Approach

- New Name

- New Grading Rubric
  - 40% Quizzes; 10% Lab Participation
  - 20% Homework; 10% Reading Activities
  - 20% Final Exam

- No Calculator
New Features

- Elementary Flip (Lecture Prep)
- Readings
- Journals
- Study Skills
- Skills Codes
Introduction to Flip

- Pre-lecture Exercises
- Pre-lecture Notes
- Readings
- Pre-lecture Videos (in progress)
Readings

- Part of the grade
- Instructors choose one or two per chapter
- Annotation required
- Start in class
- Model active reading
Topics:

- Vectors *
- Absolute Value Equations *
- Order Numbers in Scientific Notation *
- Unit Rates
- Average
- Trigonometric Circle *
- Probability
- Percent Fractions
- Sequences *
- Direct Proportion
- Exponent Properties *
- Percent Ratios
- Right Triangle Trig *
- Area Ratios
- Distance Formula & Equations of Circles *
- Inequality Graphing *
- Data Presentation
- Relative Frequency Distributions *
- Variance and Standard Deviation *
- Area Under Probability Curve *
- Multiplication Rule of Probabilities *
Complete Lecture Notes

- Instructor uses Tablet PC or ELMO
- Scan to PDF
- Publish on Bb
- Easy review (instructors/students)
- Available to those who miss class
Writing/Journal Entries

- Part of every homework
- Guided entries – short & targeted
- Emphasis on vocabulary and terminology
- Instructor models how to complete the journal
Study Skills

- MATH STUDY SKILLS videos
  Jessica Bernards, Portland CC, OR
  Mark DeSmet, Cabrillo College, CA
  ◦ Learning Math is Different
  ◦ Time Management
  ◦ Listening/Notetaking
  ◦ Test Anxiety

- Math Club – Wednesdays @ noon
Reinforcing Concepts

Repetition of topics multiple times
- Multiplication Facts
- Addition Facts
- Multiplication / Division by 100
- Estimation
Metacognitive Overlay

- Each topic associated with a code
  - Chapter Summary
  - Practice Quiz & Class Quiz
- Glossary / Answers
- Review Chapter
  - Review Checklist
  - Review Reading
  - Review Quiz
College Level???

- Mention future concepts
- Every homework has 1 challenge
  - Logarithms
  - Magic squares
  - Modulo (2, 10, 5)
  - Computer programming
  - Sectors of Circles
Course Stats

- Course success dropped
  - 43% overall (from 60% - fall semester)
- Success in continuation courses increased
  - 52% in Beginning Algebra (from 34%)
  - 66% in LA Statistics (from 33% - 44%)
- Administration skeptical
- Instructors enthusiastic
Future Wishes

- Add more videos
- Flip across sections
- Increase course success
  - Teach students how to be independent
  - Train instructors to be less old-fashioned (embrace technology)

Suggestions?
YouTube Can Be Used for

- **Pre-lecture:**
  - View videos
  - Take notes / answer questions
  - Bring to class for grade

- **Post-lecture:**
  - Ask me a question
  - Ask for clarification
  - Ask about specific hwk problem
Challenges from Flipping

- Responsibility on students
- Commitment
- Class time not productive if “homework” has not been done
- Interactive activities must be included
- Keep everything organized and together
IGNITE Tomorrow 6:00PM
Grand Ballroom D

#13  Math League Problems
Pre-Algebra Students Can Do!

#18  TV is Funnier when You Know Your Math!