Metacognition: The Key to Increasing the Success of At Risk Students!

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Director Emerita, Center for Academic Success
Louisiana State University
Speaker Disclosure

I have had no financial interests or relationships with a commercial product, service, technology interests or programs in the past 12 months.

I have no conflicts of interest to disclose.
Mission
Howard University College of Medicine provides students of high academic potential with a medical education of exceptional quality and prepares physicians and other health care professionals to serve the underserved. Particular focus is on the education of disadvantaged students for careers in medicine. Emphasis is placed on developing skills and habits of life-long learning and producing world leaders in medicine. Special attention is directed to teaching and research activities that address health care disparities...
Paradigm Shift in Health Science Education

Training Students to

- Acquire knowledge
- Implement textbook approaches
- Rely on information previously learned to inform actions

Preparing Experts to

- Acquire competencies
- Adapt to new circumstances
- Think critically to develop new approaches
- Acquire practice-based learning strategies

ADEA Commission on Change and Innovation in Dental Education (2006), Journal of Dental Education, 70(9), 925-936.
We need our students to develop metacognitive skills so they won’t end up like *this* health professional!

https://www.youtube.com/watch?v=7cUZhHS0PMM
Desired outcomes

▪ We will understand why many medical students do not have appropriate learning strategies
▪ We will be able to describe at least three concrete learning strategies that faculty can teach students to increase learning
▪ We will understand the role of Bloom’s Taxonomy in helping students to improve their learning
▪ We will understand the role of mindset in medical students’ success
▪ We will understand how metacognition and mindset work together to improve student success
▪ We may view some of our students differently
What are some of the biggest barriers to success for at-risk medical students?

- Poor reading skills
- Relying too much on memorization*
- Poorly developed critical thinking and problem solving skills
- Keeping struggles a secret*
- Lack of metacognitive learning strategies

* Dr. Sharon Silverman, developer of award winning retention program at the Strith School of Medicine at Loyola University of Chicago (personal communication, June 5, 2015)
Metacognition

The ability to:

- think about your own thinking
- be consciously aware of yourself as a problem solver
- monitor, plan, and control your mental processing (e.g. “Am I understanding this material, or just memorizing it?”)
- accurately judge your level of learning
- know what you know and what you don’t know

Metacognition in *Medical School Education*

The ability to:

- learn from experience (practice-based learning)
- think about one’s or another’s thoughts, feelings, and values
- check one’s diagnostic thinking for possible biases
- see the illness from the patient’s perspective
- reliably assess what one needs to know about a treatment option

Power of Metacognitive Learning Strategies
Sydnie’s Story: Intro and emails

- First encounter on September 23, 2013
- Email on October 14, 2013
- Email on January 9, 2014
- Email on January 20, 2014
- Email on May 7, 2014
- Update on July 26, 2016
- Email on February 7, 2017

Cum GPA 3.5
Cum GPA 3.6

Fall Sem GPA 4.18
Sydnie Landry, BS in Biology, May 2017
Louisiana State University
Final Semester GPA: 3.77

Applying to Medical School in Fall 2017
Intended Specialty: Dermatology
Sydnie’s Fall 2013 Test Grades

- Calculus
  64, 100, 97, 96, 90, 93  A in course

- Chemistry
  65, 95, 90, 70, 96  A in course
Problem Solving is Essential to Medical Students’ Success

- **Study material first**, before looking at the problems/questions
- **Work example problems** (without looking at the solutions) until you get to the answer
- **Check** to see if **answer** is correct
- If answer is not correct, **figure out where mistake was made**, without consulting solution
- **Work homework problems/answer questions as if taking a test**
Impact of Using Homework Strategy

Sydnie L.
First Year Biology Pre-Med Honors College Student

Email on January 20, 2014

I started to use the "Get more out of your homework" method. I reviewed my notes right before attempting my homework problems, and tried to work the problems without help from the solutions manual or tutors. If I still could not get the right answer, I'd look at my notes again to get a hint, but not to study the problem and mimic it step by step...
Turn Medical Students into Expert Learners

