

What Works and How do you know? Intervention Strategies and Evidence of Effectiveness

Interventions

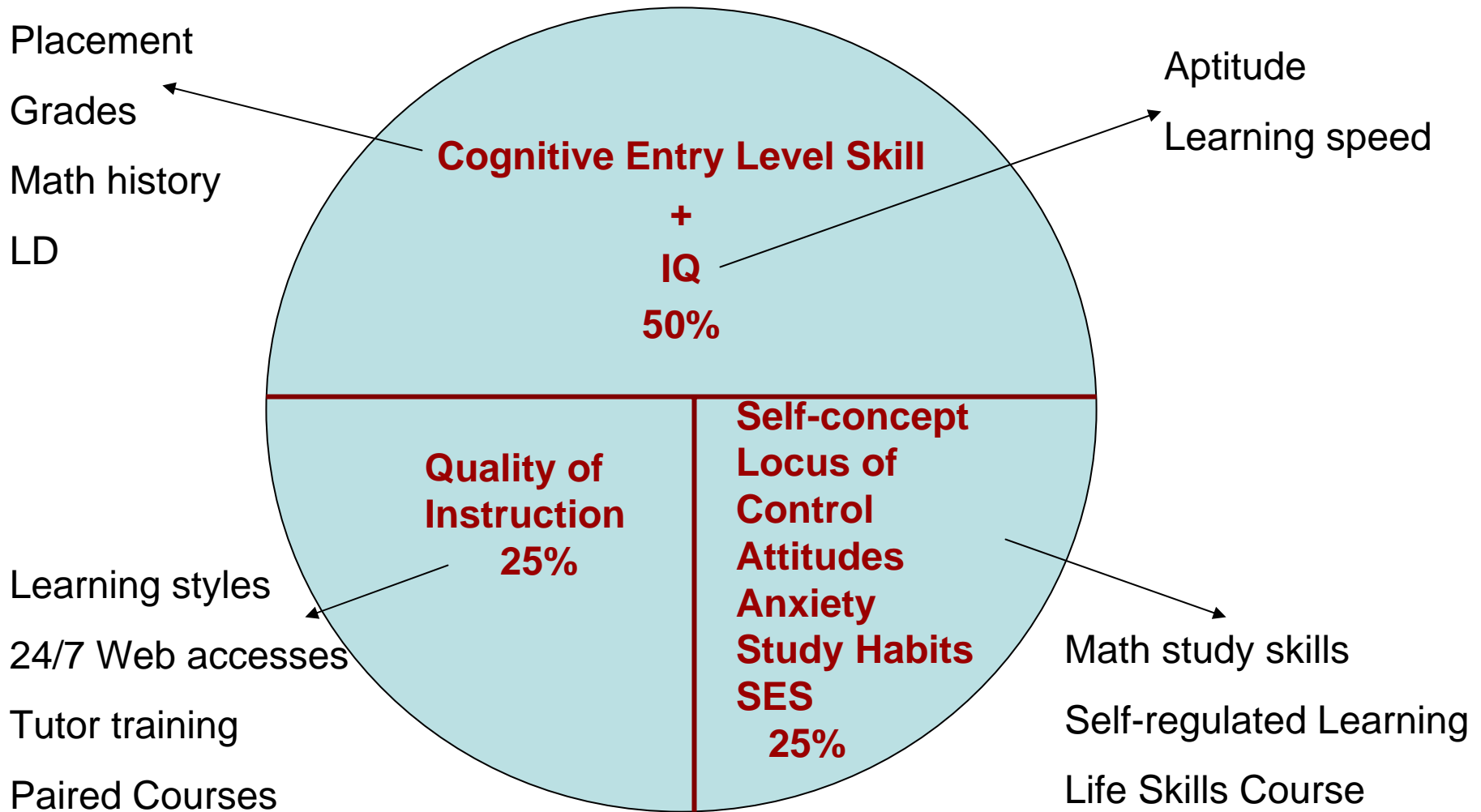
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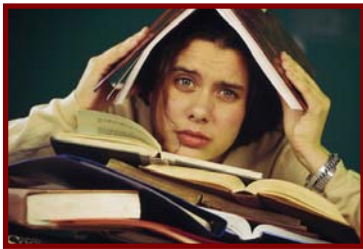


