# Florence-Darlington Technical College

# The Mathematics and Technology Hub: *Hybrid Learning*

2010 Tennessee Conference Straight to the Top
Monday, July 26, 2010

# Math Hybrid Learning Environment

- Traditional lecture *plus*
- Guided instruction in a supervised laboratory environment *utilizing*
- Interactive technology –

  Coursecompass/MyMathLab

FDTC Math Dept. July 2010

# Transforming Remedial Math

Our remedial math transformation began with the SACS 2005 QEP...

- Quality Enhancement Plan (QEP) – Title of Plan is *Calculate This!* modeled after the University of Alabama's Math Technology Learning Center.
- QEP is a compliance standard that has been established by the Southern Association of Colleges and Schools (SACS).
- The QEP is an ongoing plan of continuous improvement done on a 5-year reporting cycle.

# Why Mathematics?

## Fall 2004

## 1787 Students were enrolled in 0-Level Courses

| Course | Students | Percent |
|---|---|---|
| ENG 031/032 | 458 | 25.6% |
| RDG 031/032 | 480 | 26.9% |
| MAT 031/032 | 849 | 47.5% |

# Math Department Statistics

- 45% of 4242 or 1909 students were enrolled in a math course during the Fall 2004 semester
- 75% of 1909 or 1433 students were enrolled in remedial/prerequisite math (MAT 031, MAT 032, MAT 101, MAT 102)
- 49.5% of 1433 or 710 students did *not* pass with a grade of C or better

# Math Hub Course Titles

- MAT 031 Arithmetic (remedial)
- MAT 032 Pre-Algebra (remedial)
- MAT 101 Beginning Algebra (prerequisite)
- MAT 102 Intermediate Algebra (prerequisite)

