

## **DCCCD Retention Best Practice Submission Form**

College/Location: North Lake College

The Retention Best Practice is primarily supported by what college/location area:

Instruction X          Student Services X          Administrative     

Combination of areas: DMAT 0090 Pre-Algebra with support from TRIO, Disability Services and Advising.

Contact Persons:

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Retention Best Practice Title: Blended Instruction

Retention Best Practice Area of Focus:

Math X          STEM               Honors College               Other                             

**Retention Best Practice Executive Summary:**

Mastery based progression with a blend of lecture and technology based learning. The pilot has begun with 4 DMAT sections of 17 students in each section.

See attachment for details.

**Please describe the evaluation measures utilized to support this initiative as a best practice:**

- 1) Foundation of the Blended Instruction initiative based upon the 10 year evaluation of the Technology Learning Program at the University of Alabama. See the attachment for a detailed account of their evaluation process and results.
- 2) Our current measure of success: Pre-test scores (which generate the individualized study plan) are noted. A 100% is required for all homework objectives shown not to be mastered by the study plan. A post-test is given with an 85% mastery requirement before a written test may be attempted. The scores from the pre-test, post-test and written test are tracked to note progression and mastery.
- 3) Follow up statistics will be compiled to note retention of students from the fall of 2008 to the spring of 2009 and throughout the developmental sequence from DMAT 0090 to DMAT 0091 to DMAT 0093. Not only will their retention be tracked but their success rates in the subsequent courses and exit courses will be tracked.

**Provide a summary of the results, including data (such as trend lines over time) to show how it impacted retention and is a best practice:**

- 1) A verbal survey of current students notes that approximately 87% of the students plan to continue with the Blended Instruction program in the spring of 2009 as the pilot progresses to include the DMAT 091 Elementary Algebra course.
- 2) 100% of the students have earned an 85% or better on the chapter tests they have taken so far.

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**What would be needed to replicate the practice at other DCCCD colleges?**

Details of this endeavor will need to be evaluated. Proposals for current program and its replication and expansion are discussed in the attached document and will need further review after the program has been in effect for one year.

**Cost to implement this practice (financial and human):**

Classrooms equipped with computers.

An instructional associate is needed to aid in the administrative aspects of running the course along with providing the students with one on one instruction.

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## North Lake College ~ Mathematics Department ~ October 2008

### Emerging Best Practice: Blended Instruction

Key issues in the developmental math courses:

1. Lack of basic math skills.
2. Lack of critical thinking and basic study skills.
3. Lack of mastery when exiting course.
4. Various standards and teaching strategies among instructors.
5. Various levels of knowledge among students.
6. Lack of immediate feedback to students on homework.

To address these issues and increase retention and student success we researched the best practices presented by the National Center for Academic Transformation. Specifically, we reviewed their detailed information on Course Redesign. The development of our Blended Instruction Pilot Program was heavily influenced by the design of the Technology Learning program from the University of Alabama. This program had significant, long term data to support positive results. See data sources at end of document.

Synopsis of our pilot:

- Blended Instruction is a hybrid of the Emporium and the Supplement Model.
- Pilot program currently implemented for DMAT 090 PreAlgebra.
- Program being expanded to DMAT 091 in the spring of 2009 and expanded to DMAT 0903 in fall of 2009.

Key components to Blended Instruction:

- Pre testing with creation of a personalized study plan
- Mastery based progression
- Post testing mastery before written tests are allowed
- Intervention by instructor, counselors and Disability Services (See Resource sheet – one was developed to give to students and one developed for instructors).
- Frequent communication between student and instructor
- Lectures focusing on critical thinking, basic study skills, and common areas of difficulty
- Students can accelerate through the sequence

Note: All of the key components lead to retention and student success.

Data tracked so far:

- 1) Pre-test, post-test and written test scores being tracked.
- 2) A verbal survey of current students notes that approximately 87% of the students plan to continue with the Blended Instruction program in the spring of 2009 as the pilot progresses to include the DMAT 091 Elementary Algebra course. Other students were unsure of future plans or not present during survey.