Variables Contributing to Student Academic Achievement (Bloom, 1976)



Institution-wide Responsibility

Input



Overwhelmed
Learned -
Helplessness
No strategies

Productive Learning Experiences

Classroom Teaching that promotes active & deep learning, nurtures self-regulated learners.

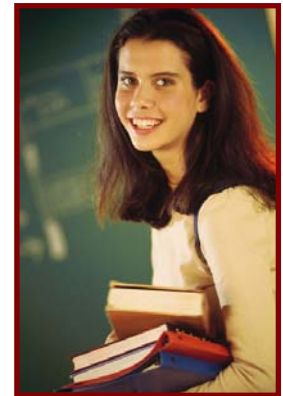
Student Learners who know how to learn in and outside of the classroom.

Academic support which supports both the above.

Institution-wide policies & mandated programs for developmental students.

Campus-wide collaboration and common philosophy.

Output



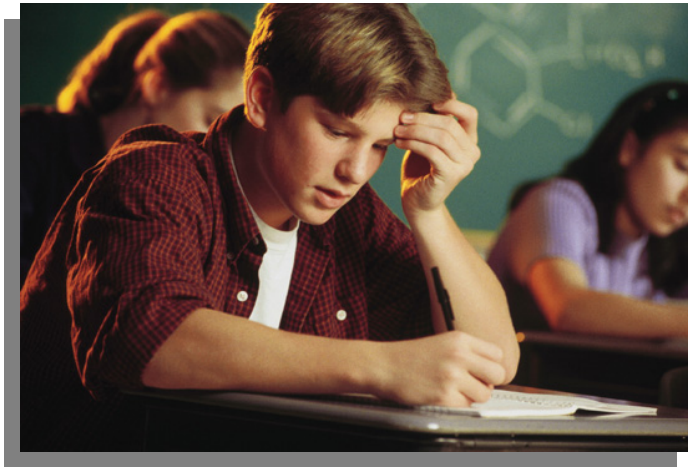
In control
Self-efficacy
A system of strategies for math, English, reading

Building Self-regulated Students

Agenda

- ⚙ Interventions: Maximize cognitive skills and IQ
- ⚙ Interventions: Maximize quality of instructions
- ⚙ Interventions: Maximize students' affective characteristics

Maximize Quality of Instruction:



- ⚙️ Frequent testing
- ⚙️ Earlier first quiz or major test for course leveling and referrals
- ⚙️ Assign counselor to work with math students
- ⚙️ Teaching to Student Learning Styles

COMPARISON OF DEVELOPMENTAL ALGEBRA STUDENTS AND MATH INSTRUCTOR LEARNING STYLES

Instructor percents in gray; Student percents in white.					
Cognitive Style Mode	Innovative	Dynamic	Common Sense	Analytic	Total
VISUAL	15%	17%	10%	23%	65%
	16%	3%	13%	53%	86%
AUDITORY	3%	2%	2%	6%	13%
	1%	0%	6%	5%	11%
KINESTHETIC	10%	2%	3%	7%	22%
	1%	0%	1%	1%	3%
Total	28%	21%	15%	36%	
	18%	3%	20%	59%	

Hands-on Manipulative & Group Learning

Success

Basic Algebra pilot 75%
pass vs. control 50%

Pre-algebra pilot 58% VS.
50%

Description

- ⊗ All students take Learning Styles Inventory
- ⊗ Students learn concretely first and then abstractly.
- ⊗ “Hands-on Equations” and Manipulatives developed by MCC faculty