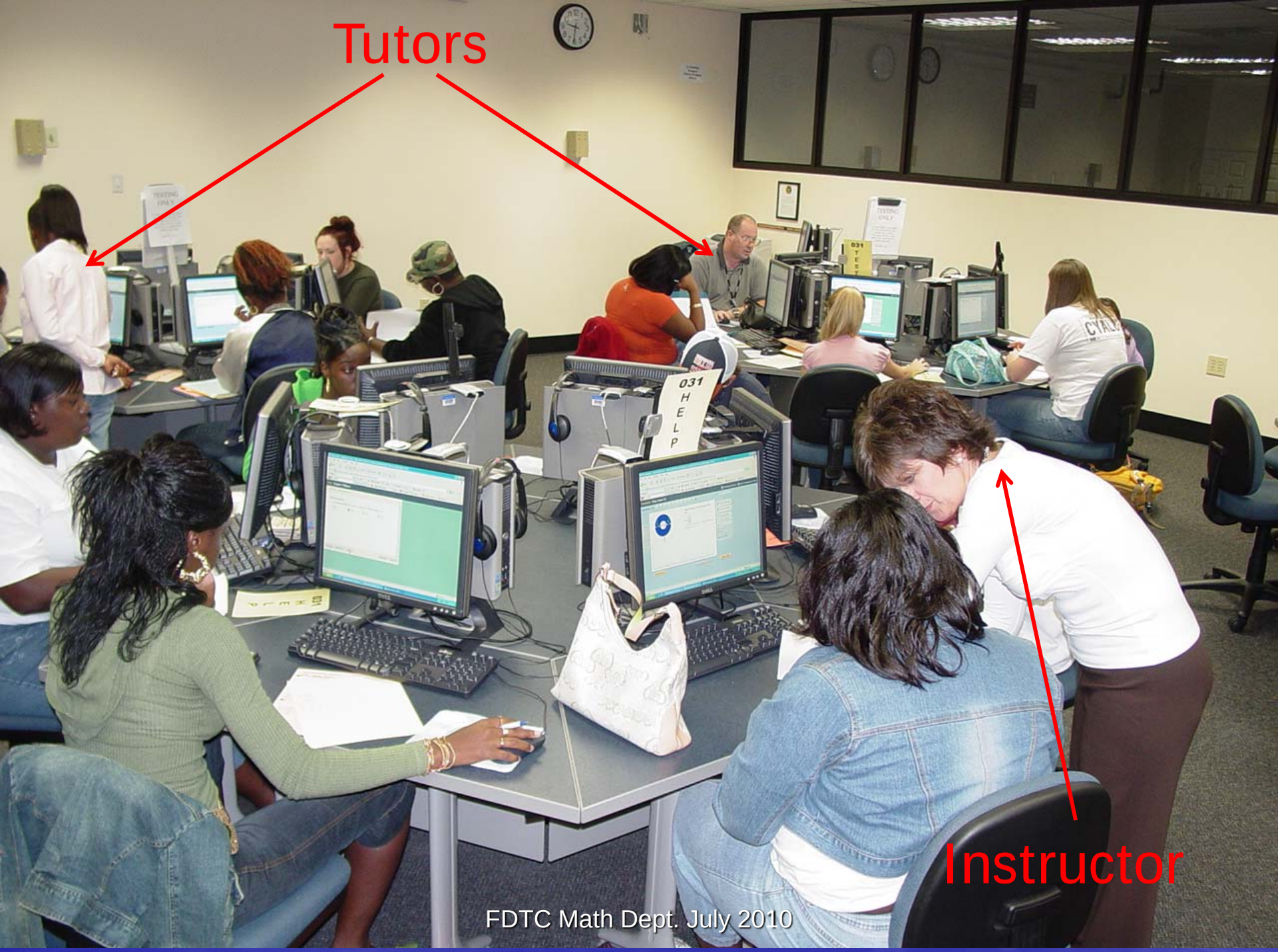
# Traditional versus Hub

**Traditional (Lecture only)**

- Three hours per week of instructor guided lecture
- We pray that students go home and do homework
- Students may progress to next set of competencies without mastery of prerequisite skills
- Three contact hours

**Hub (Lecture and Hub)**

- Two hours per week of instructor guided lecture
- Three hours per week of mandatory computer time with instructor and 2 to 4 tutors
- Students must demonstrate mastery of prerequisite skills before being allowed to move on to a new set of competencies
- 2 lecture hours + 3 hub hours=5 contact hours minimum per week


Tutors
031
HELP
Instructor

# Mathematics and Technology Hub

- Two Hub Classrooms – each room contains 50 student computers and one instructor/tutor computer workstation
- Testing Room – 33 student computers and one assistant computer workstation
- Tutoring Room – 27 student computers

# Tutoring and Testing Services

- 25 - 30 tutors currently on staff
- Tutor hours range from 5 to 30 hours each week
- Some tutors are current FDTC students, half have at least an associate's degree, and several are preparing to be future math teachers

# Tutoring and Testing Services

- Tutorial assistance is given to both Traditional and Hub students
- Tutors provide testing services to both Traditional and Hub students
- Hub Tutoring and Testing Hours:

| | |
|---|---|
| Monday-Thursday | 9:30am – 8:30pm |
| Friday | 9:30am – 3:00pm |
| Sunday | 2:00pm – 6:00pm |

# Tutoring and Testing Services

- Testing by appointment is managed using an online appointment manager ($120 per year)
- Approximately 8600 student visits per semester which equals about 18,500 hrs of tutoring/testing outside of Hub classes
- An online suggestion box and Math Hub email is available at all times for student/faculty input

# MyMathLab (MML)

- Both traditional and Hub learning environments use MML, an online course management system which provides multimedia tutorials, multi-media textbook, assessment capabilities, online grade book, and a flexible set of course materials
- All math students are required to do homework online. Thus, our traditional math classes are not what most would consider to be traditional
- The flexibility of MML accommodates both traditional and Hub learning environments; the difference is how we design MML to meet those learning needs
- Students have access to their materials and grades 24 hours a day, 7 days a week
- The website for MML: www.coursecompass.com

CourseCompass - Microsoft Internet Explorer provided by FDTC

http://www.coursecompass.com/

# CourseCompass™

Gateway To Your Online College Courses

PEARSON

## MyLab Courses? You've Come to the Right Place!

Pearson MyLabs in CourseCompass are powerful tutorial and assessment products with ready-to-use tests and assignments, custom-built exercises, and automatic grading. Read more...

myhealthlab mynutritionlab MyAccountingLab

## Access the World of Online Learning from MyPlaces

Connect to all your Pearson courses and resources from a single, handy list. Read more...