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- 3) 100% of the students have earned an 85% or better on the chapter tests they have taken so far.
- 4) 7% of students that enrolled in the course did not purchase the book or software for the course within the four week grace period allotted to accommodate financial aid issues.

Below is the outline of the process which we shared with students (each element required):

### How to make DMAT 0090 work for you!

- 1) **Pre-test** ~ Creates the study plan / score not counted in grades.
- 2) **Study Plan** ~ Make note of hats (mastered objectives) on spreadsheet.
- 3) **Instruction** ~ Take notes.  
Videos and/or Power Point Presentations - *your way to strengthen your foundation!!*  
Mini Lectures – Provided by instructor.  
If you need or want more explanation on the topic, ask me.
- 4) **Homework** ~ Keep at it until you get 100%.
- 5) **Post-test** ~ Generates a new study plan – can tell you if you need more foundation work.  
Goal is to earn an 85% or above– if not, we will brain storm on ways to further strengthen your foundation. Score does not count in your course grade.
- 6) **Written Test** ~ Need permission slip from instructor / counts for a grade.

### **Issues to be addressed to increase success of program:**

1. Tracking of mastered objectives from Study Plan needs to be streamlined.  
Current method is too time-consuming for instructor.
2. Pre-requisites necessary to keep students from working on objectives out of order.
3. Notebook check – necessary to enforce proper note taking techniques and to ensure that the students are not skipping the videos or power points BEFORE attempting the homework. A time effective method of checking the notebook thoroughly needs to be developed or an assistant is necessary in the classroom.
4. A set of lectures is being created on the main objectives that students have shown to need additional instructions beyond the MyMathLab presentations.

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### **Protocol to strengthen student foundation:**

1. If student does not score an 85% or greater on the post test, instructor reviews post test question by question with student. Instructor reviews student's written work for the post test to identify student's weaknesses.
2. Instructor chooses best option for next steps.  
Options can include: student given replacement problems for missed post test questions, student is given additional exercises from the study plan created by the post test, student is given additional problems and required to re-take the post-test.
3. Student must demonstrate mastery (85% or more) on material BEFORE allowed to take the written test.
4. If student scores below 85% on written test, a new study plan is created and the process is repeated. See instructor resources to determine if additional assistance is required for issues beyond.

### **TEACHER RESOURCE**

#### **How do we help students that are struggling?**

- Encouragement – constant
  - Do not drop – skills take time to develop
  - Ask the students: “Is it okay for some students to move faster in a class?”

If they are in agreement, then ask, “So, what you are saying is that time isn't the critical part of this effort? Can we extend that then to say it's OK to go slower?” If it takes two semesters to get through all the material – so be it. Time is not the issue – going faster or more slowly doesn't make someone Smarter – the time doesn't matter, the learning process does.

Different people – different backgrounds – in different places –different speeds are okay – we all develop different skills in our own way. **The main thing is to be sure you have the skills.** Each course that comes after assumes you really know the content of this course...the mechanical skills, the vocabulary, the applications.

- TRIO
  - Have a presentation by TRIO staff second week of class
  - Study skills – mention seminars are available
- Leading Questions to help students discern own needs:
  - How have you dealt with these issues before?
  - What tools or resources did you use in high school?
  - Have you found any resources here at NLC?

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- Build a circle of support: discuss list of resources available  
Successful people/independent people use the resources available to them. They do not “go it alone”; they assess the resources available to them and build a circle of support!
- Provide a copy of the Resources for Students (see next page)

## Resources for Students

(Instructors can input whatever software comes with your text.)

