

Become An Expert Learner: *Metacognition* is the Key!



Saundra Y. McGuire, Ph.D.

Ret. Assistant Vice Chancellor & Professor of Chemistry
Director Emerita, Center for Academic Success
Louisiana State University

Des Moines

Mostly Cloudy

36°

Wednesday Today 43 11

Now	9AM	10AM	11AM	12PM	1PM
					
36°	37°	39°	41°	40°	41°

Thursday  20 7

Friday  29 24

Saturday  35 13

Sunday  19 7

Monday  27 11



MISSION STATEMENT

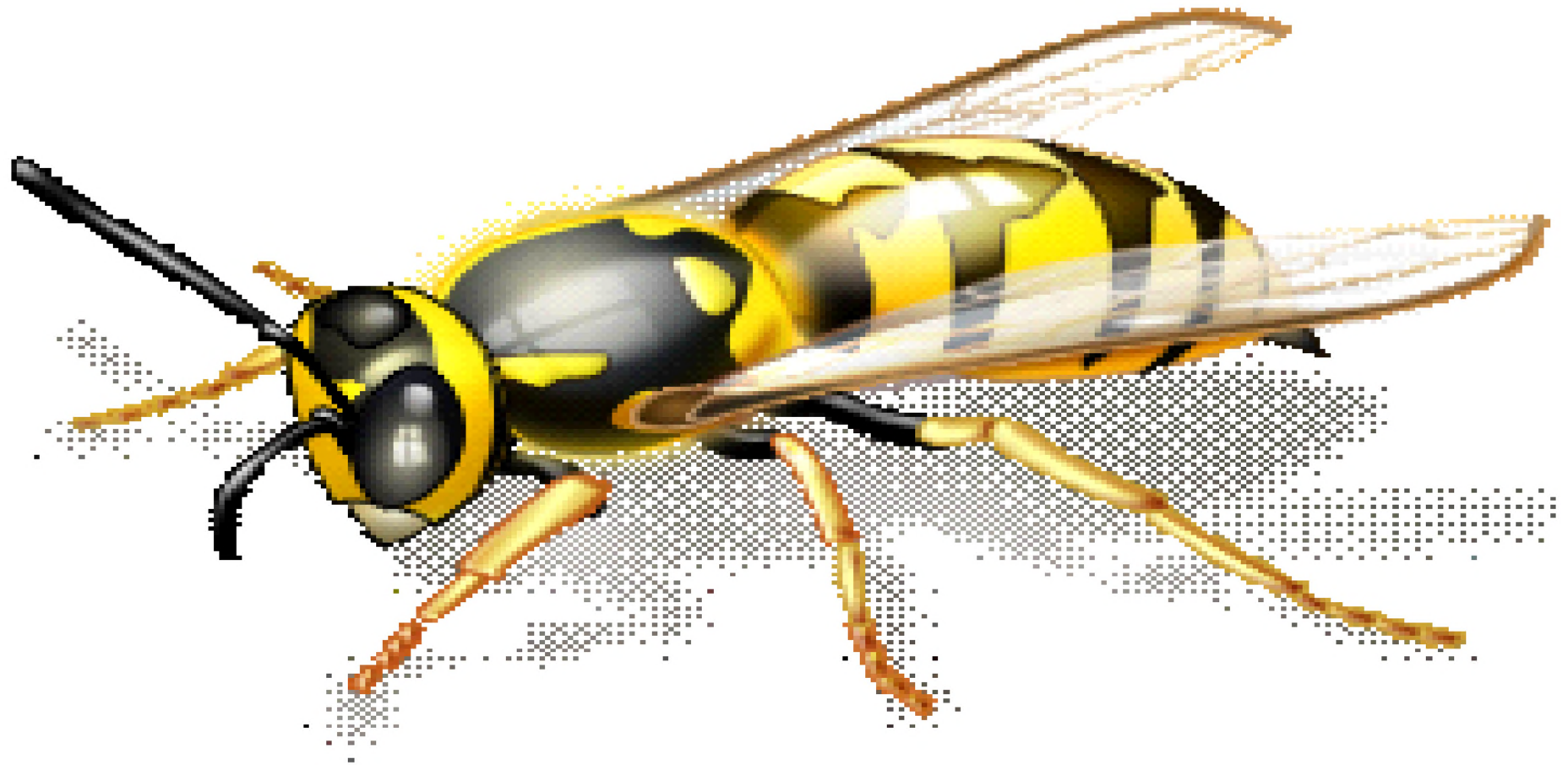


Simpson College is an independent, selective, church-related, comprehensive liberal-arts college **dedicated to excellence in higher education**

The Simpson College community is equally committed to:

- **Promoting integrative learning that enables students of all ages to develop intellectual and practical skills**
- Nurturing values which **foster personal worth and individuality** within a creative, diverse and just community