## What's New

In CourseCompass? | In MyLabs?

## Take a Tour

View List of Tours

Returning Users:

LOG IN

Forgot your login name/password?

Students

Register

Need Help?

Educators

Register

Request Access

## STUDENTS

Take a Tour

- How to Register
- How to Buy Access
- Getting Started
- FAQ
- Support

Welcome to CourseCompass, the online learning environment that helps you succeed in your MyLab or other course! CourseCompass offers you all the resources you need to get up and running in your courses. Here you'll find course announcements, syllabi, assignments, lecture notes, readings, videos, MP3s, tests, and more–everything you need to do your best.

For help getting started in CourseCompass, check on the links to the left, watch the tours, visit our Support page, or just log in and explore!

## EDUCATORS

Take a Tour

- How to Request Access
- How to Register
- Getting Started
- Available Courses
- FAQ
- Support

CourseCompass is a dynamic, interactive online learning environment. CourseCompass delivers powerful MyLabs and other courses that provide proven, effective tutorials and assessments for industry-leading Pearson textbooks. You can easily create a course and customize it with your own materials. And you can count on Pearson to offer the best tools available to help students succeed in your courses.

For help getting started in CourseCompass, check on the links to the left, watch the tours, visit our Support page, or just log in and explore!

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If you need help with this, ask your instructor or Math Hub staff.

**Syllabus**
Hub_Syllabus_Part_2.doc ( 24064 Bytes )
Mat_102_hub_syllabus_Summer_2010.doc ( 55296 Bytes )

**Presentations**
Hub_Summer_10_PPT_5_17_10.ppt ( 1074176 Bytes )
Please view the attached PowerPoint slideshow.

**Photo Consent/Refusal Form**
Throughout the semester, pictures may be taken of the Math Hub which may also contain pictures of FDTC students. These photos may be used on the FDTC website, brochures, pamphlets, videos or in local newspapers.
Please complete the paper copy of the Photo Consent/Refusal Form located in the Hub to either agree or decline to have your picture to be taken in the Math Hub.

**Agreement Forms**
You must have the plug-ins downloaded before being able to complete the two agreement form assignments below. If you have not yet installed them on your personal computer, you will need to click the icon labeled "INSTALLATION WIZARD" at the left of the page BEFORE going to the agreement below.

Agreement Forms.After watching the overview presentation and reading the provided syllabus and outline, please complete the two agreement forms in which you will be agreeing to follow the procedures and policies for this course laid out in the syllabus. After completing both Agreement Forms,you may begin Unit 1 materials.

**Important Student Information**
Summer_2010_Student_Important_Information_for_Syllabus.doc ( 40448 Bytes )
Open the attached file to read important information about student responsibilities for the semester.

**Material Timelines**
Hub_102_MW_Lecture_Timeline_Summer_2010.xls ( 21504 Bytes )
Mat_102_Outline_Bittinger_10_week.doc ( 44032 Bytes )
The timelines above will help you keep on track for the semester.

**Interval Notation Handout**
Mat_102_Handout_Interval_Notation_97_03_format.doc ( 132608 Bytes )
This handout will help you prepare for the homework entitled "Interval Notation" before section 7.1.

**Polynomial Factoring Flowchart**
Polynomial_Factoring_Flowchart.doc ( 33280 Bytes )
This handout may be useful as you are reviewing factoring. Its use will NOT be allowed for any tests or the final exam.

**Early Completion of Course**
Early_completion_Summer_2010_5.6.2010.doc ( 40960 Bytes )

**The Accelerated Student's Options**
Accelerated_student_options_Summer_2010_5.5.2010.doc ( 34816 Bytes )
Early Finishers: Print and read the attachment thoroughly. Then speak with your instructor who will help you fill out the Course Transition Form and answer any questions you may have.

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**Take a PreTest**
Before you begin the material on a chapter, you must take a pretest for that chapter. If you make above the "passing" grade, you can exempt the chapter and begin the next chapter. If you make below the passing grade, you must then complete the chapter homework, Chapter Homework Review, and posttest.