Teach Them Metacognitive Learning Strategies!
The Story of Dr. Eric Yancy

- Entered Medical School at age of 19 after skipping senior year of college
- Flunked first gross anatomy test
- Met with the instructor who encouraged him and told him how to study
- Was one of the youngest chief residents at Indiana U Med Ctr Riley Children’s Hospital
- Inducted into Alpha Omega Alpha
- Received the 2011 Alumni Merit Award from Creighton University School of Medicine
- Twice named Methodist Hospital Teacher of the Year
Faculty Can Help Students Excel at Howard University College of Medicine

Help students identify and close “the gap”

current behavior → current learning

MIND THE GAP

productive behavior → desired learning
Freshmen Orientation

- **Purpose:** To provide academic orientation to the medical curriculum for all entering freshman students.
- **Program:** Learning skills - critical thinking, problem solving, time management and exam-taking workshops are presented during orientation week.
- **Participants:** Entering freshman medical students.

Preliminary Academic Reinforcement Program (PARP)

- **Purpose:** To provide academic orientation to the medical curriculum for selected incoming students to facilitate their transition from undergraduate study and entry into medical school.
- **Program:** The six-week structured summer program includes academic material from the first year medical curriculum, learning skills, counseling, group study and individualized tutoring by MedSTARS Leaders. Successful performance guarantees admission to the freshman year.
- **Participants:** Prospective students are selected by the College of Medicine’s Admissions Committee. This program is funded by HCOP.

Behavioral Health Preliminary Academic Reinforcement Program (Be_PARP)

- **Purpose:** To engage, recruit, and train economically and academically disadvantaged students in behavioral health.
Reflection Questions

• What’s the difference, if any, between *studying* and *learning*?

• For which task would you work harder?
  A. Make an A on the test
  B. Teach the material to the class
Travis, junior psychology student
47, 52, 82, 86

Problem: Reading Comprehension

Solution: Preview text before reading*
Develop questions*
Read one paragraph at a time and paraphrase information

*Develop anticipatory set
Critical Reading is Essential to Medical Students’ Success

Reading skills that can be taught

- Previewing before reading
- Activating relevant prior knowledge
- Constructing mental images
- Self-questioning
- Comprehension monitoring
- Summarizing
- Connecting new material to prior knowledge

Quirk, p. 9
A Reading Strategy that Works: SQ5R

- **Survey** (look at intro, summary, bold print, italicized words, etc.)
- **Question** (devise questions survey that you think the reading will answer)
- **Read** (one paragraph at a time)
- **Recite** (summarize in your own words)
- **Record or wRite** (annotate in margins)
- **Review** (summarize the information in your words)
- **Reflect** (other views, remaining questions)
First Voyage of Christopher Columbus

WITH HOCKED GEMS FINANCING HIM/ OUR HERO BRAVELY DEFIED ALL SCORNFUL LAUGHTER/ THAT TRIED TO PREVENT HIS SCHEME/ YOUR EYES DECEIVE/ HE HAD SAID/ AN EGG/ NOT A TABLE/ CORRECTLY TYPifies THIS UNEXPLORED PLANET/ NOW THREE STURDY SISTERS SOUGHT PROOF/ FORGING ALONG SOMETIMES THROUGH CALM VASTNESS/ YET MORE OFTEN OVER TURBULENT PEAKS AND VALLEYS/ DAYS BECAME WEEKS/ AS MANY DOUBTERS SPREAD FEARFUL RUMORS ABOUT THE EDGE/ AT LAST/ FROM NOWHERE/ WELCOME WINGED CREATURES APPEARED/ SIGNIFYING MOMENTOUS SUCCESS

Anticipatory set CAN interfere!