- Graduating students who **continue to grow as free, responsible and fulfilled individuals** in the world of family, work, service and scholarship
- Drawing upon our relationship with the United Methodist Church and our religious traditions that **guide us on issues of personal integrity, moral responsibility, social justice and global citizenship**







**What are YOU likely to face
as you climb the academic ladder?**



**Folks whose *miscalculations*
tell *them* that *you* should
not be able to fly!**

Expect Obstacles

Remember that stumbling blocks and stepping stones may look identical; YOU determine which role they will play!



Metacognition is the key to turning stumbling blocks into stepping stones!



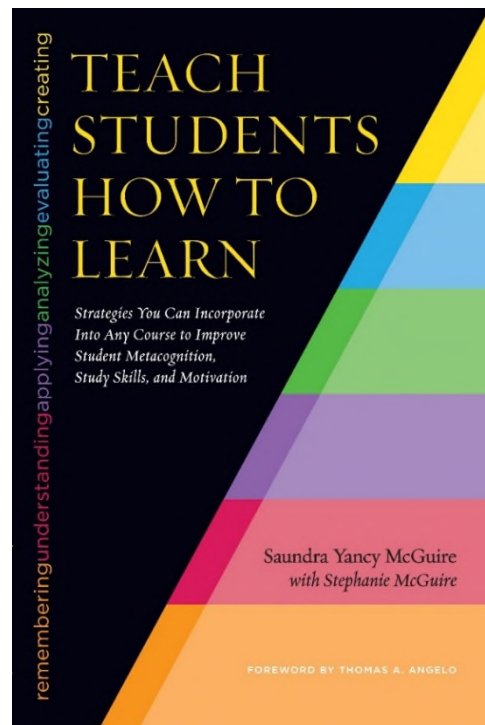
What we will discuss today

- Why college students (and others) may be inefficient learners
- Metacognitive learning strategies that work, and why they work

How do I KNOW These Strategies Work?

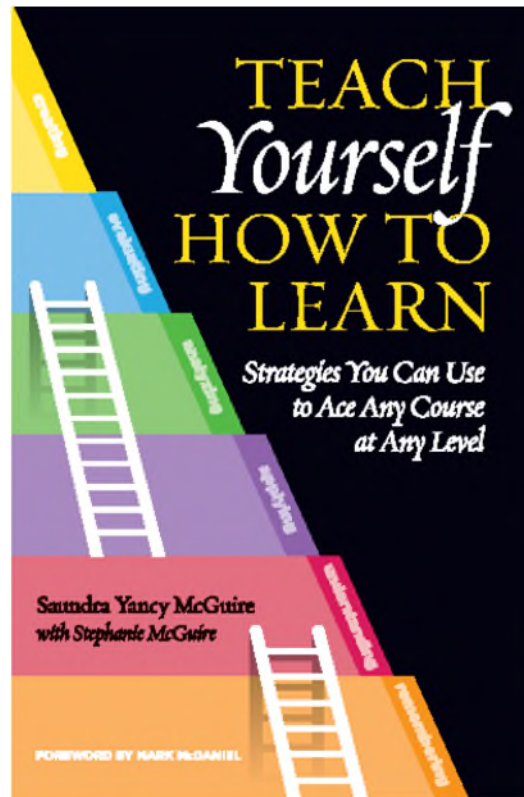
I wrote the book on it!