- MyMathLab – software program that came with your book – plan to use it!
  - The program has videos for each section we cover.
  - The program has guided solution steps for homework problems.
  - It has practice quizzes and more.
  - The Study Plan helps you to zero in on topics you need to work on
- TRIO – special program offering free one-on-one tutoring (ext. 3150)  
The Student Support Services - TRiO program offers a variety of free academic services to help students who qualify for the program. If you are eligible for the program, you will be provided an individualized program of educational support services designed to meet your needs. Our goal is to provide you with the support services that will enable you to succeed in college and in life.  
(A428) Phone: (972) 273-3150
- Math Lab – Free tutoring (C211)
  - Open environment
  - May need to wait – be patient
  - Come armed with specific problems to work on with tutors

8:00 a.m. - 9:00 p.m. on Monday - Thursday

8:00 a.m. - 3:00 p.m. on Friday

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9:00 a.m. - 2:00 p.m. on Saturday  
CLOSED on Sunday

- Private Tutor – One on one help tailored to your needs and schedule. (Listings posted in Math Lab. Private tutors are not sponsored by the college.)
- Study group - Form a study group with classmates/Academic Coach  
Discussing strategies and helping someone else can be a very useful method of learning for some students.
- Counseling Services – they have lists of programs to fit a variety of needs

Need help with life's challenges? The North Lake College Counseling Center provides professional assistance to current students with personal issues that may affect academic success and quality of life.

Counseling services are FREE and available by appointment, Monday through Friday from 8:30 a.m. to 5:30 p.m. or by dropping in A414 (depending on counselor availability). Additional hours may be arranged to meet special needs.

Our licensed professional counselors can help with issues including:

- Adjustment issues
- Anger management
- Conflicted life choices
- Death or loss
- Depression/anxiety
- Drug and alcohol abuse
- Diversity
- Family concerns
- Self esteem
- Sleep difficulties
- Stress
- Relationship issues
- Time management

Questions? Please visit the college Student Development Office (A430) or call 972-273-3333 to schedule an appointment.

- Disability Services

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The North Lake College Disability Services Office (DSO) provides a variety of support services to empower you, foster your independence, promote achievement of realistic career and educational goals, and assist you in discovering, developing, and demonstrating your full potential and abilities. DSO offers individual academic advisement and registration and approves and implements academic accommodations based on your disability. DSO can also act as a referral source if you need additional support.

Questions? Please visit the college Disability Services Office (A430) or call 972-273-3165.

- Advising

Advisors will help you plan the best program for your interests and abilities and provide information on:

- [Selecting Courses](#)
- [Degrees and Certificates](#)
- [Transfer to a Four-Year School](#)
- [University Representative Visitation Schedule](#)
- [Orientation for New Students](#)
- [Registration Dates and Times](#)

Please visit the college Advising Office (A415), call 972-273-3182

## Resources researched to provide foundation for Blended Instruction Pilot Program:

Course redesign.

<http://www.center.rpi.edu/>

<http://www.center.rpi.edu/whatwedo.html>

Recommended readings

[http://www.center.rpi.edu/Rec\\_Reading.htm](http://www.center.rpi.edu/Rec_Reading.htm)

Community college model (elementary Algebra)

[http://www.thencat.org/PCR/R2/RCC/RCC\\_FR3.htm](http://www.thencat.org/PCR/R2/RCC/RCC_FR3.htm)

Model at University of Alabama (intermediate algebra)

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[http://www.thencat.org/PCR/R2/UA/UA\\_FR1.htm](http://www.thencat.org/PCR/R2/UA/UA_FR1.htm)

This report is from <http://www.mtlc.ua.edu/>  
Math 100 is Intermediate Algebra.

Department of Mathematics  
College of Arts & Science  
The University of Alabama

