Math and Science Regional Center Summer Program

The Math and Science Regional Center's summer 2005 program opened its doors on June 5, 2005. Funded by the U. S. Department of Education and administered by The University of Tennessee, the Math and Science Regional Center (MSRC) recruits high school students who come from low-income families in which neither parent holds a bachelor's degree. Additionally, students must desire to increase their knowledge of and skills in the fields of math and science. Students from the eight southeastern states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee) arrived on the university campus to attend the challenging academic program. Some flew, others rode the bus, and still others made the journey in their parents' cars. For many, this was their first trip outside of their home state.

Starting off the program with the Campus Tour, students experienced true college life. Walking all over campus in the hot, East Tennessee weather is nothing new to veteran UT students, but many MSRC students had to adjust. Students lived in Humes Hall and ate in the same food establishments as UT college students. Adjusting to roommates, resident assistants, schedules, and the freedom of living away from home were some of the many social challenges that the students faced while in the program.

MSRC provided classes covering a wide spectrum of science and math fields. Animal science was taught by UT Instructor Aaron Fisher. In this class, students had the opportunity to examine and work with live farm animals in the animal science Department. Professor Dr. Al Hazari sparked enthusiasm and excitement in his advanced chemistry class through live demonstrations and applied learning in UT's Chemistry Departmental laboratories. In the environmental and geoscience classes, graduate students Zack Taylor and Justin Hart educated students on the basics of soil, land, water, land formations, and maps, as well as the technology involved with Global Positioning Systems (GPS). Instructor Chase Vandervelde worked alongside students in his

MSRC Advanced Chemistry students pose with UT Chemistry Professor Dr. Hazari after assisting him with his "Chemistry Magic Show."
anatomy and physiology class to perform feline dissections.

UT GTA Natalie Langley introduced the investigation of bones and decay in her forensic anthropology class. Technology-minded students received hands-on instruction in PHP, a computer programming language. Other science classes included biology, chemistry, and physics.

In mathematics, instructor Justin Ridge provided classes ranging from linear algebra to calculus. Students were encouraged to take math courses that would help them in their fall semester of high school. In addition to math and science, students took English, foreign language, and ACT/SAT test preparation classes.

In addition to their classroom instruction, students conducted research alongside actual scientific professionals who served as their mentors. Projects had to be presented both visually and orally, and students were required to turn in three to five written pages regarding their research. For the entire month of June, students worked on projects in the field of their choice. Students placed at Baptist Hospital studied Magnetic Resonance Imaging, the human heart, neurodiagnostics, and joint disorders. The Knoxville Zoo provided several students with a closer look at animal science and zoology. Three individuals were placed alongside UT Chemistry Department professors to learn about chemical reactions. The forensic anthropology group investigated a crime scene in their project, “The Party’s Over: Mardi Gras Massacre.” Students in the sleep disorders group researched neuroscientific topics. Two groups designed, created, and uploaded Web sites, and a third technology-based group researched computer viruses and spyware. Several groups focused their research on environmental science.

Two of these groups conducted environmental science research at Ijams Nature Center. Their topics were “The effects of Japanese privet on Riparian Forests” and “Evaluation of Toll Creek Restoration: An Analysis of Geomorphology and Water Quality.” The latter project won first place at the Poster Symposium during the final week of the program.

The Summer Program
is scheduled for
June 18 - July 14, 2006

Despite the vigorous daytime schedule, nights and weekends were filled as well. Evening and afternoon activities included robotic elephant building, academic scholars’ bowls, career exploration seminars, and interest groups in a variety of topics. Students also enjoyed movie nights, MSRC idol (karaoke), Friday nights at The Down Under, and the program-wide talent show. Saturdays were spent in the Smoky Mountains, at the American Museum of Science and Energy, and at Maryville College’s Mountain Challenge. Sundays were the only true days of rest and relaxation, much needed to get through the intensive week.