And I have examples to prove that it works!



McGuire, S.Y. & McGuire, S.N. (2015). *Teach Students How to Learn: Strategies You Can Incorporate into Any Course to Improve Student Metacognition, Study Skills, and Motivation*. Sterling, VA: Stylus

Just Out as of January 3, 2018: A book for learners



McGuire, S.Y. & McGuire, S.N. (2018). *Teach Yourself How to Learn: Strategies You Can Use to Ace Any Course at Any Level*. Sterling, VA: Stylus Publications, LLC.

Sydney Used Metacognition to Turn Stumbling Blocks into Stepping Stones



- 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 Cum GPA 3.5
- Email on February 7, 2017 Cum GPA 3.6

Fall Sem GPA 4.18

Sydney Landry, BS in Biology, May 2017

Louisiana State University

Final Semester GPA: 3.77



Applying to Medical School in Fall 2017

Intended Specialty: Dermatology

Effective Homework Strategy

- **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

Sydney 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...*

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

Power of Teaching to Master Learning

Clint's Story: Baby Groot and the Licensure Exam



Guardians of the Galaxy

- First encounter on October 29, 2015 at EKU
- Email on January 18, 2016
- Msg on April 14, 2016
- Msg on June 11, 2016

https://www.youtube.com/watch?v=BEPbXYzE5_Y

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

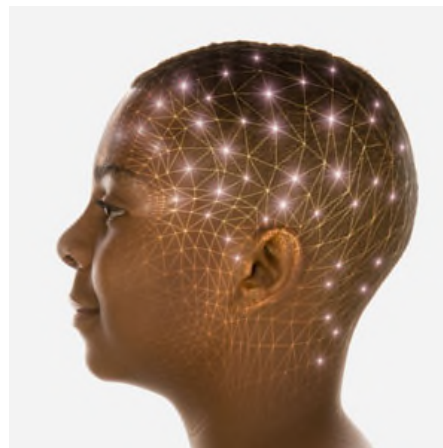
Flavell, J. H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), *The nature of intelligence* (pp.231-236). Hillsdale, NJ: Erlbaum

Before and After

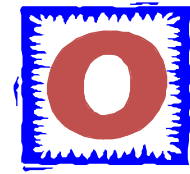
- Robert, freshman chemistry student
42, 100, 100, 100 A in course
- Michael, senior pre-med organic student
30, 28, 80, 91 B in course
- Miriam, freshman calculus student
37.5, 83, 93 B in course
- Ifeanyi, sophomore thermodynamics student
67, 54, 68, 95 B in course
- Terrence, junior Bio Engineering student
GPA 1.67 cum, 3.54 (F 03), 3.8 (S 04)

Why is Fast and Dramatic Increase Possible?

It's all about the *strategies!*



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*
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

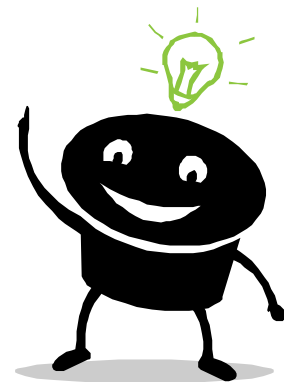
Quarter Hour



NOW, how many words or phrases
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**