## Acknowledgement

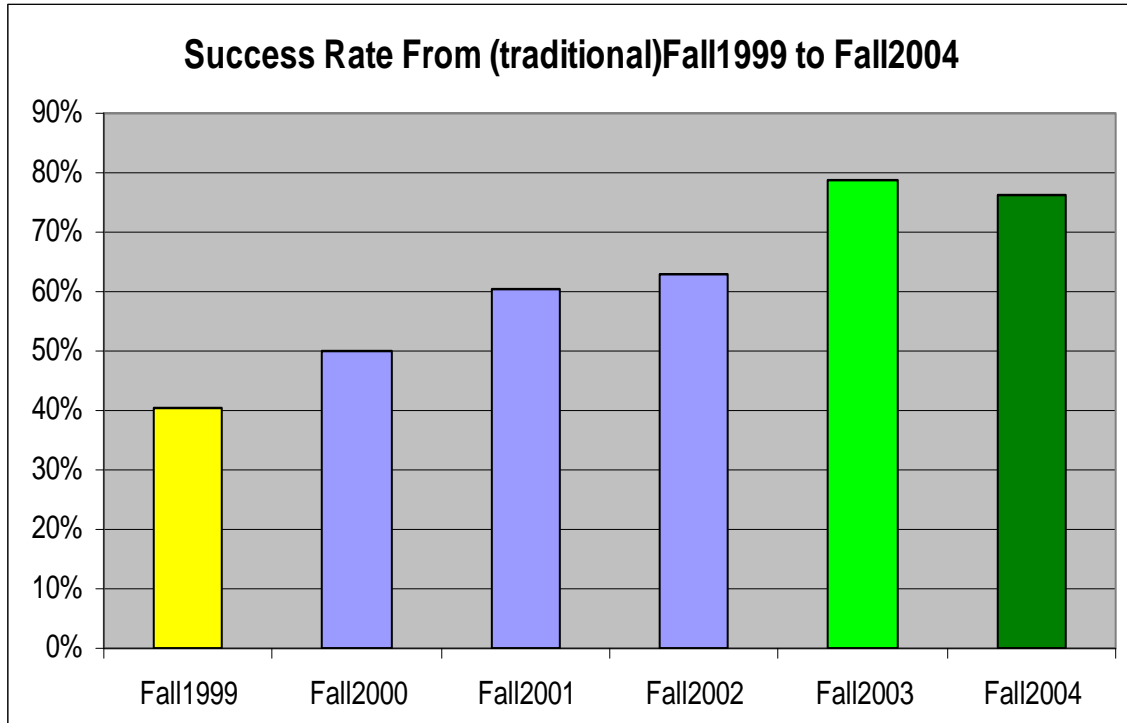
- We would like to thank the Provost, the Dean, the University, and all supporting personnel for providing us such a nice environment in which students can learn mathematics.
- We would like to thank all of the instructors, the lab coordinator, and the data manager. Their diligence and hard work has enabled the MTLC to run smoothly.
- We would also like to thank all the students who were successful in their MTLC courses. They earned their success by working hard and taking responsibility for their learning. We congratulate them all.

## Performance of Technology Learning of Math100 in MTLC

In Spring 2000, we piloted 3 sections of Math100 using technology learning. The data show that students in Math100 using technology learning are 28% more likely to succeed than using the traditional way of learning. The data also indicate that A students have not been affected by different teaching methods. However, the technology learning method has produced more B and C students. Because of the promising results indicated in the pilot study, all of our Math100 sections have been moved to the MTLC using technology learning.

