



**To Pre-Algebra and Beyond
without & with Technology**

Sophia Georgiakaki

Tompkins Cortland CC (NY)

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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**



Algebra Sequence



**L/A Math
(Intro Stats)**



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
 - Homework
 - Study for Exams
 - Resources
- **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!**