For more information contact Dr. Ernest W. Brewer, Professor and Principal Investigator/ Director, Department of Theory and Practice in Teacher Education or Ms. Jennifer Allen, Associate Director at (865) 974-4466 or email her at jallen9@utk.edu.
Positive Self-Concept
Know Your Strengths and Weaknesses...

When you look in a mirror, what do you see? What sorts of words would you use to describe yourself? Are they positive, negative, or a combination of both? The view that we have of ourselves is called our self-concept. This view may be negative or positive and is learned through interacting with other people and the environment around us. Self-concept includes not only how we view our physical body, but also how we view our ability to: accept and respect ourselves and others, solve problems, and make a difference in the world around us.

Working toward achieving a good self-concept begins by learning to accept yourself as you are today. Become aware of your strengths and weaknesses and make an effort to capitalize on your assets. Concentrating on the ways your talents can help you experience success also fosters a better view of yourself. As your self-concept improves, you will have the resources to begin working on overcoming your greatest weaknesses.

The other essential ingredient in being able to move toward a positive self-concept is believing in yourself. If you do not believe in yourself, others sense this and will act accordingly. This clearly helps keep a bad self-concept firmly in place. On the other hand, if you do believe in yourself and project a good self-concept, others will look at you as someone who is self-confident and deserves respect. So, in attaining a good self-concept, you reach the point of being able to look beyond yourself and assist others.

Some Do's and Don'ts...
Test-Taking Tips from the Professor

Tests are in the same category as Monday mornings and root canals, but like other unpleasant events, they can be managed. If you’re well-prepared, you can turn a potentially unpleasant event into a good experience.

Tests are a part of academic life, so resolve to get the best of them. Begin to prepare for tests on the very first day of class by careful note-taking and studying. Schedule test preparation time well in advance and avoid last minute cramming.

Here are some strategies education experts suggest to increase your test-taking effectiveness:

Before the Test
- Try to predict test questions as you take notes.
- Review all notes taken in class and those developed when reading texts.
- Recite aloud any facts that you need to learn.
- Avoid rereading text books before a test.
- Consider studying with a partner or in a small group.
- Get a good night's sleep.

During the Test
- Concentrate on important information that you have highlighted or summarized.
- Be sure you understand all the directions.
- Pace yourself. Don't spend a lot of time on a few questions. Answer questions you know first then go back to those you are less sure of—but be sure to answer all questions.
- Write legibly and/or be sure your answers are recorded in the right place.
- Stay calm and avoid changing answers. Your first choice is most often correct.
- Finally, don't second guess your performance. The actual results may be very different from your expectations.

By using these tips you'll be well on your way to success in testing. If you feel you need outside help to improve your test taking, ask your teacher or advisor for an appropriate referral.

- Dr. Ernest W. Brewer
Professor and PI/Director

Thus, the payoff of having a positive self-image is great, both for you and the people around you!

-Dr. Ernest W. Brewer
Project Director

"Tell me and I forget.  Show me, and I remember.  Involve me, and I understand."
- Eskimo proverb
Student Loans: Step by Step How-To Guide

Step 1
- Review your career plans and decide which type of school is best for you.
- Narrow your school choices to three. Request admissions information and school catalogs.
- Obtain registration materials and test dates for the ACT and/or SAT.
- Meet with school admissions’ representatives who visit your high school.
- Ask employees, teachers and guidance counselors for letters of recommendation to include with your college applications.
- Attend college fairs and financial aid nights.
- Compose admissions’ essays.

Step 2
- Pick up a Free Application for Federal Student Aid (FAFSA) at your high school counselor’s office, your local or college library, or college financial aid office. **Do Not Submit Before Jan. 1st!**
- Submit your FAFSA to the processor as soon as possible after January 1st. You can complete the form online at www.fafsa.ed.gov (keep a copy of the form).

**Parents:** File your tax forms as early as possible. You may need them to finalize the FAFSA. Be prepared to send a copy of your tax forms to the school, if requested.
- Take ACT and/or SAT exams, if not yet completed.
- Mark your calendar with registration, admissions and financial assistance deadlines and fees.