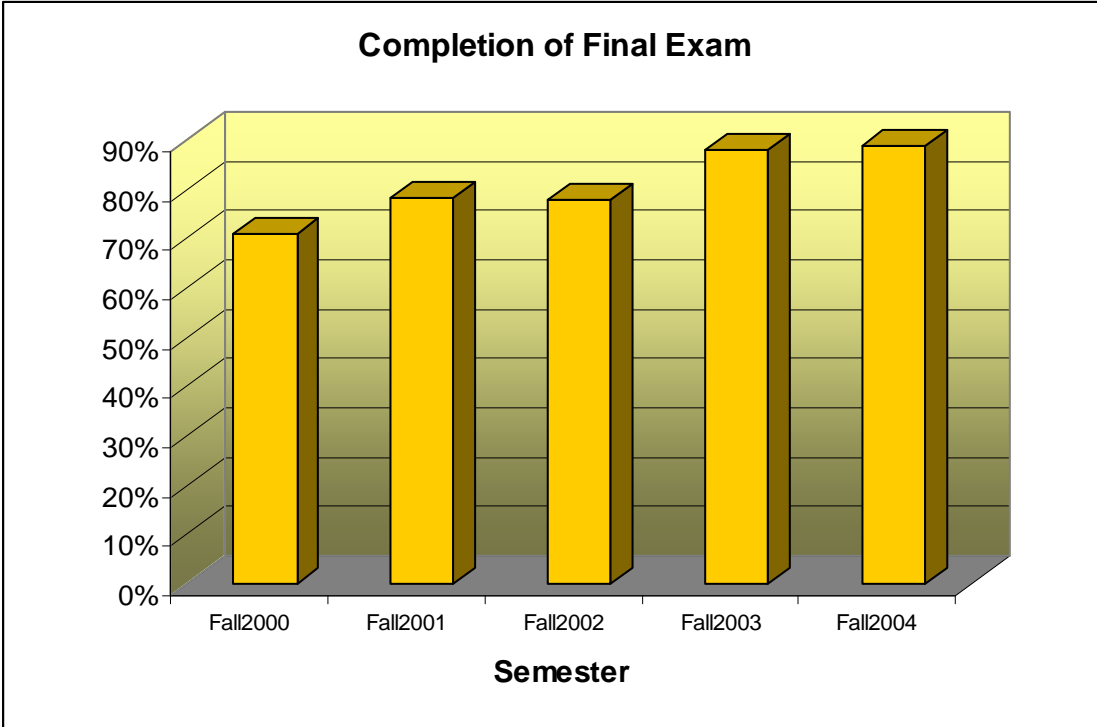
**The success rates have increased significantly since 1999. Math100 students in Fall 2003 and 2004 are 85% more likely to succeed than in Fall 1999!**

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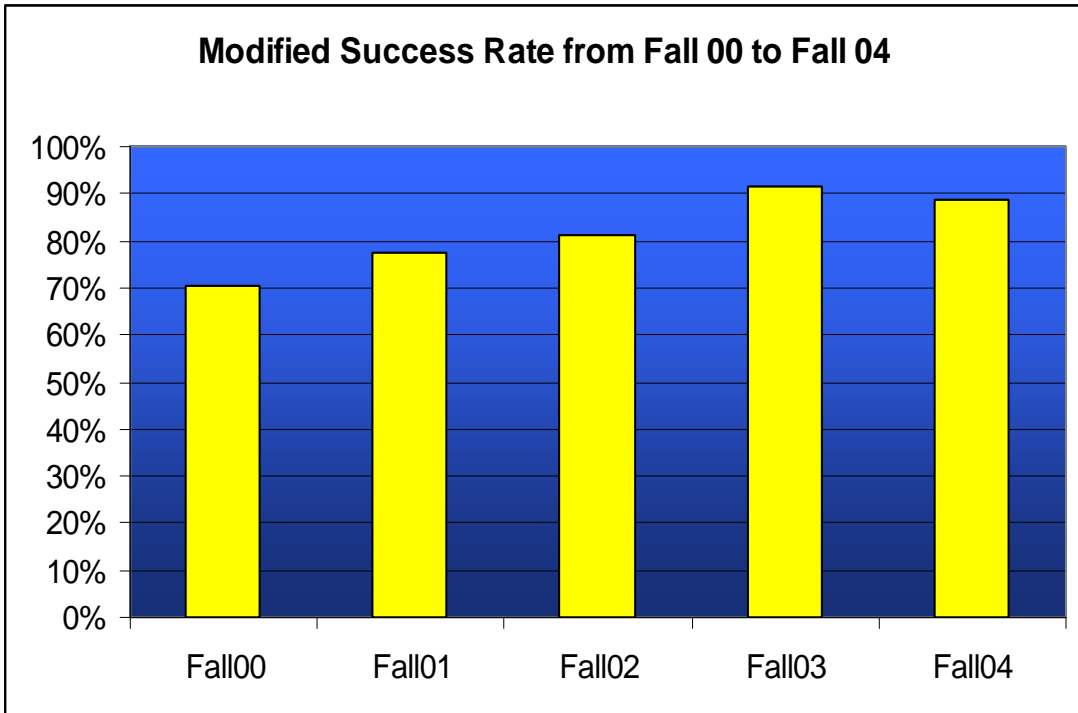