SPRING 2004 – BASIC ALGEBRA PILOT (Manipulatives + Collaborative Learning)

Instructor	Pass Rate for Pilot	Pass Rate for Non-pilot
Instructor 1	54%	59%
Instructor 2	74%	47%
Instructor 3	50%	42%
Instructor 4	68%	44%
Average Pass Rate	66%	50%

Fall 2004 – BASIC ALGEBRA PILOT (Manipulatives & Collaborative Learning)

Instructor	Pass Rate for Pilot	Pass Rate for Non-pilot
Instructor 1	75%	44%
Instructor 2	83%	40%
Instructor 3	67%	42%
Instructor 4	69%	--
Average Pass Rate	75%* 74%**	42%

* Does include instructor 4 ** Does not include instructor 4

Using a Chi Square analysis both the fall and spring pilot pass rates were significantly higher than the non pilot pass rates. Each of the fall pilot instructors class pass rates (except for Instructor 4 who did not have a non pilot class) were higher than the non pilot pass rate with a range from 25% to 43%. Three out of the four spring 2004 instructor pilot pass rates were higher than the non pilots pass rates. This data adds additional creditability to success of the math MAT 0024 pilots.

Linked Pre-algebra and Life Skills Course

Pilot	58% pass rate
Non-pilot	50% pass rate



Used math study skills text, Nolting, 2002

Front loaded math study skills in the life skills course

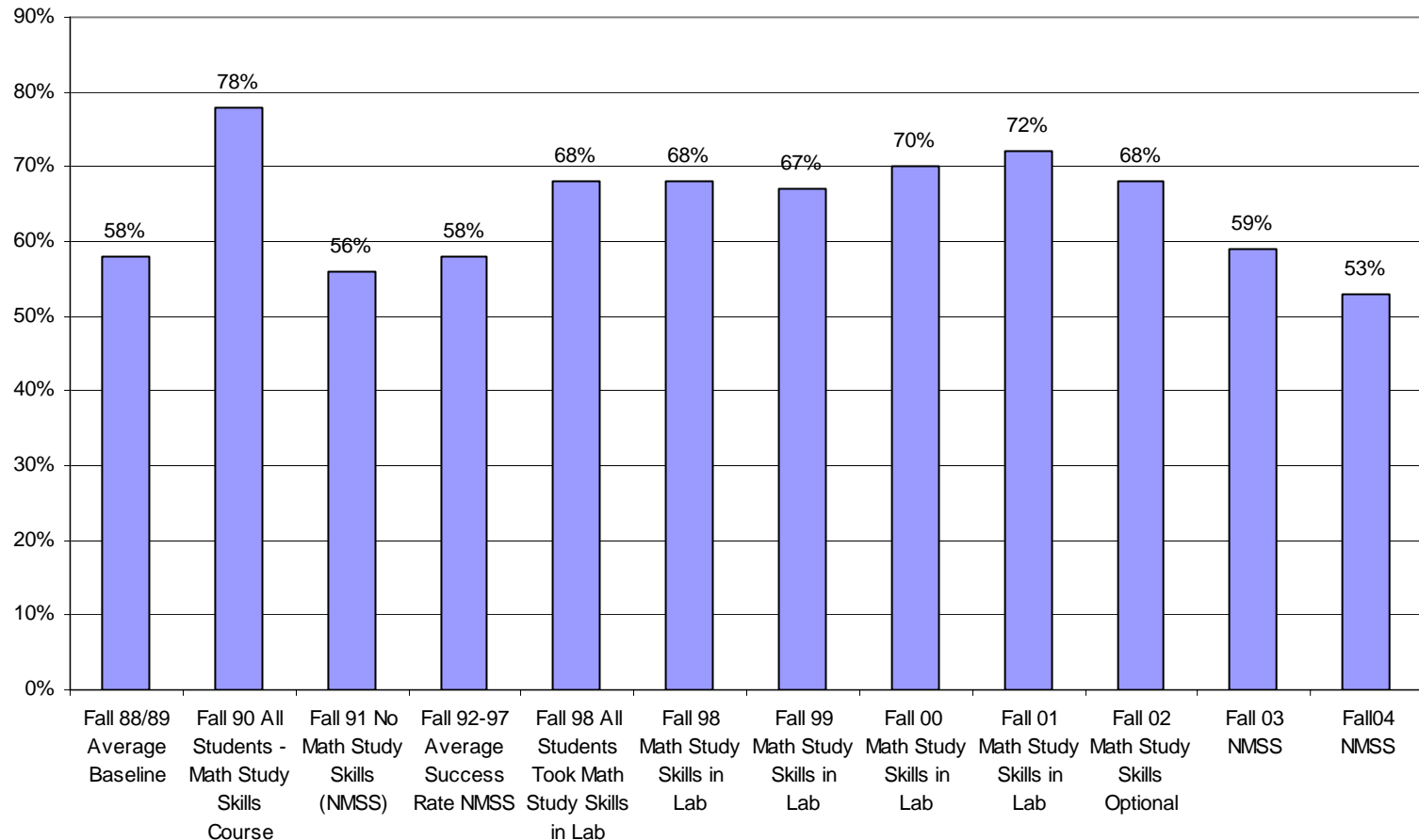
Maximize Students' Affective Characteristics