Let’s look at the car on the next slide...
Is this a 2-door or 4-door car?
Dana, first year physics student*
80, 54, 91, 97, 90 (final)

Problem: Memorizing formulas and using www.cramster.com

Solution: Solve problems with no external aids and test mastery of concepts

Received MS degree in Medical Physics, Spring 2015
The UT Graduate School of Biomedical Sciences at Houston
Dana Lewis, MS in Medical Physics, 2015
Univ of Texas Graduate School
of Biomedical Sciences at Houston
Thesis research at UT MD Anderson Cancer Center

Practicing Medical Physicist as of 8/28/2016
when she completed her residency!
The final was worth 100 points with a 10 bonus question.

### Chemistry 2001

<table>
<thead>
<tr>
<th></th>
<th>Class Average</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
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<tr>
<td>Test 1</td>
<td>76</td>
<td>65</td>
<td>67</td>
<td>70</td>
<td>83</td>
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<td>Test 2</td>
<td>52</td>
<td>67</td>
<td>65</td>
<td>46</td>
<td>55</td>
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<tr>
<td>Test 3</td>
<td>72</td>
<td>61</td>
<td>68</td>
<td>68</td>
<td>65</td>
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<tr>
<td>Final</td>
<td>78</td>
<td>107</td>
<td>88</td>
<td>88</td>
<td>90</td>
</tr>
</tbody>
</table>

Date of Final Exam: December 14, 2005
Meeting with Student No. 1: December 12, 2005
Meeting with Student Nos. 2 & 4: December 2, 2005
Meeting with Student No. 3: December 8, 2005
Why the Fast and Dramatic Increase?

It’s all about the strategies, and getting them to engage their brains!
Counting Vowels in 45 seconds

How accurate are you?

Count all the vowels in the words on the next slide.
Dollar Bill  
Dice  
Tricycle  
Four-leaf Clover  
Hand  
Six-Pack  
Seven-Up  
Octopus  
Cat Lives  
Bowling Pins  
Football Team  
Dozen Eggs  
Unlucky Friday  
Valentine’s Day  
Quarter Hour
How many *words* or *phrases* from the list do you remember?
Let’s look at the words again…

What are they arranged according to?
Dollar Bill
Dice
Tricycle
Four-leaf Clover
Hand
Six-Pack
Seven-Up
Octopus
Cat Lives
Bowling Pins
Football Team
Dozen Eggs
Unlucky Friday
Valentine’s Day
Quarter Hour
NOW, how many *words* or *phrases* from the list do you remember?
What were two major differences between the two attempts?

1. We knew what the task was

2. We knew how the information was organized
What we know about learning

• Active learning is more lasting than passive learning
  -- Passive learning is an oxymoron*

• Thinking about thinking is important
  – Metacognition**

• The level at which learning occurs is important
  – Bloom’s Taxonomy***


Bloom’s Taxonomy

Anderson & Krathwohl, 2001

Bloom’s Taxonomy

- **REMEMBERING**: Recalling relevant knowledge from long term memory
- **UNDERSTANDING**: Making sense of the material you have learned
- **APPLYING**: Use the knowledge gained in new ways
- **ANALYZING**: Breaking the concept into parts and understand how each part is related to one another
- **EVALUATING**: Making judgements based on a set of guidelines
- **CREATING**: Putting information together in an innovative way

When we teach students about Bloom’s Taxonomy...

They GET it!
How do you think students answered?

At what level of Bloom’s did you have to operate to excel in college?

1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating
How do you think students answered?

At what level of Bloom’s do you think you’ll have to operate to excel in medical school?

1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating
How do we teach students to move higher on Bloom’s Taxonomy?

Teach them the Study Cycle*

*adapted from Frank Christ’s PLRS system
The Study Cycle

Preview

*Preview before class* – Skim the chapter, note headings and boldface words, review summaries and chapter objectives, and come up with questions you’d like the lecture to answer for you.

Attend

*Attend class* – GO TO CLASS! Answer and ask questions and take meaningful notes.

Review

*Review after class* – As soon after class as possible, read notes, fill in gaps and note any questions.

Study

*Study* – Repetition is the key. Ask questions such as ‘why’, ‘how’, and ‘what if’.
- Intense Study Sessions* - 3-5 short study sessions per day
- Weekend Review – Read notes and material from the week to make connections

Assess

*Assess your Learning* – Periodically perform reality checks
- Am I using study methods that are effective?
- Do I understand the material enough to teach it to others?

