

Study Skills Guide

--A work in progress--

Produced by the
Learning Resource Center



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Introduction

All Students have varying degrees of competency in study skills when they arrive at college. While the demands of college life, over time, enhance these skills, students traditionally have little knowledge of how to study properly, effectively, and efficiently. In the mission statement of Butler University it states that we are committed to the “highest ideals in student learning”, and with this in mind we have written assembled this Study Skills Guide. This text has been developed to assist students that are enrolled in PE101 or Study Skills Seminars offered by the Learning Resource Center; furthermore, it will provide you with the tools to effectively study and retain knowledge as you proceed through your undergraduate career at Butler University.

Study skills are not always a natural component in our acquisition and retention of knowledge. Rather, study skills are tools we develop and use when we attempt to process and retain information. In addition, just as eating well, exercise, and personal hygiene are a way of life, understanding and using good study skills should be part of any student’s regimen for success. For example, an athlete would not go into a game with out the proper skills or knowledge necessary to compete; likewise, as a student, study skills are your tools to make you a competitive and effective student, for life!

Unfortunately well-honed study skills are not always thoroughly developed in the high school curriculums; however, like any activity, mental or physical, study skills can be acquired and practiced to the point of mastery.

As you read through this text look for core concepts in each chapter. You will quickly notice that the learning involves diligence, commitment, and that it is not just an event but also a process you must go through to acquire understanding. Furthermore, note how the chapters relate to each other conceptually, and pay close attention to the repetition of certain phrases like “Recency, Frequency, and Depth of Processing”. These phrases are not only tools to guide you through your undergraduate work, but they are also major skills that will contribute to life-long learning.

-LRC Staff

Seven Attitudes to Bring to Learning

Through your career at Butler University it is essential that you develop and understand the concept of **continuous life-long learning**. Continuous life-long learning is the process of developing intellectually in and beyond your undergraduate experience. Being effective at this task requires that you bring certain “attitudes” to the process, and in this section we are going to discuss what those attitudes are, and how they will aid you in life-long learning.

Being successful at your roles in life (i.e. student, employee, employer, parent, friend, and etc) means that you must have the ability to adapt and adjust to new information as it is presented. Just as your parents and older generations have had to change their way of thinking as burgeoning technological advancements of our society have infiltrated our personal lives, you too will face challenges and changes that are not within your foresight. For example, it was only 5 years ago when Butler wired the entire campus for PC usage in every room. This idea was incredibly remote to students even in the early 1990’s. Change creates an opportunity to learn, and although it may not be easy, it does not necessarily have to be painful either. We have identified Seven Attitudes that will assist you in the process of changing and learning.

The 7 Attitudes:

1. **Beginner’s Mind:** Always bring freshness when approaching new situations. Observe the old and the new as if you were seeing them for the first time. Breaking down old paradigms will give you inspiration and make learning a tolerable and enjoyable experience.
2. **Non-Judging:** avoid preconceived notions and biases. Remember, having a critical eye means being rational and thoughtful, not petty, predictably reactive, or fault-finding. Judgments impair your ability to make reasonable, equitable, and intelligent decisions.
3. **Acceptance:** engage “doing” mode by moving forward. Understand that there are things that are incapable of change; moving past them allows for creative solutions. For example, accept the fact that your term paper is due on Monday and get going with the research if you haven’t started. Brooding over your plight will lead to exacerbation and procrastination.
4. **Patience:** is a virtue. Remind yourself that it takes time to succeed. Allow things to unfold in their own time while keeping things in the present. “Don’t push the river” (*Tao de Ching*). Nothing positive comes from losing your patience. Inevitably, there will be assignments or materials that will be difficult for you to understand, and having patience will help you through these difficult times.
5. **Trust:** Let yourself trust others without abdicating personal responsibility. Understand that most people (instructors, family, friends, and even strangers) have

positive intentions, and placing trust in these people can help you excel. Trust your own instincts to do the right thing.

“Learn from the mistakes of others – you can never live long enough to make them all yourself”

-JOHN LUTHER

6. **Letting Go:** YOU CANNOT CHANGE THE PAST! Forgive yourself and forgive others so you can move on to new challenges. Obsessing over a less-than desirable grade or a nasty argument with a friend will impair your ability to improve yourself and move onward. Everyone makes mistakes, successful students will learn from their mistakes. Letting Go is different from Acceptance in terms of time. Acceptance refers to present circumstances whereas Letting Go refers to mistakes in the past.