- ⊗ Co-requisite 1 hour math study skills course + Basic Algebra course
 - (Students who had repeated Basic Algebra 1-4 times enrolled in the math study skills course.)
- ⊗ Significant success at .05 p level (Nolting, 1986, 1990)

Success Rates

Pre-algebra and Co-requisite Math Study Skills Course/Lab

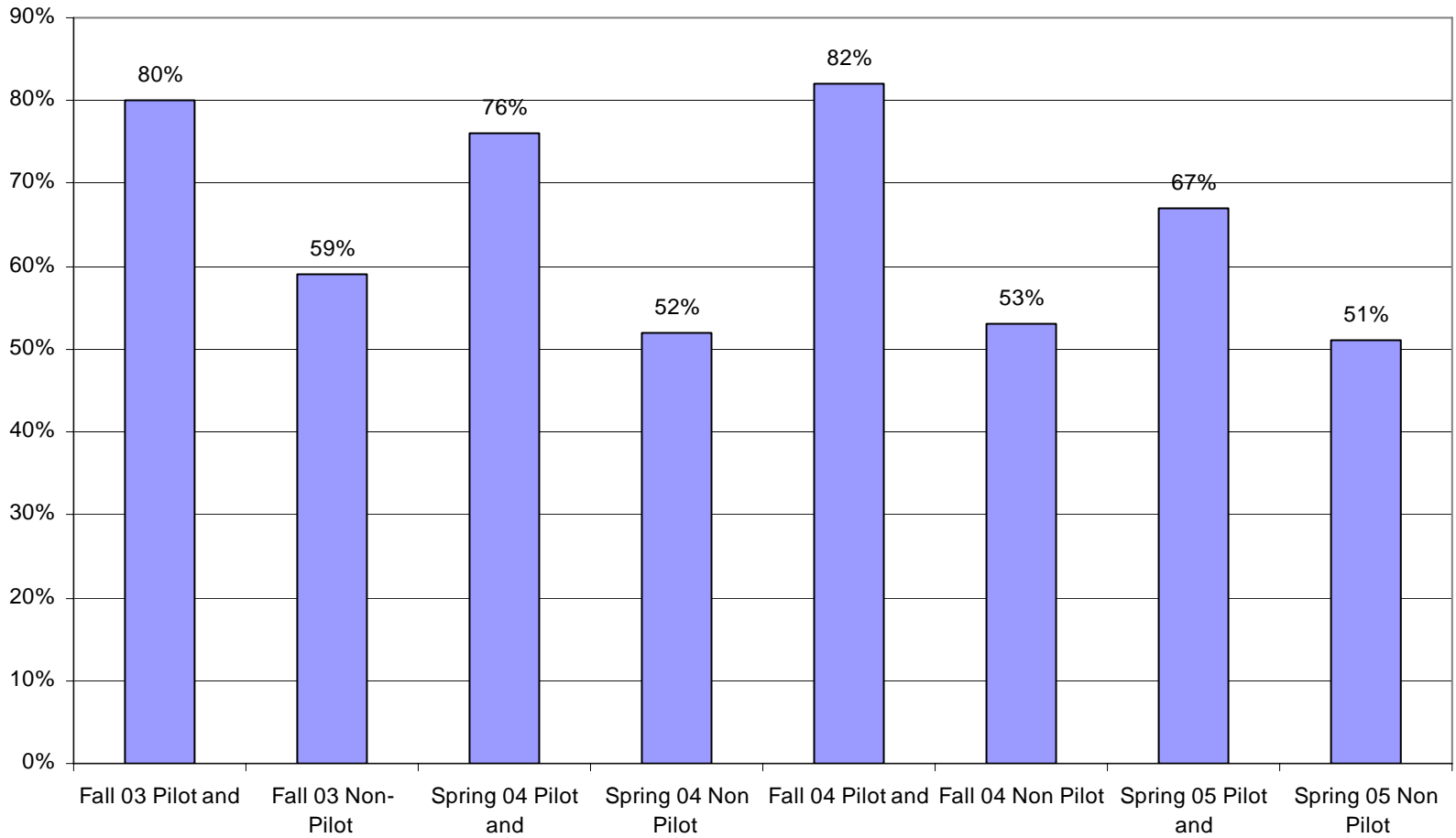
SUCCESSFUL COMPLETERS
MAT 0002/0012 FALL BRADENTON



Success of Students Taking Pre-algebra and Life Skills Course Separately

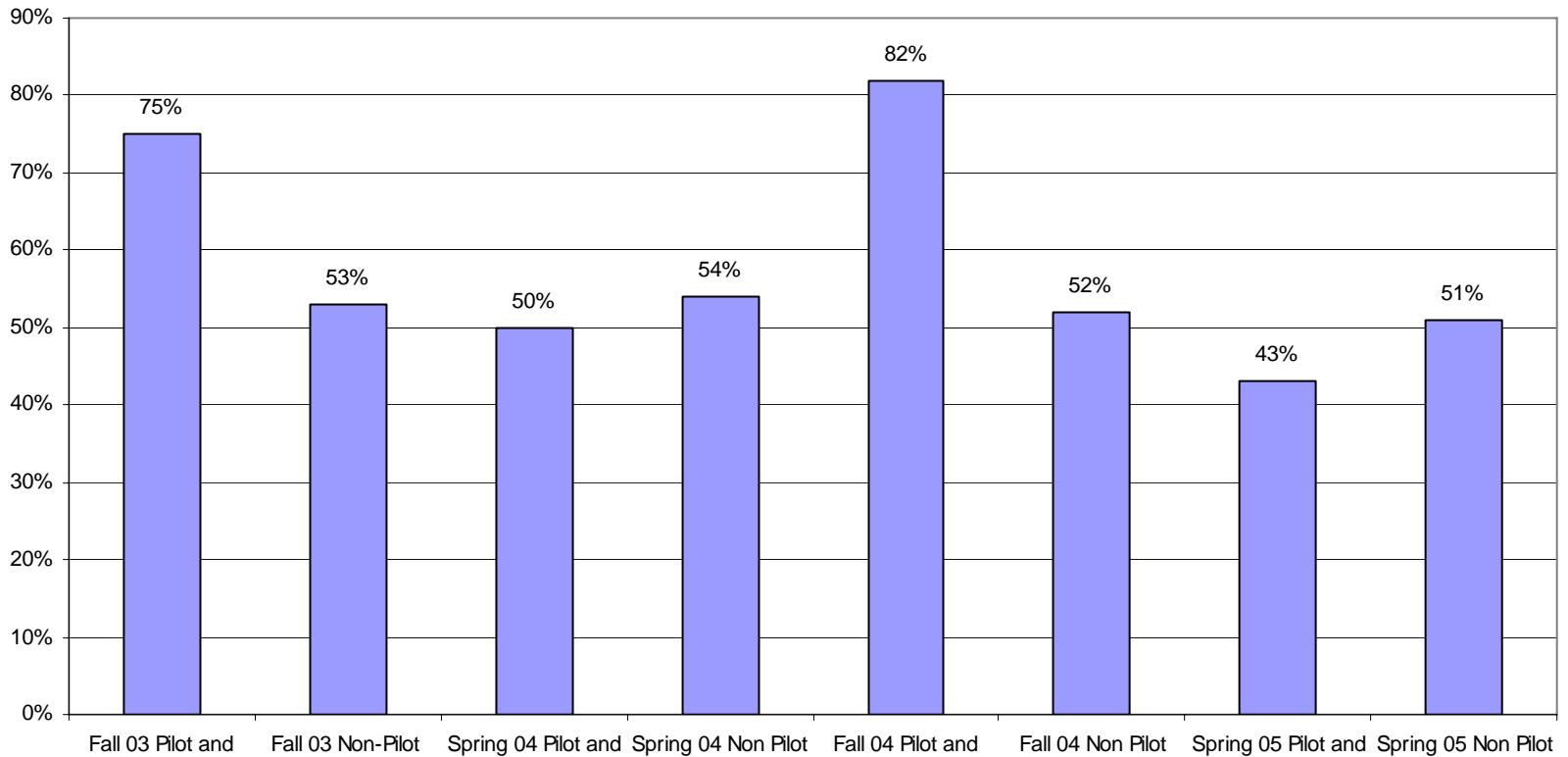
Semester	Pilot	Non-pilot
Fall 03	80%	59%
Spring 04	76%	52%
Fall 04	82%	53%
Spring 05	67%	51%

SUCCESS OF STUDENTS TAKING MAT 0012 AND SLS 1101 SEPARATELY



Success of Students Taking Basic Algebra & Life Skills Course Separately

SUCCESS OF STUDENTS TAKING MAT 0024 AND SLS 1101 SEPARATELY



Additional Interventions