Step 3
- Begin completing your admissions’ applications. Double check the deadline for submission.
- Research taking Advanced Placement (AP) or College Level Examination Program (CLEP) exams.
- Visit your top school choices. Meet with faculty, staff and students.
- Research and apply for other funding and scholarships.
- Finalize your admissions applications (often can be done online). Be sure to keep copies of your applications.

Step 4
- Look for your Student Aid Report (SAR) in the mail. This form contains your financial aid information.
- Find out what outstanding items are needed by the financial aid office. If requested, submit tax forms.
- If you haven’t received your SAR four weeks after submitting the FAFSA, immediately contact the Federal Student Aid Information Center at 800-4-FEDAID.

Step 5
- Watch the mail for school acceptance and financial aid award letters. Compare the packages based on the various costs.
- Make your final school decision and mail any deposits required.
- Check with the school that you have chosen to attend about returning financial aid award letters.
- Accept financial aid.
- Inform the schools where you will not be attending of your decision.
- Watch for other important school deadlines.
- Finalize any summer job plans.
- Prepare a realistic student budget.

Step 6
- Plan for college orientation, transportation and housing.
- Follow up with the financial aid office at your school to be certain that all your paperwork is complete.
- Finalize plans for school.

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**THE POWER OF EDUCATION**

<table>
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<td>Professional</td>
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</table>

*Average income based on educational attainment.*

Individuals 25 years old and older, by total money earnings in 2003

Source: U.S. Census Bureau

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**THE UNIVERSITY OF TENNESSEE • COLLEGE OF EDUCATION, HEALTH, AND HUMAN SCIENCES**
Decoding the New SATs

A revamped SAT is now being given to high school students across the country. The changes are big: Instead of two sections, verbal and math, the college entrance test now has three, including a 25-minute essay. Students need 1,400 for a perfect score, not 1,600 as before. The math section now includes some Algebra II questions, and in the verbal section, the dreaded analogies are gone. In addition to test scores, students will receive specific feedback on where they excel and where they need work.

What's the best way to prepare? Prep courses costing as much as $900 can help boost a student’s scores. But experts say motivated kids also can get ready on their own— if they devote the time.

One significant way, says Jennifer Karan, national director of SAT and ACT programs at Kaplan Test Prep practice. Mimic the test environment. Find a quiet place with no interruptions, keeping track of each section and sitting through the whole thing for three hours and 45 minutes, with only three short breaks just like the real thing. Practice tests and online resources can be found at the Kaplan and College Board Web sites (kaptest.com and collegeboard.com).

The overhauled SAT focuses more on critical-thinking skills. “Students often think spelling, punctuation, and grammar are what SAT essay graders are looking for,” Karan says. “They're not. The essay portion, she says, is about creating a logical argument with clear writing.

If you still have a few years to go before taking the SAT, the College Board suggests keeping a journal to improve the writing skills tested in the essay section. Also, studies show that taking a rigorous course load in addition to taking the PSAT first, for practice, helps.”

Source: USA Weekend

“The things taught in schools and colleges are not an education, but the means to an education.” Ralph Waldo Emerson

SAT Prep Quiz! Are You Ready?

1. Since the SAT includes easy, medium and difficult questions, which type do you usually spend the least amount of time?
   - A) easy questions
   - B) medium questions
   - C) hard questions

2. On which type of SAT question do you usually spend the most amount of time?
   - A) easy questions
   - B) medium questions
   - C) hard questions