Intense Study Sessions

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Set a Goal</td>
<td>1-2 min</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Decide what you want to accomplish in your study session</td>
</tr>
<tr>
<td>2</td>
<td>Study with Focus</td>
<td>30-50 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interact with material - organize, concept map, summarize, process, re-read, fill-in notes, reflect, etc.</td>
</tr>
<tr>
<td>3</td>
<td>Reward Yourself</td>
<td>10-15 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take a break – call a friend, play a short game, get a snack</td>
</tr>
<tr>
<td>4</td>
<td>Review</td>
<td>5 min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Go over what you just studied</td>
</tr>
</tbody>
</table>

Center for Academic Success
B-31 Coates Hall • 225.578.2872 • www.cas.lsu.edu
Use Concept Mapping for Understanding Patterns and Relationships

Learning in medical school (and medical practice) requires the development of an understanding of patterns and relationships in order to be useful. Each step in learning involves combining what you already know with what you need to know. Understanding concept mapping and its contribution to learning in medical education can be seen by comparing it with standard outlining. First we compare the advantages and disadvantages of both learning methods and then we describe when and how to employ concept mapping as a learning tool.

Outlining is a standard way to organize information for presentation:

I. First item
   II. Second item
      A. sub item
      B. sub item
         1. sub-sub item
         2. sub-sub item
   III. Third item, etc.
Create a Disease/Treatment Map

Type of Disease/Treatment

Primary Headings

Subheadings

Secondary Subheadings
Ideas...

Cause and Effect:

(Comments go Here.)

(Comments go Here.)

(Comments go Here.)
Persuasive Writing/Discussions

Thesis

Viewpoint

Details

Reasons, Facts, Examples

Viewpoint

Details

Reasons, Facts, Examples

Conclusion
Compare and Contrast

Somatic Nervous System

How are they similar?

How are they different?

Autonomic Nervous System
Turning Medical Students into Efficient, Expert Learners

• Have them do “think aloud” exercises, involving actual cases
• Constantly ask them “why” how and “what if” questions in think-pair-share exercises in class
• Show them how to test their understanding by verbalizing or writing about concepts; practice retrieval of information
• Show them how to move their activities higher on the *Bloom’s taxonomy* scale by comparing and contrasting, thinking of analogies, thinking of new pathways, treatments, etc.
**Reflection in medical education can lead to less burn-out**

*Date:* June 2, 2015  
*Source:* Loyola University Health System  
*Summary:* With physician burnout on the rise it is all the more integral for students to learn ways to engage better with the challenges faced in the medical profession. Stritch faculty members believe reflection is a fundamental tool to help students process and cope with the tremendous physical, emotional and mental pressure that can accompany their vocation.
Four Steps in Problem Solving that Include Metacognitive Capability*

- Identifying and defining the problem requires retrieving info from long term memory
- Mentally representing the problem
- Planning how to proceed
- Evaluating what you know about your performance

*Described by Davidson, Deuser, and Sternberg

Quirk, p. 61
Help Students Develop the Right Mindset


Mindset* is Important!

- Fixed Intelligence Mindset
  Intelligence is static
  You have a certain amount of it

- Growth Intelligence Mindset
  Intelligence can be developed
  You can grow it with actions

New York: Random House Publishing
## Responses to Many Situations are Based on Mindset

<table>
<thead>
<tr>
<th></th>
<th>Fixed Intelligence Mindset Response</th>
<th>Growth Intelligence Mindset Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges</td>
<td>Avoid</td>
<td>Embrace</td>
</tr>
<tr>
<td>Obstacles</td>
<td>Give up easily</td>
<td>Persist</td>
</tr>
<tr>
<td>Tasks requiring effort</td>
<td>Fruitless to Try</td>
<td>Path to mastery</td>
</tr>
<tr>
<td>Criticism</td>
<td>Ignore it</td>
<td>Learn from it</td>
</tr>
<tr>
<td>Success of Others</td>
<td>Threatening</td>
<td>Inspirational</td>
</tr>
</tbody>
</table>
Innovative Educators Webinar
October 20, 2010