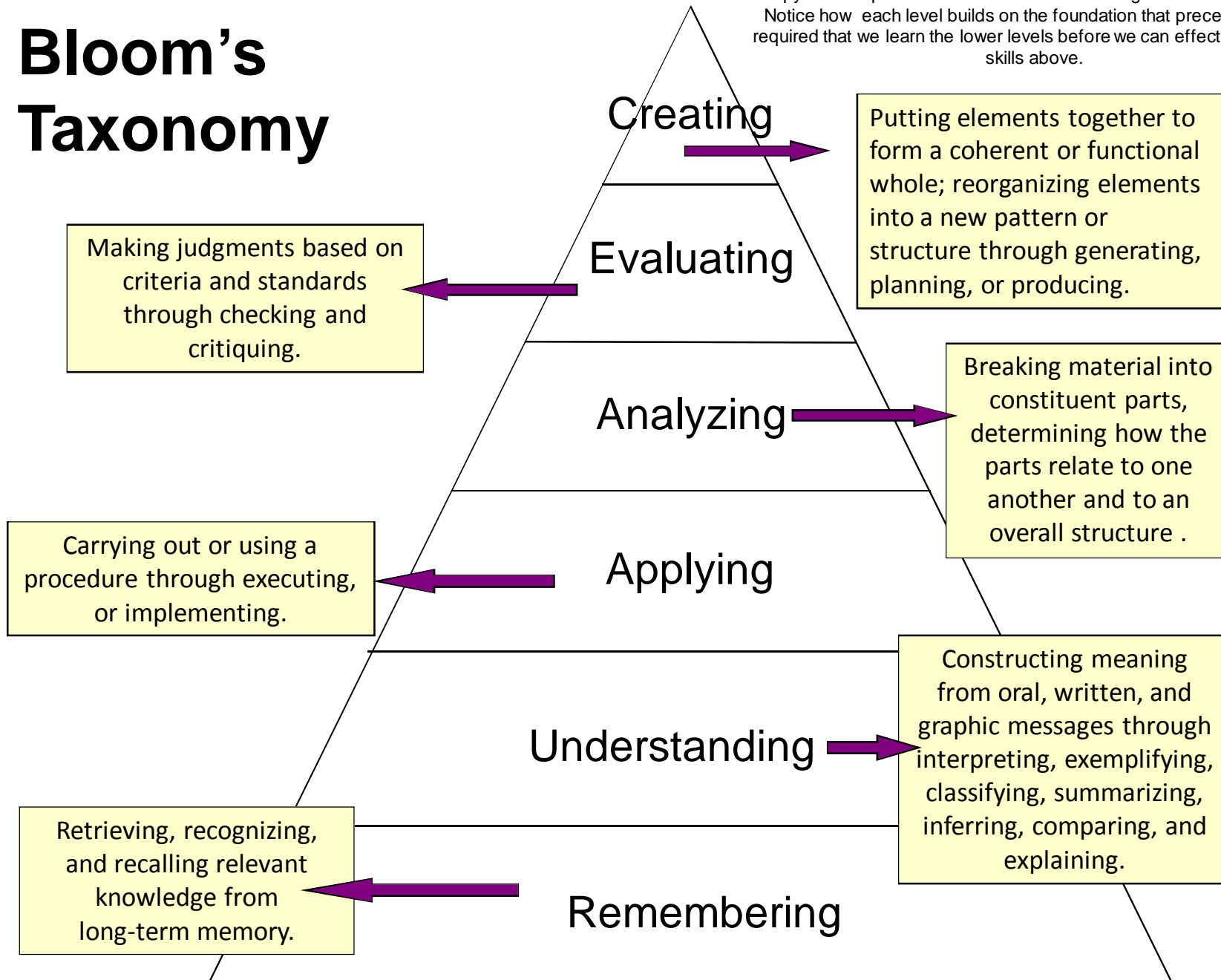


Turning Yourself into an Efficient, Expert Learner

- Do “think aloud” exercises
- Constantly ask yourself “why” and “what if” questions
- Always test your understanding by verbalizing or writing about concepts; practice retrieval of information
- Move your activities higher on the *Bloom's taxonomy* scale by comparing and contrasting, thinking of analogies, thinking of new pathways, etc.

Bloom's Taxonomy

This pyramid depicts the different levels of thinking we use when learning. Notice how each level builds on the foundation that precedes it. It is required that we learn the lower levels before we can effectively use the skills above.



Let's think back to high school...

At what level of Bloom's did you have to operate to make A's or B's in high school?

1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating

Now let's consider college (or higher)

At what level of Bloom's do you think you'll need to operate to make A's in all of courses at Simpson?