**The following chart shows the percent of students in Math100 who completed the final exam. Data show as the number of students who take the final exam increases the higher the success rate. Instructors worked hard to communicate with their students on a regular basis encouraging them to complete their work.**

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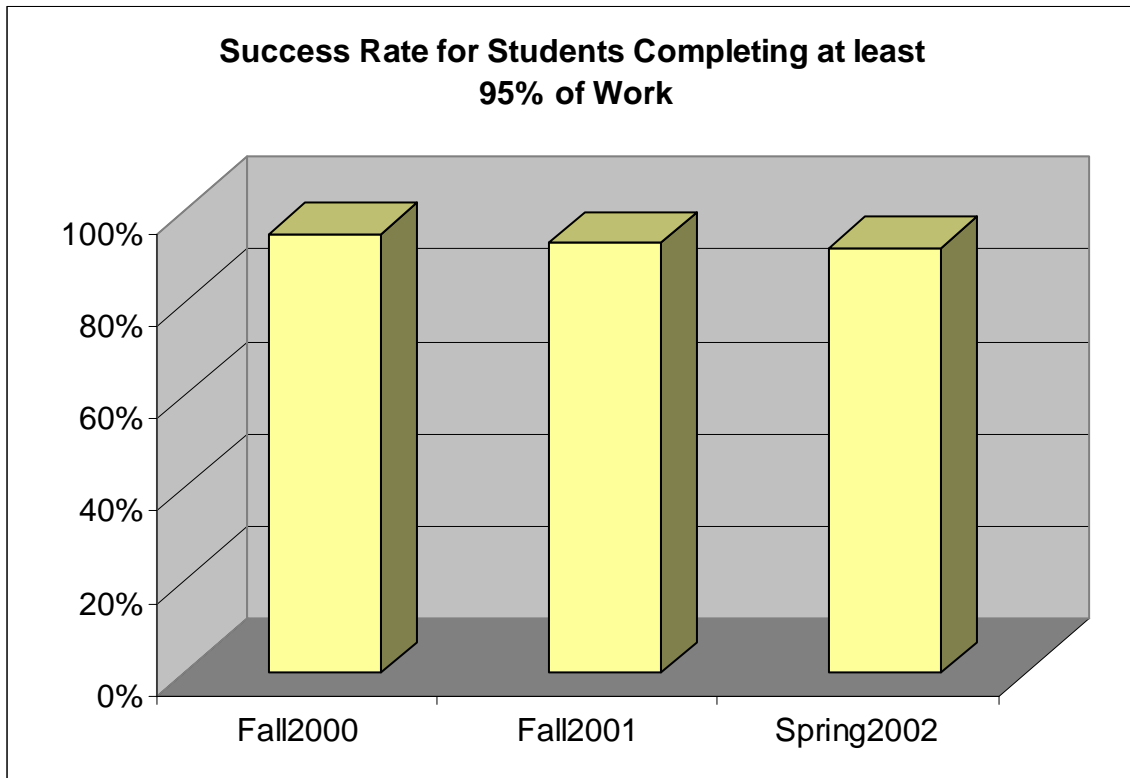