**Do Homework**
If you do not pass the Chapter PreTest with the appropriate grade, you must complete all homework assignments for that chapter with 100% mastery.

**Chapter Homework Review**
This assignment is a scrambled summary of the homework assignments from this chapter. The Chapter Homework Review will help you prepare for the posttest. This assignment will be done AFTER you make 100's on all homework assignments from the chapter and BEFORE you take the posttest for the first time. You must score 100% on the Chapter Homework review before taking the posttest.

**Sample Tests**
Sample Tests are not required and will not affect your average. Sample test grades will appear in your gradebook but will not change your overall average. Taking a sample test without any notes or help may be a good indication if you are ready for the "real" post test. ***NOTE - The sample test is NOT a copy of the actual test!! The sample tests were created by the textbook author. The "real" post tests were created by FDTC instructors.
Please be aware that when you take a sample test, additional study plan problems may be added to your original study plan.

**Take a PostTest**
Click the above button to take a Posttest. You must complete the Chapter Homework Review and make a 100 before you can take the Posttest for the first time. YOU MUST HAVE YOUR STUDY PLAN CLEARED BEFORE YOU TAKE EACH POSTTEST!!!!

**Study Plan**
You only need to complete a Study Plan if you fail a Posttest. The study plan will require you to work problems similar to the concepts you missed on the posttest. All "pencil" problems must be completed correctly before you can retake the posttest.

**Take the Final Exam**
Click the above button to take your final exam. You must pass your last Chapter Posttest in order to qualify. Your instructor is the only person who knows the password for this test. Therefore, they are the only one that can start and submit the exam for you. The final exam is divided into two parts: Part A has 10 questions and Part B has 23 questions. Part A must be completed and submitted before Part B can be opened. Part A and Part B must be completed during one sitting. Both parts are multiple choice and you will be allowed to uses your calculator and Hub formula sheet on the entire exam.

# Homework and Tests: Homework





## All Homework Assignments

| Due | Assignment | Time Limit | Attempts | Gradebook Score |
|---|---|---|---|---|
| 07/26/10 2:30pm | Syllabus Agreement (Mat 102) | | | |
| 07/26/10 2:30pm | Policies and Procedures Assignment | | | |
| 07/26/10 2:30pm | Homework 2.1 | | | |
| 07/26/10 2:30pm | Homework 2.5 | | | |
| 07/26/10 2:30pm | Homework 3.1 | | | |
| 07/26/10 2:30pm | Homework 3.2 | | | |
| 07/26/10 2:30pm | Homework 3.3 | | | |
| 07/26/10 2:30pm | Homework 3.8 | | | |
| 07/26/10 2:30pm | Homework Review 2.1, 2.5, 3.1, 3.2, 3.3, 3.8 | | | |
| 07/26/10 2:30pm | Factoring Review | | | |
| 07/26/10 2:30pm | Homework 6.1 | | | |
| 07/26/10 2:30pm | Homework 6.4 | | | |
| 07/26/10 2:30pm | Homework 6.5 | | | |
| 07/26/10 2:30pm | Homework 6.8 | | | |
| 07/26/10 2:30pm | Homework Review 6.1, 6.4, 6.5, 6.8 | | | |
| 07/26/10 2:30pm | Interval Notation | | | |
| 07/26/10 2:30pm | Homework 7.1 | | | |
| 07/26/10 2:30pm | Homework 7.2 | | | |

File Edit View Favorites Tools Help

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Study Plan - Jennifer Riggins | Page | Tools

MyMathLab

Help Support Browser Check

Jennifer Riggins 7/15/10 3:21 PM

Member: 2010SU MAT 102-01T HOWLE [42] > Back to Gradebook

Course Calendar

Previous Student | Student Name | Email Student | Next Student

Hide Navigation Buttons

MyMathLab

- Settings
- Home Page Manager
- HW & Test Manager
- Study Plan Manager
- Gradebook
- MyMathLab Calendar

## Study Plan

Legend

Click a chapter below to start practicing, or follow these steps to create a personalized study plan.

