**Innovative Educators Summit**

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**Integrate Math Study Skills into Online, Classroom and Co-requisite Courses**

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Research on math success variables, math study skills, anxiety and NMS 2018

How learning math is different - Group discussion

Assessment of math study skills and test anxiety - Math Study Skills Evaluation

Understanding, reducing math/math test anxiety, mindfulness and mindset

Math study skills transformed into teaching/learning strategies

Co-requisite courses, integration of math study skills & math success plans



**Research Articles**

The Math Anxiety-Performance Link: A Global Phenomenon (Alana E. Foley, Julianne B. Herts, Francesca Borgonovi, Sonia Guerriero, Susan C. Levine, and Sian L. Beilock, 2017) - Math anxiety causing worldwide failures in math classes, STEM programs and lower economics.

 Student Success in Developmental Mathematics Courses (Zientek, L.R. et al, 2013)–Affective Characteristics – 41%. Community College Journal of Research and Practice - Carnegie

When Math Hurts: Math Anxiety Predicts Pain Network Activation in Anticipation of Doing Math (Beilock, 2012) – Thinking about doing math homework can activate pain receptor however doing math homework did not activate pain.

Readiness, Behavior and Foundational Mathematics Course Success (Li, Zelenka. 2013) - Placement and Study Behaviors predict math success - Carnegie Foundation support idea.

Sources of Self-efficacy of Community College Students Enrolled in Developmental Mathematics (Zientek, Fong & Phelps, 2017) - Four sources explain 35.8 of variance

**Math Study Skills Evaluation Results-First Questions**

Math Study Skills Evaluation – This free student evaluation measures math study skills not calculation skills, determines the math study skills needed for improvement and refers to pages and chapters in Winning at Math and Concise (www.academicsuccess.com). **Sample Results:**

Paul the overall result of your evaluation is a score of **60**

A score of 79 and below means you need to improve your math study skills and this could be the main reason you may have had having difficulty learning math. Most college students have not been taught general study skills and even fewer students have been taught math study skills. That is not your fault. However, by using Winning at Math or My Math Success Plan you can learn math study skills and apply those skills to improve learning. Making a low score on this survey means that you have even more of chance to improve your math learning and grades.

**You have a score of 63 in Study Effectively,** which measures the understanding that studying for math, is different from other subjects. It also measures your effective use of study place(s), study schedules, study tools, and motivation. The WAM reference chapters are 1, 4 and 9. The MMSP reference chapters are 1 and 5.

**You have a score of 62 in Memory and Learning,** which measures the understanding of learning styles, the learning process, as well as developing a learning plan and memory strategies. The WAM reference chapters are 2 and 5. The MMSP reference chapter is 4.

**You have a score of 58 in Reading and Homework**, which measures the understanding of the syllabus, along with developing reading and homework strategies to improve math learning. The WAM reference chapter is 7. The MMSP reference chapter is 2.

**You have a score of 57 in Classroom Learning,** which measures the ability to develop listening strategies, note-taking systems as well as the ability to ask questions. The WAM reference chapter is 6. You also need to view the Taking Effective Math Notes DVD. The MMSP reference chapter is 2.

**You have a score of 60 in Test Anxiety and Test-Taking,** which measures the understanding of the effects of test anxiety, how to reduce test anxiety, how to take tests and how to analyze test results. The WAM reference chapters are 3 and 8. You also need to view the Mastering Math and Test Anxiety and the Ten Step s to Taking a Math Test DVDs. The MMSP reference chapter is 3.

#1: My habit is that I:
Response: 1 seldom study math every school day.

Your response indicates that you may not understand that math has a sequential learning pattern. A sequential learning pattern means material learned one day is used the next day and the next day and so forth. That means putting off studying math will lead to poor math grades. You need to study and do your homework before each class.
You need to read pp. 16-23 p in Winning at Math.

Question #2: When learning math:
Response: 1 I do not believe that math study skills, test anxiety and motivation represent about 25% of my grade.

Your response indicates that you may not totally understand the different factors that contribute to learning math and your grades. The major factors contributing to learning math and grades are math knowledge (50%), math instruction (25%) and student learning (25%). The variable of student learning (25%) and self–motivation to use math study skills can improve your grades. This is the only variable totally under your control. Use the math study skills in this text to improve your grades.
You need to read pp. 36–40 in Winning at Math.

Question #4: My habit is that I:
Response: 3 almost always become anxious and forget important concepts during a math test.

Your response indicates that you have symptoms of math anxiety and/or test anxiety. Math and test anxiety are learned responses, which can be unlearned. You need to learn how to control your anxiety by using relaxation techniques and positive self–statements during homework and tests.
You need to read pp. 67-80 in Winning at Math. You need to listen to How to Reduce Test Anxiety CD from the Web based Auditory Relaxation Training program or on the www.academicsuccess.com Web site and practice the relaxation techniques.

Question #8: My habit is that I:
Response: 1 seldom study math at least 8 to 12 hours a week.

Your response indicates that you may not be aware of the study time required to be successful in math. You need to make a study schedule and set study goals. You need to study math at least 8 hours a week to make A's and B's. Remember that students who make C's usually fail their next math course.
You need to read pp. 96-100 in Winning at Math.

**Math Study Skills Content from Winning at Math 7th**

* How Learning Math is Different and How to Take Control of Your Learning
* How to Improve Listening and Note-Taking Skills
* How to Improve Study Environment, Time-Management and Reading
* How to Improve Your Homework Techniques
* Managing Anxiety and Taking Math Tests
* Assessing and Using Your Memory and Math Learning Strategies
* Appendix A - Apps, Websites, and Search Engines for Academic Support
* Appendix B - Learning Modality Inventory for Math Students
* Appendix C - My Math Success Plan
* Appendix D - Classroom Group Learning Actives

**Some Strategies for Math Improvement and Repeating Students**

Integrating math study skills into math classroom and computer based courses Assessing students’ math skills levels, math study skills and anxiety levels Integrating math study skills into co-requisites labs Improving students math self-efficacy and mindfulness Math course sections just for repeating math students teaching math study skills Faculty mentors and counselors help develop student Math Success Plans Staffing repeating students with a Math Success Committee Repeating student take College Success courses that teaches math study skills - **Kuwait** **Faculty and department action plans to improve math success.**

**Some Research on Integrating Math Study Skills into the Classroom**

College Course Level Type of Course Base Line Pass Rate Pass Rate Using WAM UWM Beginning Algebra Modular 50% 80% LTC Beginning Algebra Classroom 30% 71% BCF Pre - Algebra Classroom 23% 60% LSCC Intermediate Algebra Classroom 39% 57% MCC Pre - Algebra Classroom 33% 48% repeating course MCC Beginning Algebra Classroom 33% 67% repeating course MCC Intermediate Algebra Classroom 40% 70% repeating course

**Resources: Research, free Math Study Skills Evaluation, integrating math study skills into different course designs, Math Success Blog, national interviews at AcademicSuccess.com.**

Contact Hawkes Learning sales representative for a Winning at Math review copy and ordering the texts. **The Hawkes management system has a built in multiple choice math study skills question bank which students can take that gives information on the incorrect answers.**