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**Fixed Mind-set**
- Intelligence is static

**Growth Mind-set**
- Intelligence can be developed

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**Challenges**
- Leads to a desire to learn and therefore a tendency to...
  - Avoid challenges
  - Embrace challenges

**Obstacles**
- Leads to a desire to learn and therefore a tendency to...
  - Give up easily
  - Persist in the face of setbacks

**Effort**
- Leads to a desire to learn and therefore a tendency to...
  - See effort as fruitless or worse
  - See effort as the path to mastery

**Criticism**
- Leads to a desire to learn and therefore a tendency to...
  - Ignore useful negative feedback
  - Learn from criticism

**Success of Others**
- Leads to a desire to learn and therefore a tendency to...
  - Feel threatened by the success of others
  - Find lessons and inspiration in the success of others

---

As a result, they may plateau early and achieve less than their full potential.

As a result, they reach ever-higher levels of achievement.

All this confirms a deterministic view of the world.

All this gives them a greater sense of free will.

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Graphic: Nigel Holmes
Which mindset about intelligence do you think *most medical students* have?

1. Fixed
2. Growth
Which mindset about *student* intelligence do you think *most College of Medicine faculty* have?

1. Fixed
2. Growth
Email from a Spring 2011 General Chemistry Student

“…Personally, I am not so good at chemistry and unfortunately, at this point my grade for that class is reflecting exactly that. I am emailing you inquiring about a possibility of you tutoring me.”

April 6, 2011

-----------------------------------------------------------------------------------------------------------------------------

“I made a 68, 50, (50), 87, 87, and a 97 on my final. I ended up earning a 90 (A) in the course, but I started with a 60 (D). I think what I did different was make sidenotes in each chapter and as I progressed onto the next chapter I was able to refer to these notes. I would say that in chemistry everything builds from the previous topic.

May 13, 2011

-------------

Semester GPA: 3.8
TALENT IS SET
You either have it or you don't.

TALENT IS GROWN
Talent grows over time with exposure & effort

Fuels your desire to appear talented. You tend to...

Stokes your desire to learn. You tend to...

AVOID CHALLENGES
If I fail, it means I’m not talented.

SEEK CHALLENGES
If I fail, I will learn something.

GIVE UP EASILY
Why bother? I must not be talented.

KEEP TRYING
I will learn how to overcome this.

SEE EFFORT AS BAD
If I have talent, this should be easy.

SEE EFFORT AS KEY
The harder I work, the better I get.

IGNORE CRITIQUE
Something’s wrong? I’m not talented.

PURSUE CRITIQUE
What can I learn from this opinion?

FEEL THREATENED BY OTHERS’ SUCCESS
They have talent. I could never do that.

FEEL INSPIRED BY OTHERS’ SUCCESS
They’re awesome! I want to do that!

WITH THIS BELIEF, YOU MAY PLATEAU OR QUIT.

WITH THIS BELIEF, YOU GET BETTER & BETTER.

wwW.ThePracticeOfPractice.com
Learned Helplessness*

Based on prior experience, the feeling that no amount of effort will bring success destroys motivation to attempt a task

*Martin Seligman and Steven F. Maier
Solving Anagrams

www.youtube.com/watch?v=gFmFOmprTt0
What happens when we teach metacognitive learning strategies, Bloom’s Taxonomy, and the Study Cycle to an entire class, not just individuals?
Performance in Gen Chem I in 2011 Based on One Learning Strategies Session*

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<tr>
<th></th>
<th>Attended</th>
<th>Absent</th>
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<tr>
<td>Exam 1 Avg.:</td>
<td>71.65%</td>
<td>70.45%</td>
</tr>
<tr>
<td>Exam 2 Avg.:</td>
<td>77.18%</td>
<td>68.90%</td>
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<tr>
<td>Final course Avg*.:</td>
<td>81.60%</td>
<td>70.43%</td>
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Final Course Grade: B C

The one 50-min presentation on study and learning strategies resulted in an improvement of one full letter grade!