1. Remembering
2. Understanding
3. Applying
4. Analyzing
5. Evaluating
6. Creating

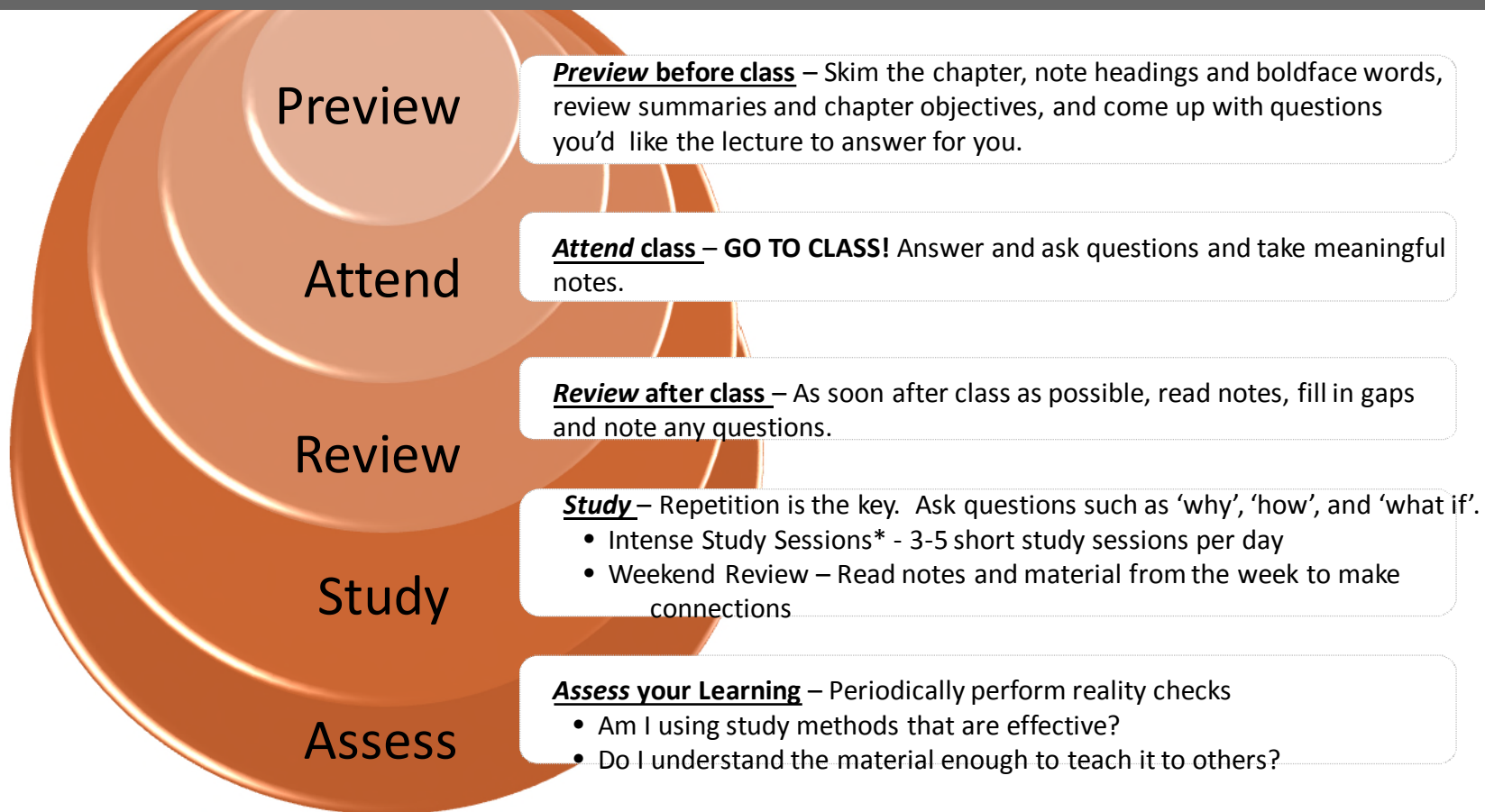
How can you move yourself *higher* on Bloom's Taxonomy?