1. To determine what you need to study, do work on the following material: Quizzes, Tests, Sample Tests
2. Practice the questions in the topics you need to study ( ).
3. When you have answered all questions correctly ( ), prove mastery ( ) by again working on the following material: Quizzes, Tests, Sample Tests

Learn More

Show All | Show What I Need to Study

Jump to where I worked last

| Book Contents for All Topics | Correct | Worked | Questions | Time Spent |
|---|---|---|---|---|
| Ch 0: Orientation Questions for Students | | | 0 | |
| Ch 2: Functions, Linear Equations, and Models | | | 83 | |
| Ch 3: Systems of Linear Equations and Problem Solving | | | 103 | |
| Ch 5: Polynomials and Polynomial Functions | | | 0 | |
| Ch 6: Rational Expressions, Equations, and Functions | 40 | 42 | 110 | 2h 47m 6s |
| Ch 7: Exponents and Radical Functions | | | 206 | |
| Ch 8: Quadratic Functions and Equations | | | 110 | |
| Ch GA: Online Appendix: Additional Geometry Questions | | | 0 | |
| Total: All Chapters | 40 | 42 | 612 | 2h 47m 6s |

Show results that created this study plan

This course is based on Bittinger: Intermediate Algebra: Graphs & Models, 3e

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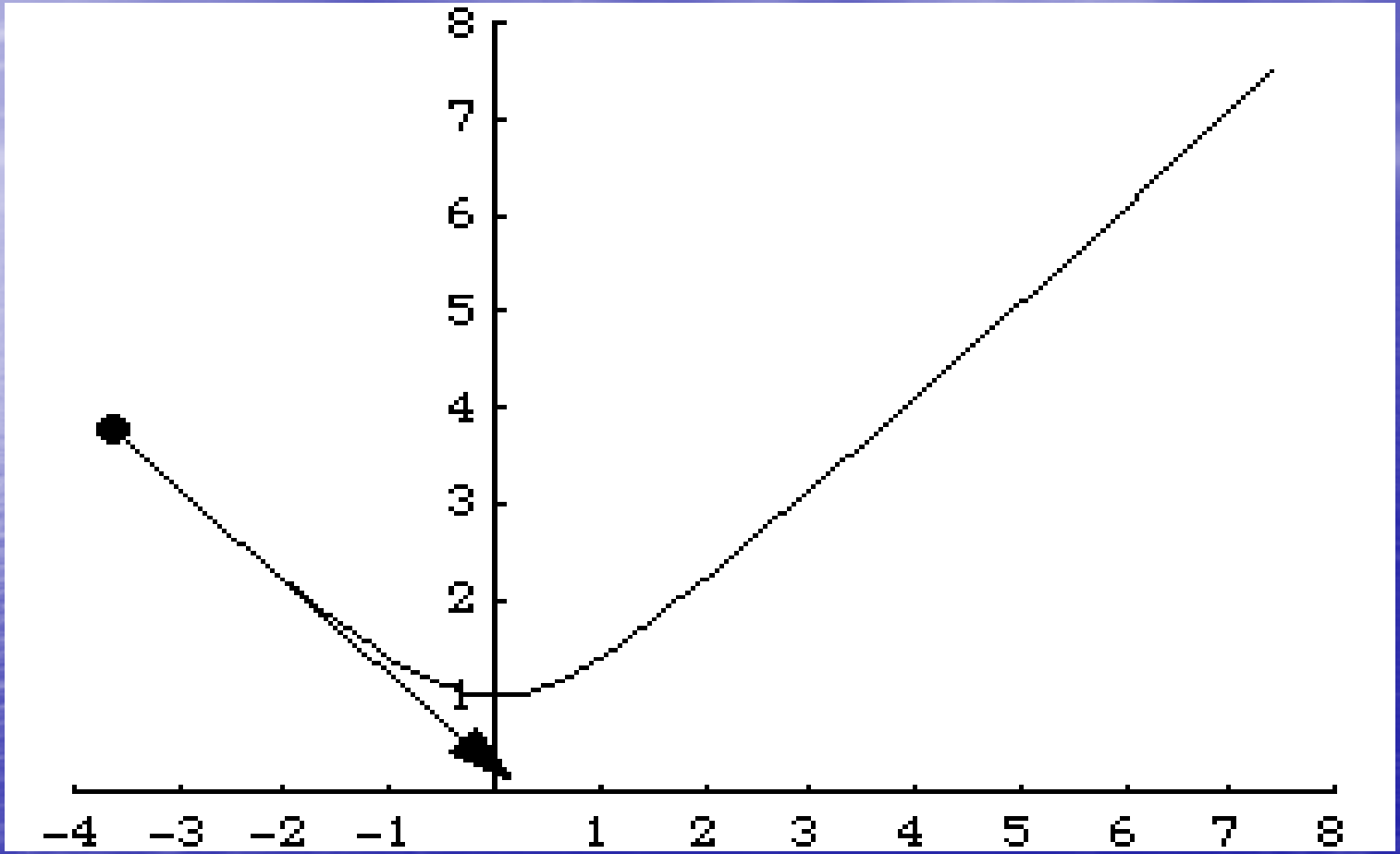
# Why we use MML…