3. When in doubt on an SAT question, go with your first hunch?
   - True
   - False

4. Most SAT questions have trick answers?
   - True
   - False

5. On the SAT essay, quality is more important than quantity?
   - True
   - False

MSRC Mentors

The Math and Science Regional Center connects students with scientific and mathematical professionals through the summer mentoring component. During the summer 2005 program, 15 mentors conducted a variety of projects with the students. Stacy Bliss and Ashley Williams, two Educational Psychology graduate students, worked with a combined total of eleven students on projects involving neuro-psychology. Six students investigated forensic anthropology alongside Ph.D. student Natalie Langley. Geography graduate students Zack Taylor and Justin Hart assisted six students in geographical and environmental science. UT Chemistry Professors Dr. Zhao, Dr. Xue, and Dr. Chen offered hands-on research opportunities for three MSRC students. The University of Tennessee’s Office of Information Technology provided two mentors, Justin Griffin and Christopher Reardon, who, along with computer science graduate student Jon Scharff, explored technology-based research projects with seven different students. High school science teachers Chase Vandervelde and Alexis Toomey worked with a total of seven students on environmental research projects. The Knoxville Zoo offered seven students the chance to research various aspects of the zoo, under the guidance of Chad Fifer. Finally, Todd Heprinstand and Baptist Hospital provided medical research opportunities to six students.

Plans for the 2006 Mentoring research projects are currently being developed.
Need College Financial Aid?
Apply Immediately!

Unless your child is 7-foot-3 and has an amazing jump shot, people will not show up on your doorstep offering to pay for his or her college education. If you want financial assistance, you have to ask for it. And the first step in that process is filling out the Free Application for Federal Student Aid, also known as the FAFSA.

It costs nothing to fill out the FAFSA, not even a stamp if you do it online. Yet, every year thousands of families forsake the FAFSA, depriving themselves of thousands of dollars in grants and low-cost loans.

A recent study by the American Council on Education found that half of undergraduates enrolled in colleges and universities in academic year 1999-2000 failed to fill out a FAFSA.

Even more troubling, 850,000 of those students were probably eligible for a federal Pell Grant, the study said. Pell grants provide up to $4,050 a year for low-income students, and the money doesn’t have to be paid back. President Bush has proposed raising the maximum Pell grant to $4,550 by 2010.

Financial aid experts offer lots of reasons for FAFSA avoidance. Many middle- and upper-middle income families don’t file because they believe they’re ineligible for financial aid. Others are intimidated by the form, which asks detailed questions about family finances. And like preparing your taxes, filling out the FAFSA takes time.

Still, if your child will start college this fall, it’s worth the effort. Even if you don’t qualify for a Pell grant, you may be eligible for assistance from your state or your child’s college. At a minimum, you’re eligible for a federal student loan with a below-market interest rate, said Martha Holler, spokeswoman for student loan provider Sallie Mae. But to get a loan, you have to fill out the FAFSA.

How to make the FAFSA process run smoothly:

1. **File early.** The Department of Education started accepting FAFSA applications for the 2006-2007 academic year on Jan. 1. The deadline for federal assistance is June 30, 2006, but many states and individual schools impose earlier deadlines. Some want the information by mid-February. Plus, getting your application in early could improve your chances of receiving aid, said Chris Chapman, chief executive officer of loan provider ALL Student Loan. “States have a limited amount of money to give out, and many give it on first-come, first-served basis,” he said. When you fill out the FAFSA, you’ll be asked to list up to six colleges or universities. Your information will be sent to those schools. Once you’ve selected the schools that will receive your application, check their deadlines and find out if they require additional information, Holler said. You’ll need to provide information about your 2005 income, which is easier to do after you’ve completed your tax returns. Even if you haven’t filed your taxes yet, you can file FAFSA.

Education is Key

In the midst of upheaval in the work world and international marketplaces, there is one constant: **Education is the most critical element of success.**

Governments, schools, and businesses plead with young people to stay in school and with adults to make learning part of their life. The nation depends on it.

The undeniable fact is, however, that the country can only provide the tools for learning. The decision to stay in school, to learn, and to change with the times is up to you.
Estimate your income, using last year's returns and your year-end pay stub, and revise the form later.

2. **Take your time.** You'll need to pull together a lot of documents, such as your investment statements and W-2's. Divorced parents and blended families may need to devote even more time to the process to make sure they follow the guidelines correctly, said Ben Baron, vice president for Kaplan Test Prep and Admissions.