Use the Study Cycle*

**adapted from Frank Christ's PLRS system*

The Study Cycle



*Intense Study Sessions

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

Emails from a General Chemistry Student Who Used Metacognitive Strategies to Become an Expert Learner

“...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

Use Metacognitive Strategies to Become an Efficient, Expert Learner

- **Always solve problems without looking at an example or the solution**
- **Memorize everything you're told to memorize (e.g. definitions, formulas, information, processes, etc.)**
- **Always ask why, how, and what if questions**
- **Test understanding by giving "mini lectures" on concepts**
- **Spend time on every subject every day**
- **Use the Study Cycle with Intense Study Sessions**
- **Aim for 100% mastery, not 90%!**

Useful Websites

- www.lsu.edu/students/cas/
- www.howtostudy.org
- www.vark-learn.com
- www.drearlbloch.com

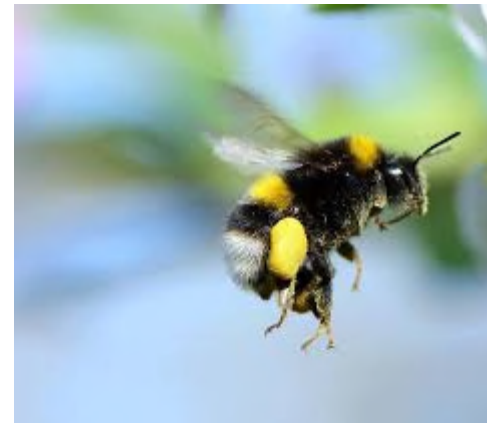
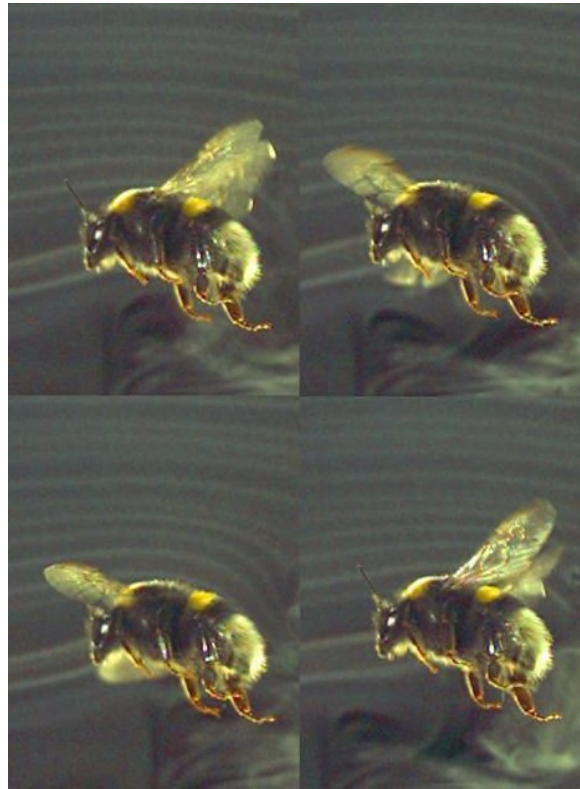
References

- Bruer, John T. , 2000. *Schools For Thought: A Science of Learning in the Classroom*. MIT Press.
- Bransford, J.D., Brown, A.L., Cocking, R.R. (Eds.), 2000. *How people learn: Brain, Mind, Experience, and School*. Washington, DC: National Academy Press.
- Christ, F. L., 1997. *Seven Steps to Better Management of Your Study Time*. Clearwater, FL: H & H Publishing
- Cromley, Jennifer, 2000. *Learning to Think, Learning to Learn: What the Science of Thinking and Learning Has to Offer Adult Education*. Washington, DC: National Institute for Literacy.
- Ellis, David, 2014. *Becoming a Master Student**. Boston: Cengage Learning.
- Hoffman, Roald and Sandra Y. McGuire. (2010). Learning and Teaching Strategies. *American Scientist* , vol. 98, pp. 378-382.
- McGuire, S.Y. (2015). *Teach Students How to Learn: Strategies You Can Incorporate into Any Course to Improve Student Metacognition, Study Skills, and Motivation*. Sterling, VA: Stylus
- Nilson, Linda, 2004. *Teaching at Its Best: A Research-Based Resource for College Instructors*. Bolton, MA: Anker Publishing Company.
- Pierce, William, 2004. *Metacognition: Study Strategies, Monitoring, and Motivation*.