Performance in Gen Chem 1202 Sp 2013 Based on One Learning Strategies Session

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<th>Absent</th>
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<td>Exam 1 Avg.:</td>
<td>71.33%</td>
<td>69.27%</td>
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<tr>
<td>Homework Total</td>
<td>169.8</td>
<td>119.1</td>
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<tr>
<td>Final course Avg*</td>
<td>82.36%</td>
<td>67.71%</td>
</tr>
<tr>
<td><strong>Final Course Grade:</strong></td>
<td><strong>B</strong></td>
<td><strong>D</strong></td>
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The 50-min presentation on study and learning strategies resulted in an improvement of two letter grades!
Metacognition: An Effective Tool to Promote Success in College Science Learning

2014, Vol. 43, No. 4 pp. 48-53

Ninfeng Zhao¹, Jeffrey Wardeska¹, Saundra McGuire², Elzbieta Cook²

¹Department of Chemistry, East Tennessee State University
²Department of Chemistry, Louisiana State University
Sharing Strategies that Have Worked for Others Can Be Very Motivational
Top 5 Reasons Students Made an A on Test 1:

1. Did preview-review for every class
2. Did a little of the homework at a time
3. Used the book and did the suggested problems
4. Made flashcards of the information to be memorized
5. Practiced explaining the information to others
Top 5 Reasons Students Made an F on Test 1

1. Didn’t spend enough time on the material
2. Started the homework too late
3. Didn’t memorize the information I needed to memorize
4. Did not use the book
5. Assumed I understood information that I had read and re-read, but had not applied
LSU Dental School First Year Class:  Another Success Story!

- Metacognition Discussion – 8/13/2004
- Histology Exam – 8/23/2004
- Previous class averages: 74 – 78
- Challenge to class on 8/13: 84 average
- Reported average on 8/24/2004: 85!
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<th>Date</th>
<th>Result</th>
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<tr>
<td>9/04</td>
<td>Failed</td>
<td>10/05</td>
<td>Passed</td>
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<tr>
<td>10/04</td>
<td>Failed</td>
<td>11/05</td>
<td>Failed</td>
</tr>
<tr>
<td>11/04</td>
<td>Failed</td>
<td>12/05</td>
<td>Passed best in group</td>
</tr>
<tr>
<td>12/04</td>
<td>Failed</td>
<td>1/06</td>
<td>Passed</td>
</tr>
<tr>
<td>1/05</td>
<td>Passed</td>
<td>2/06</td>
<td>Passed</td>
</tr>
<tr>
<td>2/05</td>
<td>Failed</td>
<td>3/06</td>
<td>Failed</td>
</tr>
<tr>
<td>3/05</td>
<td>Failed</td>
<td>4/06</td>
<td>Passed last one!</td>
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<tr>
<td>4/05</td>
<td>Failed</td>
<td>5/06</td>
<td>N/A</td>
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Began work with CAS and the Writing Center in October 2005
Oct. 17, 2011

Hello Dr. Kelley. ... I am struggling at Xavier and I REALLY want to succeed, but everything I've tried seems to end with a "decent" grade. I’m not the type of person that settles for decent. What you preached during the time you were in Dr. Privett's class last week is still ringing in my head. I really want to know how you were able to do really well even despite your circumstances growing up. I was hoping you could mentor me and guide me down the path that will help me realize my true potential while here at Xavier. Honestly I want to do what you did, but I seriously can't find a way how to. Can I please set up a meeting with you as soon as you’re available so I can learn how to get a handle grades and classes?

Oct. 24, 2011

Hey Dr. Kelley, I made an 84 on my chemistry exam (compared to the 56 on my first one) using your method for 2 days (without prior intense studying). Thanks for pointing me in the right direction. I’ll come by your office Friday and talk to you about the test.