**The success rates are much better if we count only students who completed the final exam.**

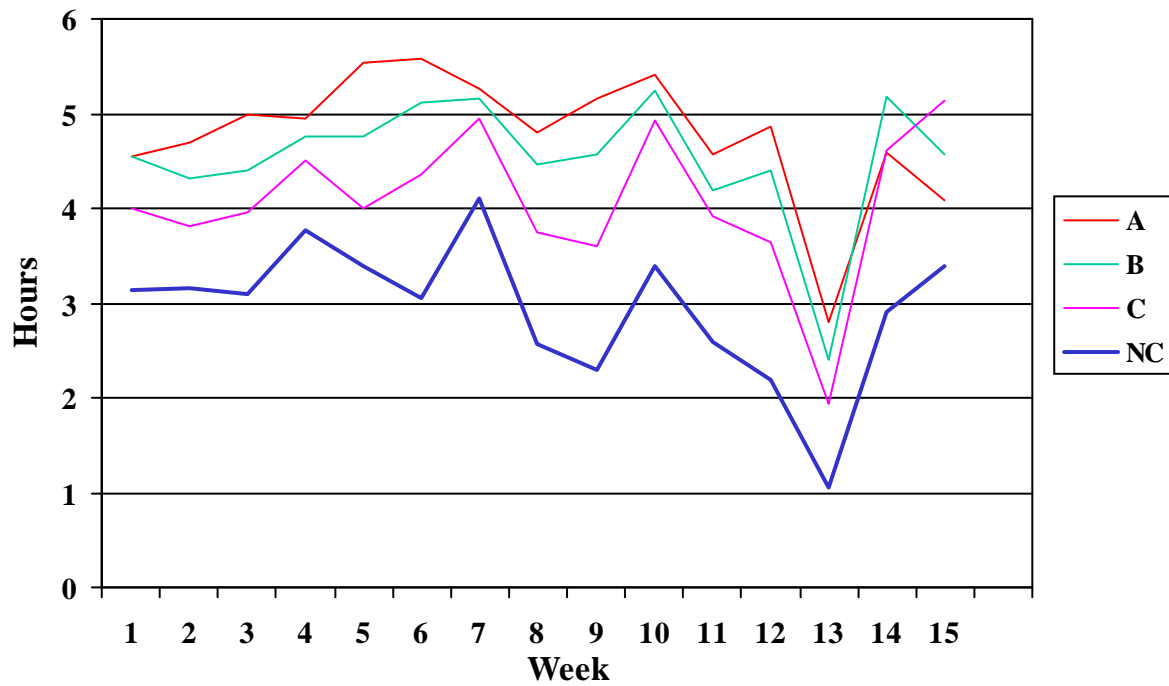


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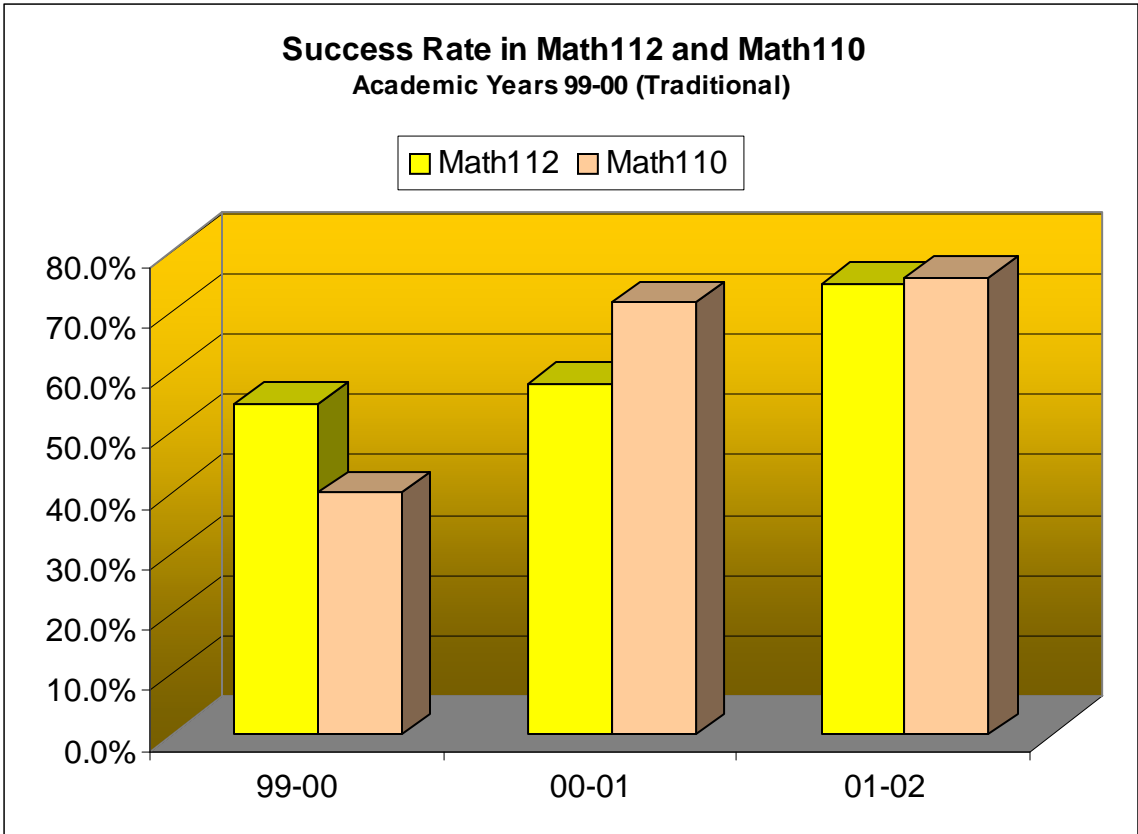
**It is not surprising that students who complete at least 95% of assigned work have more than a 90% chance of success!**