<http://academic.pg.cc.md.us/~wpeirce/MCCCTR/metacognition.htm>

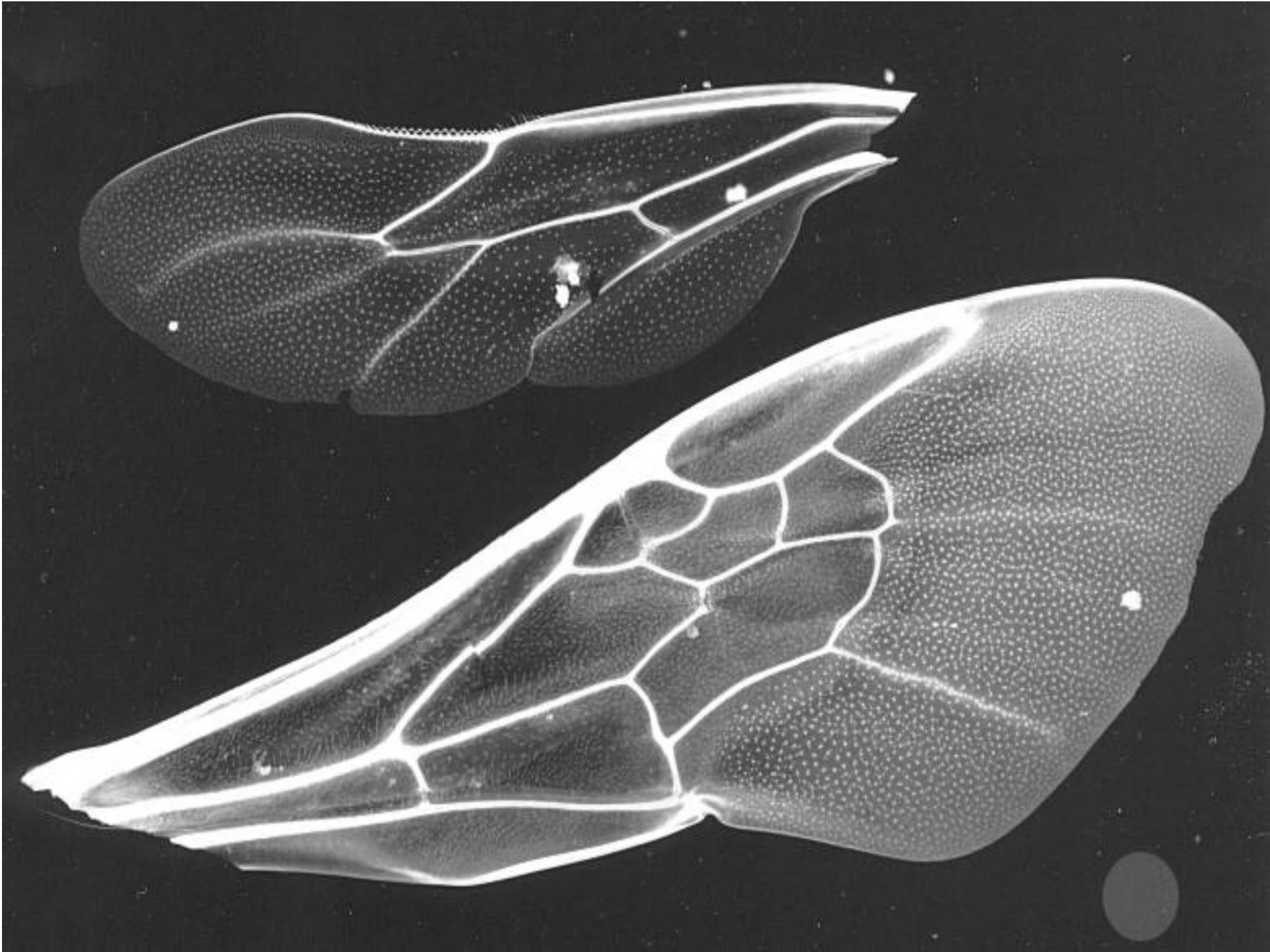