3. **File online.** You can file a FAFSA over the Internet by going to [www.fafsa.ed.gov](http://www.fafsa.ed.gov). Filing online speeds processing. You'll be notified immediately of errors, such as skipping a line. If you make an error on a paper application, the Department of Education will mail it back, which could cause you to miss the deadline.

4. **Don't fall for financial aid scams.** Federal regulators report an increase in complaints about financial aid companies that charge large up-front fees in exchange for "guaranteed" financial aid. There are legitimate financial aid counselors, but a lot of good information is available free. You can get help at [www.collegeboard.com](http://www.collegeboard.com), [www.collegeanswer.com](http://www.collegeanswer.com), and the Department of Education's FAFSA Web site, [www.fafsa.ed.gov](http://www.fafsa.ed.gov).

*Source: The Daily Times, Gannett News Service*

"The foundation to every state is the education of its youth."

-Diogenes Laertius

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**Getting Organized**

Here are some of the documents you'll need to fill out a FAFSA for the 2006-07 academic year:

- 2005 W-2 forms
- Records documenting other sources of income, such as Social Security, welfare or veterans benefits
- Current bank statements
- Mortgage information
- Statements showing your stocks, bonds, mutual funds and other investments
- Records related to any unusual family circumstances, such as unemployment or family medical expenses not covered by insurance

*Source: FinAid.org*

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**Tuition Help is Available**

Upper-income students are the least likely to file a Free Application for Federal Student Aid, but a significant percentage of low and middle-income students also fail to file.

The breakdown among undergraduates who were listed as dependents in academic year 1999-2000:

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $20,000</td>
<td>20.5%</td>
</tr>
<tr>
<td>$20,000-$39,999</td>
<td>31.6%</td>
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<tr>
<td>$40,000-$59,999</td>
<td>43.7%</td>
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<tr>
<td>$60,000-$79,999</td>
<td>46.2%</td>
</tr>
<tr>
<td>$80,000+</td>
<td>56.9%</td>
</tr>
</tbody>
</table>

*Source: American Council on Education*
Managing Your Time

We all have the same amount of time. So, why do some people seem able to accomplish so much? They usually follow a system of time management. Do you know where your time goes? In order to manage time, you need to know what you usually do. One way to accomplish this is to keep a time log. Briefly jotting down what you are doing every 15-30 minutes for a week will give you important information. Once you have this, ask yourself:

☑ Did I get everything done?
☑ Was I rushed for time?
☑ Did I meet deadlines?
☑ What habits interfered with reaching my goals?
☑ Did I accomplish more at a certain time of day?
☑ At what time of the day did I accomplish the least?

Now, you're ready to use the information from your time log. Make a list of the activities you have to do. Mark those that are scheduled at definite times and those that can be arranged according to your own time. Then, prioritize the list:

1. the most crucial activities
2. activities that can wait until after those in group 1
3. the least crucial activities

Prepare a schedule using the prioritized list. Use your list and schedule every day. When you develop the schedule, remember to plan for your peak times and low energy times.

Some important tips for stretching your time include: using waiting time effectively, being sure of instructions, avoiding perfectionism, doing the difficult tasks first and avoiding overcommitment.

Effective time management frees you to do your best and to succeed. Remember, the schedule isn't your master because you control it. It's well worth the time to plan your time.

- Dr. Ernest W. Brewer
Professor and PI/Director

MSRC Program Description

Since its inception in 1990, the University of Tennessee's Math and Science Regional Center (MSRC) has served over 700 high school students interested in the fields of math and science. Students from across the Southeastern United States participate in the MSRC summer program each year.

Participants experience true college life by living in University of Tennessee dormitories and eating in the on-campus dining facilities. Through rigorous academic classes and research activities, students experience hands-on learning at its best.

During the academic year, local students participate in monthly Saturday session activities that focus on college admissions, financial aid, career and educational counseling, and science and mathematics. Through the summer and academic components, the Math and Science Regional Center strives to increase the number of students entering into math and science college majors and career fields.