Guide for Success in the Medical Sciences*

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Abstract

The authors teach technical topics to students in a Physician Assistant program. These students come from a wide variety of experiences and background. Many of them have not been in school for several years and find the return to academics quite challenging. This lecture guides students to good study habits and attitudes.

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1 Clinical Case

A short video clip is presented in which a patient is diagnosed with meningitis and then sent home for bed rest. The patient does not improve, and returns for medical attention. Ultimately, it is determined that the patient has a rapidly fatal CNS infection that requires prompt attention. The first decision to return to patient home to bed rest might not have been prudent. The point being, one must be always alert and well prepared to avoid making poor choices.

2 P.A. National Certification Examination

(PANCE) - Link: NCCPA Homepage[1]

3 Medical Field versus Medical Sciences

3.1 Medical Field is a range of specialization in knowledge, study, or occupation in medicine.

3.2 Medical Sciences is the science of dealing with the maintenance of health and the prevention and treatment of disease. Courses in medical sciences are the standards established by the medical profession to successfully pass your certification, PANCE. This includes two major content areas of proficiency:

- PA Practice Task Areas: Sample Questions and Critiques[2]

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†http://creativecommons.org/licenses/by/3.0/

[1]http://www.nccpa.net/

[2]http://cnx.org/content//latest/./StudySkills/SampleQuestionsAndCritiques.pdf

- Diseases/Disorders by organ systems: Link:http://www.nccpa.net/[3]

3.3 The material presented in medical science courses is not conceptually more difficult than many rigorous undergraduate courses, but the volume flow rate of information per hour and per day is much greater. It has frequently been described as "drinking from a fire-hose." The most fundamental principle of efficient studying (the best use of your limited time) requires active, not passive learning.

http://meded.ucsd.edu/ugme/oess/study_skills/active_studying/[4] UC San Diego, Drinking from a fire-hose[5]

3.3.1 Active learning

requires making decisions about the material. "Is this important?", "How is this part organized?", "Where does this fit into the 'big picture'?", "What is the precise definition of this term?", "Where have I seen this in an earlier lecture?

3.3.2 Passive reading

of pages of text or "going over" notes (even with a highlighter) and hoping to absorb the information is very inefficient. If you have enough time, it will work. It probably worked in undergraduate classes, but it usually isn't adequate for the fire hose.

4 What is your Learning Style?

Each individual has their own set of ways with which they learn best. Univ. Utah, Learning Styles[6]

5 Learning styles and study skills follow the yellow brick road to success:

5.1 The Right Attitude:

All students taking medical sciences courses worldwide experience these same difficulties and obstacles you will encounter in this program. This happens in all the fields of the medical profession. Students have managed to be successful in the medical profession by:

5.1.1 Vow to change your method if necessary

Realizing that their current learning and study skills are not compatible with the learning requirements to be successful in their programs and changing these previous skills immediately for ones that will maximize learning long-term (active learning).

Following learning strategies that allows them to be more efficient in their own learning style.

5.1.2 Attitude is everything

Coming to class with a positive and alert mind set stimulates your brain into learning the class material. Stress hinders learning and causes you to lose interest and focus. Regardless of how effective an instructor may or may not be no instructor can ultimately teach you anything if the student's right attitude and desire to learn are missing. Lack of proper attitude and desire to learn prevents the student from actively engaging

[3] http://www.nccpa.net/
[4] http://meded.ucsd.edu/ugme/oess/study_skills/active_studying/
[5] http://meded.ucsd.edu/ugme/oess/study_skills/active_studying/
[6] http://medicine.utah.edu/learningresources/tools/styles/index.htm

in the course, and being responsible for their own learning. Don't fight the problem. You will not be able to change what students must be taught. Relax, have fun, enjoy learning.

5.1.3 Everyone is different

Learning styles, educational background and study skills are personal skills. What works best for one person, may not work for others. No single teaching style can accommodate all learning styles either. Regardless of how many instructors you have in an entire cycle or program, learning begins when the students give their 100% effort. "We ain't gonna learn you nothin', you gotta do it."

5.1.4 Don't believe everything you hear

Forget what you may have heard about the difficulty of a course or the personality of an instructor. Remember that many such comments originate with people not prepared or organized to do the work. Do not let those negative comments hinder your own individual performance or become an obstacle to your success in the program.

5.1.5 Never, never, never give up

No matter how hard or complicated a course is, do not give up that easily. Persistence and determination help you overcome difficult concepts necessary to build your educational background and allow you to be flexible enough to adjust your study skills facilitating learning over time. Persistence, determination and hard work allow you to turn the negative outcomes into positives ones. Your hard work will determine the outcome of your overall success.

We sometimes try to encourage students and tell them this is easy. "Don't be discouraged, this is easy. You can do this!" I have been surprised to learn some students thought they were being mocked. Everything is easy when you know how and you do the work. Nothing worthwhile comes without a price. If you are willing to pay the price, you will be able to do this.