*Excellent student reference

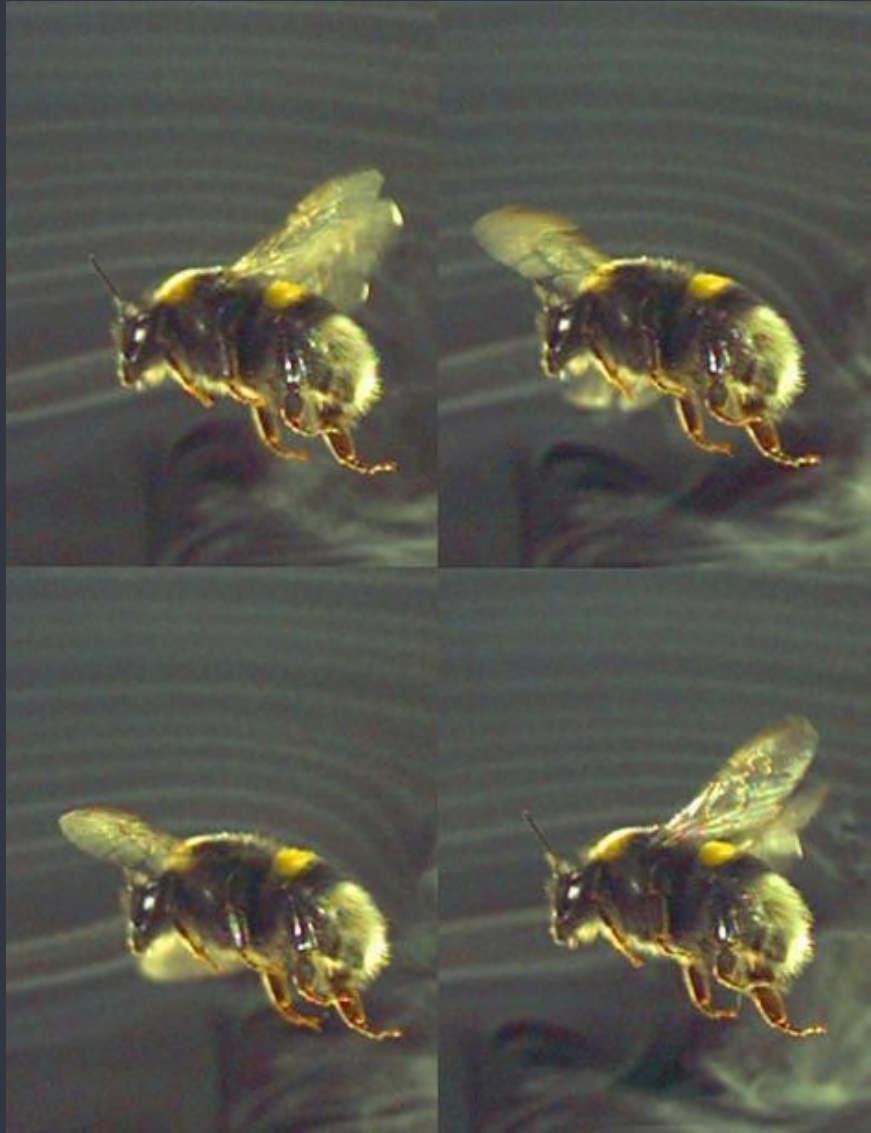
Why the Bumblebee CAN fly...













SIMPSON COLLEGE



GO