- ⊗ Use of Math Study Skills Evaluation to analyze math study skills and prescribe pages in *Winning at Math* (Nolting, 2002) – (documented individual success)
- ⊗ Use of manipulatives and math study skills to improve the individual success of students with LD – (documented individual success)

Options for Integrating Study Skills into Curriculum

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- Integrate study skills into math labs attached to math courses
- Training tutors and other academic support staff in math study skills
- Math anxiety and test taking workshops
- Math study skills course
- In the math course
- College success course
- Learning labs, math and counseling departments

Web Resources

- American Math Association of Two Year Colleges
<http://www.amatyc.org>
- *Beyond Crossroads* by the American Math Association of Two Year Colleges
<http://www.bc.amatyc.org>
- Math Research and Study Skills by Dr. Paul Nolting and others
<http://www.academicsuccess.com/research/math.php>
- National Developmental Education Association
www.nade.net

Web Resources

- Student Life Skills Report (Data Trend31) by Dr Patricia Windham, Associate Vice-Chancellor for Evaluation (850-245-9482):
www.fldoe.org/CC/OSAS/DataTrendsResearch/Data_Trends.asp
- Student Math Practice and Learning Sites
<http://www.academicsuccess.com/studentResources.html>
- Title 3 Practice Placement Test Resources (Accuplacer)
<http://www.mccfl.edu/pages/1484.asp>
- Title 3 Research and Presentation by Dr. Paul Nolting and others
<http://www.mccfl.edu/pages/2092.asp>

Contact Us for Follow-up Conversations



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