6 How To Win

- Develop a good study cycle that works well with your own individual learning style and educational background:
- DO NOT USE MATERIAL FROM PREVIOUS CYCLES. TEST QUESTIONS AND OBJECTIVES MAY NOT BE THE SAME. This is passive learning and may prevent you from developing proper study skills to succeed in the program. Using outdated information is one way to get lower performance scores on the tests.
- Do not procrastinate or get behind your course materials. Procrastination in medical school is a sure way to fail.
- Everyone has 24 hours days. Use the time wisely to study on a regular basis. Depending on educational background, it may take some time, effort and hard work to learn the concepts. It may appear hard, but it is not difficult or impossible to learn. Develop a weekly schedule and stick to it.
- Preview the course material (Skimming)
- Before day 1, start reading or skimming the assigned lecture material to get a general idea of the topic for discussion. Don't wait for the first meeting. Coming to class without reading or skimming the lecture material will cause you to be lost, confused and unclear about what kind of questions to ask during the lecture presentation and class discussion.
- Do not fall behind in reading the course material. Read ahead as often as you can. This would facilitate your understanding of the subject matter when the professor lectures on the topic.
- If there are sections that you do not understand in the textbooks or handouts, place a question mark on the margin.

- Sort out the information in the textbooks or handouts. Identify important sections (sections that catch your attention) versus less important sections.
- All lectures are posted in Blackboard to show color pictures. Check electronic material on blackboard before lecture. It is advisable to bring your laptops to every lecture to have access to the lecture material online.
- During lecture: The instructor's job is not to entertain or build self-esteem. It is to instruct students. This makes them the best mentors. Instructors are very good at what they do and have been successful not only in their schooling but also careers. They can help you succeed. Follow their guidance and work closely with them.
- Medical courses have to meet specific content standards. These content standards require that many concepts, topics and main points be presented in a particular subject. Lectures are designed to present multiple concepts, topics and main points in a logical sequence over a specified period of time. Previewing the lecture material before class will facilitate following and understanding the concepts, topics and main points presented in a lecture.
- Learning requires listening. Listening requires not only hearing what people are saying but also understanding what they are saying. Effective listening skills are not about you tend to hear, what you want to hear or taking sentences, phrases or words of context without full comprehension of the subject.
  - Learning by Listening (Dartmouth, Taking Lecture and Class Notes[7]
  - Ten Bad Listening Habits (Dartmouth, Ten Bad Listening Habits[8]
  - Eight habits which differentiate non-effective and effective listening (Utah State, Effective vs. Non-effective Listening[9]
  - Effective Listening (Education Atlas, Effective Listening[10]

Use a notebook or your laptop to write down key/main points of the lecture. Use these notes as a rough draft or outline to study from later.

- Taking Lecture Notes (Dartmouth, Taking Notes[11]
- The Cornell Note Taking System (Dartmouth, Cornell Notes[12]
- Taking Notes for Others (Dartmouth, Taking Notes for Others[13]
- Improving your note-taking (Education Atlas, Improving Your Note Taking[14]

7 Questions, the bane of student existence

- Questions from students are welcomed. Questions asked during lecture benefit everyone. Your questions can help instructors determine if they are being understood.
  - Ask questions while writing down your own notes.
  - Ask questions about sections that have a question mark after previewing textbook or handouts.
  - Ask specific questions about a key concept covered in lecture.
  - Ask questions during or after class directly to the instructor. Don't ask your neighbor. Your neighbor slept through it all.
- When answering questions in class, try to use your own words rather than reading sentences out of the textbooks or handouts. We wrote that material. We remember what we said. Reading it back doesn't help anyone. Test your understanding by trying to repeat the content as you know it now. Remember,

[7] http://www.dartmouth.edu/~acskills/success/notes.html
[8] http://www.dartmouth.edu/~acskills/success/notes.html
[9] http://www.usu.edu/arc/idea_sheets/listening.cfm
[10] http://www.educationatlas.com/listening-in-class.html
[11] http://www.dartmouth.edu/~acskills/success/notes.html
[12] http://www.dartmouth.edu/~acskills/success/notes.html
[13] http://www.dartmouth.edu/~acskills/success/notes.html
[14] http://www.educationatlas.com/taking-notes-in-class.html

there are not right or wrong answers here. This is practice. You are learning either way from both correct and incorrect answers. This will be helpful in understanding the material.
- Don't ask the instructors about the content of a test. These types of questions, such as what kind of questions are you going to ask, what kind of choices for this question, or what are the answers to the test, are highly unethical. Instructors MUST NOT answer any of them. We can't tell you what we are going to ask.