Nov 3, 2011

Hey Dr. Kelley! I have increased my Bio exam grade from a 76% to a 91.5% using your system. Ever since I started your study cycle program, my grades have significantly improved. I have honestly gained a sense of hope and confidence here at Xavier. My family and I are really grateful that you have taken time to get me back on track.
What strategies can faculty implement?*

- In-class activities that allow students to apply information being learned
- Using questions that allow students to analyze, predict, compare approaches, etc.
- Frequent in-class quizzes
- Simulations that require students to solve ill-structured problems
- Retrospective critique of cases to identify errors and/or exemplary performance
- Compare student reasoning to that of experts
- Writing assignments requiring reflection

*Am Dental Ed Assn Commission on Change and Innovation
Additional strategies faculty can implement*

- **Recommend commercial review books** with lots of problems with answers to reinforce their lecture material.

- **Recommend that students contact you via email with questions**, and if the answer is detailed, post it for other students to read.

- If students are not clear on the explanations to the questions (from email responses or in lectures) **encourage them to make an appointment during office hours for better clarification of the material**.

- **Show that you appreciate the students by having a "happy hour" with pizza and soft drinks** when a given segment of the course is completed. E.g. in micro there are four segments. Therefore at least two happy hours could be done on a Friday afternoon, say from five to six thirty pm in the student's lounge or in the lecture hall. The students will love it because it is a free meal for them and they will get to know their teachers better.

*Dr. Earl Bloch
Howard University College of Medicine
Student Comment:

As a first year medical student at Howard University College of Medicine, I found the web site, Dr. Bloch’s 12 Steps for Academic Success immensely helpful. There were several helpful suggestions about how to schedule my study time, and how to prepare for exam...I am certain that my success as a first year medical student was a product of the suggestions and advice offered on the web site. I would recommend that all first year medical students visit the web site, because it is a 12 step study plan that really yields results.

C. Gill
First Year Medical Student
Howard University College of Medicine
Class of 2010
I was first exposed to the 12-Step study plan early in my first year of medical school, I regret not utilizing its profound study techniques. Perhaps like most students, I believed my brute-force, wait-to-the-last-minute undergrad methods will still work. I was emphatically wrong. When I adopted the plan, I was especially attracted to the 4th step, because the scenario presented described me. I revamped my schedule by first grouping my lectures into Auditory, Vision, Oral Cavity etc. Then I alternated the time allotted to each block. This method was so effective for me, in terms of keeping my attention and allowing me to effectively cover my material, that I transitioned from an unsatisfactory status to honoring some of my exams! I am still working on my time-management, but with the 4th-step, I never had a dull moment and it works!

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Tips for Acing Boards

- know what the exam will cover
- review the whys, hows, & what ifs of information
- practice teaching the information
- aim for 100% understanding
- over learn information because of the impact of stress on performance
- take LOTS of practice tests and concentrate as much on why the incorrect answers are wrong as on why the correct answers are right
- Metacognitively reflect on why you missed the questions you missed

Worked for veterinary school instructor who had failed boards five times, but passed when taught these strategies
Conclusion

We *can* significantly increase student success by...

- teaching students *how* to learn
- helping students develop the right mindset
- making the implicit *explicit*
- *not judging* student potential on initial performance
- encouraging students to *persist in the face of initial failure*
- *motivate them* to use metacognitive tools for increased learning
Special Note

Please visit the CAS website at www.cas.lsu.edu. We have on-line workshops that will introduce you and your students to effective metacognitive strategies. Have fun teaching your students powerful metacognitive strategies that will lead to increased academic success!

Saundra McGuire
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• Dr. Carla Davis, Section Chief, Baylor College of Medicine and Pediatric Allergist and Immunologist

• All of the faculty and students who implemented these strategies and provided feedback
Useful Websites

- www.cas.lsu.edu
- www.howtostudy.org
- www.vark-learn.com
Additional References


http://academic.pg.cc.md.us/~wpeirce/MCCCTR/metacognition.htm
Reflection Activity for Afternoon

• Discuss scenarios of students having difficulty

• Choose 2 to 3 strategies that you would like to teach your students and share how you plan to present this to the students