**Another non-surprising fact is that A students spent more time than B students, B students spent more time than C students, and so on.**

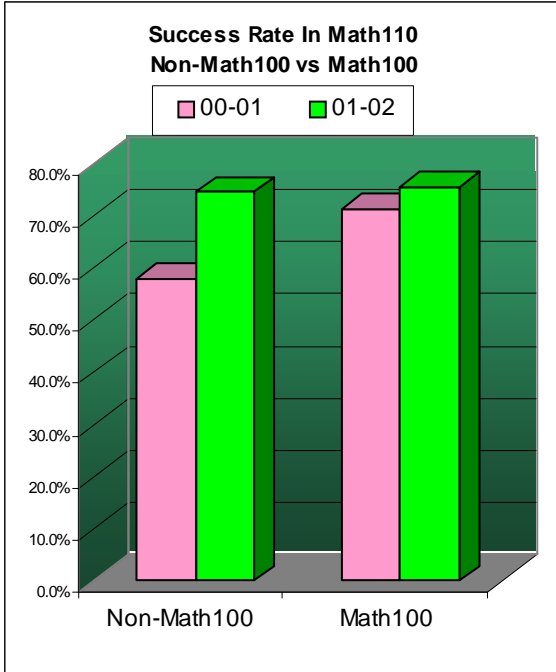
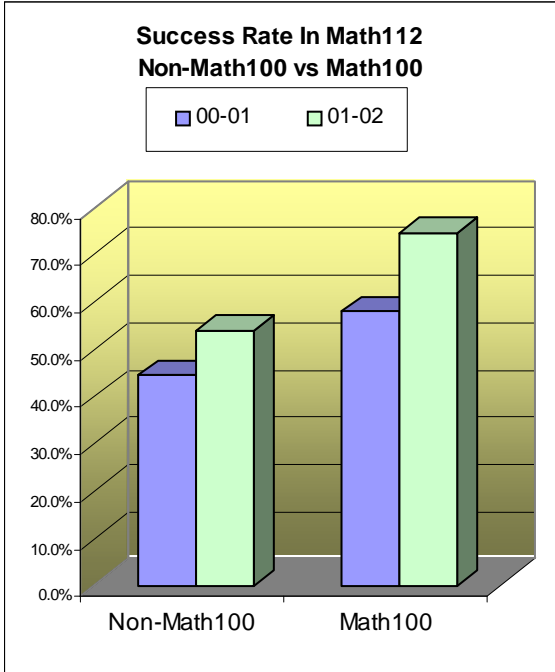


**Students in Math100 are better prepared for the next level of mathematics courses! The next chart indicates the success rate in subsequent courses of students who passed Math100.**



**The charts below compare the success rates in Math112 and Math110 between students who entered these courses without taking Math100 and passed Math100.**

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