8 After lecture

- Study the material after lecture. Students begin to forget about 50% of the material learned in lecture after 24 hours.
- Find a suitable place to study. Remove all distractions so you can focus and concentrate on the material you are reviewing and studying.
- Finding A Good Place to Study (Education Atlas, Finding a Good Place To Study[15]
- How to Develop Better Concentration While Studying To build knowledge, you must read to understand and comprehend assigned class readings and handouts. Sort out important versus irrelevant material based on the testable objectives and class discussion of key points.
- A Strategy for Reading Textbooks (Education Atlas, A Strategy For Reading Textbooks[16]
- Improving Reading Comprehension (Education Atlas, Improving ReadingComprehension[17]
- Guidelines for Increasing Reading Speed and Effectiveness
- Depending on educational background and your own individual learning style, it is expected that you use other resources to enhance your own learning style. Your level of educational background will determine how much effort and hard work will be needed to be successful in a particular course as well as the program.
- Take learning objectives for each course and write your own study guide based on your own individual style.
- By writing things down, your brain will remember important details and it will be easier for you to understand abstract concepts. Keep study guide simple and well organized.

9 Borrowing Notes

- Borrowing notes from others will not help. It reinforces memorization without understanding the meaning (passive learning). Everyone learns differently.
- Consequences of borrowing notes: These notes do not guarantee what you need to know for the test it is fully covered or have the specific meaning intended. As a result a student may get lower scores in a test due to lack of preparation.
- A student with a strong background may chose to skip known material and only covered the material that he may be unfamiliar with to maximize his own individual learning style.
- Notes may be written based on individual interpretations of what one person think it is, rather than the actual meaning given in the lecture (proper context).

Develop tables, outlines or branching formats to compare or expand the concepts in the learning objectives.

The images printed in your handouts or textbooks have been selected as the best representatives to understand processes. Concepts from these images are testable. Redraw these images on paper to retain a visual image of the process in your mind. You can also look at the illustration and try to recall the entire process. If you cannot summarize a process in a picture or recall what you know about the topic without looking at your notes, ask for help.

[15] http://www.educationatlas.com/find-a-good-place-to-study.html
[16] http://www.educationatlas.com/strategy-for-reading-textbooks.html
[17] http://www.educationatlas.com/reading-comprehension.html

Avoid memorization of bullet points unless you can expand and explain them.

Revise and evaluate your own study guide. Add main points that are missing from your lecture notes and assigned readings.

Review your notes on a daily basis.

Challenge yourself when reviewing the material by stating what you know and ask what you are missing. Try this as telling a story (memory recall) using your own words.

Principles of Memory Recall Improving Your Memory for Information (Education Atlas, Improving Your Memory for Information[18]

At the end of the day, get 8 hours of sleep daily. The study cycle:

Listening skills and note-taking. Preview, Read and Recall Study Cycle Tasks of Preview, Read and Recall

10 Preparing for Tests

Do not cram. Studying 24 to 72 hours before a test is an easy way to fail or get low scores in the course. The material will also seem overwhelming to learn. This will cause mental block (The equivalent of being hit by a tsunami).

How to prepare for a test? Two key concepts to prepare for a test:

Levels of Learning:

Use the Bloom's Taxonomy Model Questions and Key Words to create questions to challenge your knowledge of the material.

Model questions and key words:

11 Study Groups

- Study groups are useful for reviewing the material and challenging your knowledge after you have learned. Everyone learns differently.
- Review and compare lecture notes and study guides with group members.
- Challenge each other when reviewing the material by stating what you know and ask what you are missing. Try this as telling a story (memory recall) using your own words.
- Challenge group members to explain in their own words assigned illustrations in the lecture.
- Use the Bloom's Taxonomy Model Questions and Key Words to create questions to challenge your group members.
- Study Groups (Education Atlas, Study Groups[19]

12 Comparison of Learning Styles and Study Skills

13 References:

Here are some useful websites to get more information about study skills for the medical sciences:

- http://www.kumc.edu/som/medsos/ss.html[20]
- http://meded.ucsd.edu/ugme/oess/study_skills/active_studying/ [21]
- http://hsc.unm.edu/SOM/excellence/Learning_Strat.shtml[22]
- http://www.utexas.edu/student/utlc/learning_resources/[23]

[18] http://www.educationatlas.com/remembering-information.html
[19] http://www.educationatlas.com/study-groups.html
[20] http://www.kumc.edu/som/medsos/ss.html
[21] http://meded.ucsd.edu/ugme/oess/study_skills/active_studying/
[22] http://hsc.unm.edu/SOM/excellence/Learning_Strat.shtml
[23] http://www.utexas.edu/student/utlc/learning_resources/

- http://medicine.utah.edu/learningresources/tools/styles/index.htm[24]
- http://www.dartmouth.edu/~acskills/success/notes.html[25]
- http://www.visualbeing.com/2005/07/08/forget-what-youve-heard-about-remembering/[26] Forget what you've heard about remembering

[24] http://medicine.utah.edu/learningresources/tools/styles/index.htm
[25] http://www.dartmouth.edu/~acskills/success/notes.html
[26] http://www.visualbeing.com/2005/07/08/forget-what-youve-heard-about-remembering/