- Each remedial/prerequisite Hub course is standardized (ie: all Math 031 students use the same master course)
- Each student has a unique individualized test, homework, and study plan
- Each student can work at his or her own pace and must finish at least one course in a semester but could complete multiple courses

# Data and Results




We are collecting and analyzing data for the four QEP goals.

# Primary Goal of QEP

... to increase student knowledge of course competencies by at least 5% in our remedial/prerequisite courses.

# How We Measure Our Primary Goal

- Within the first two days of each semester, students are given a course pre-assessment: a subset of the departmental final exam
- The post-assessment serves as a subset of the departmental final exam
- Both sets of data are stored electronically and used to compare changes in student learning outcomes
- Finally, the data are divided into two groups for comparison: Hub environment and traditional environment

# Primary Goal Results

The average increase from pre to post for 1865 Hub students is 34.2 points

The average increase from pre to post for 2728 traditional student is 29.1 points

Percent difference between the two environments is

$$\frac{34.2 - 29.1}{29.1} \times 100\% = 17.5\%$$

**This well exceeds our goal of 5%**

# Secondary Goal One

... to increase the course success rate in remedial/prerequisite math classes by at least 5%.

# Secondary Goal One Results

The success rate for 3894 Hub students is 57.7%

The success rate for 9802 traditional student is 42.2%

Percent difference between the two environments is

$$\frac{57.7-42.2}{42.2}\times 100\% = 36.7\%$$

**This well exceeds our goal of 5%**

# Secondary Goal Two

... to increase the course success rate of students in curriculum math courses who took the prerequisite math course by at least 5%.

# Secondary Goal Two Results

The success rate in a curriculum math course of the 612 students who took the prerequisite math course in the Hub environment is 65.7%

The success rate in a curriculum math course of the 2505 students who took the prerequisite math course in a traditional environment is 59.1%

Percent difference between the two environments is

$$\frac{65.7-59.1}{59.1}\times 100\% = 11.2\%$$

**This well exceeds our goal of 5%**

# Secondary Goal Three

...to increase the average on the final exam of each remedial/prerequisite math course by at least 5%.

# Secondary Goal Three
# Results

The average grade on the cumulative final exam of the 2297 Hub students is 76.5

The average grade on the cumulative final exam of the 6805 traditional students is 68.5

Percent difference between the two environments is

$$\frac{76.5-68.5}{68.5}\times 100\% = 11.7\%$$

**This well exceeds our goal of 5%**

# The Benefits of the Hybrid Learning Environment

We believe this approach:

- Supports active learning
- Provides one-on-one help
- Increases communication
- Encourages additional time on task
- Allows course acceleration
- Develops self-confidence and motivation

# Title III Grant

FDTC received a $1.87 million Title III grant in Fall, 2009, to expand the Hub. As a result, most of the remedial/prerequisite math students now use and learn math via the Mathematics and Technology Hub.

# For more information

- For data:

  http://qep.indrihovic.com

- For questions:

  Debi.McCandrew@fdtc.edu

  Jennifer.Riggins@fdtc.edu