“When we begin to take our failures non-seriously, it means we are ceasing to be afraid of them. It is of immense importance to learn to laugh at ourselves.”

-KATHERINE MANSFIELD

7. **Self-Directed Compassion:** always doing your best will never fail you, but it will not always result in perfections. Give your best effort; if this is not enough, re-evaluate the situation and change your approach. Being conscious of your emotions and feelings can help you tackle bigger and more difficult obstacles

Discussion Topics:

1. Which of the 7 Attitudes do you find easy to employ? Which do you find most difficult to employ?
2. Would you like someone in your life to look at you with a Beginner’s Mind?
3. Are these attitudes intuitive, or must we put effort into behaving this way?
4. Is there any situation where these attitudes will harm you?
5. Do you know someone who has all of these attitudes, most of these attitudes?

Memory

“Memories, at the corner of my mind...”

How do we make memories? A discussion about study skills is fruitless without a clear understanding of how we acquire and retrieve information (memories) from our brains. Your memory is essential in the process of learning, and in this section we will discuss how we create memories, how we store and process memories and finally, how we retain and retrieve those memories.

Imagine your mind as a complex three-dimensional mesh of electrical connections. Each electrical pulse (a thought) transmitted through the mesh will take a very distinct path to create a memory. You can think of this path as a road map, or directions, to that memory. As paths cross and connect with each other, so do your memories of people, places, events, and information. There are things that you can do to enhance the how these memories are created, retained, and retrieved; however, there are also many things you can do to prevent these memories from forming.

We will start with the **Computational Theory of Mind**. This theory postulates that there are three processes that everyone goes through to create a memory: **Perception, Encoding, and Retention & Retrieval**. Now let us take a closer look at each one.

“Johnny 5 need input” – *Short Circuit*

Perceive

Your innate ability to absorb information is **perception**. Right now your brain is receiving input visually (words on this page), audibly (hum of the lights, voices in the background), tangibly (a pen in your hand, soft carpet under you feet), etc. Or you feel bored and tired from all this studying. Through all of your senses you can acquire specific knowledge about your surroundings. At any given moment you may be processing something through hearing, smelling, tasting, touching, or seeing. Although our five senses come naturally to most of us, there are associated impediments that block our ability to process new information. These blocks include the following:

-**Concentration:** Ugh, this is the worst class to have after lunch, I can’t stay awake! Having trouble staying awake during lecture? It could be that you’re tired from a heavy lunch or a late night. Or it could be due to your limited ability to concentrate on a single object for a given amount of time. A lack of concentration impedes your ability to process information and create memories. But the truth is our minds are not designed for long-term concentration. Why is it that you have to continually blink and refocus when looking at an object? Go ahead, try it. Look at these words without blinking and see what happens. First, your eyes get dry, and secondly, the words get blurry because your mind loses that

visual hold. You can improve your concentration, like cardiovascular training, through meditation and breathing exercises. So you can endure the mental anguish of that soporific lecture, try focusing on your breathing for just 2 minutes, 5 times/day. This will improve your concentration as well as relieve stress. Don't let concentration be the thing blocking you from perceiving input.

-Attention: is the game of concentration. Humans have two types of process: Automatic and Controlled. Ever driven for several minutes and not remembered anything about the route you took? If so, then your driving at that time was an automatic process. Because you've been driving for so long, you dangerously pay little attention until something out of the ordinary occurs, like flashing red and blue lights in your mirror.

Pretend you're now driving on an unfamiliar country road in the middle of Redneckville. Now you pay close attention to the road because of deer, unexpected curves, and disheveled guys with shotguns and two teeth. This is known as a controlled process because you're paying close attention to your actions and surroundings.

Reading should NOT be an automatic process. Driving can become automatic, but should definitely NOT be for safety's sake. Reading a text book needs to be a controlled process. Otherwise, you will read words and not remember a blessed thing once you've reached the end of the paragraph. (See **Reading**) Only under a controlled process can your mind make memories because you're paying attention. You cannot make memories under an automatic process because you're NOT paying attention. This is the impeding part to your perception of information.

-Interference: There will always be instances where your perception is blocked or distracted. Interference can be self-imposed; for instance, when you choose to study for a class while trying to watch your favorite TV show. Interference can also be involuntary, for example, when you find a nice quiet place to study and then a rude person breaks the quiescence when they flip open their cell phone.

Interference can also be caused when you're trying to do two controlled processes simultaneously, such as driving a car while talking on a cell phone. Both a conversation and driving require the controlled process of attention, and therefore should be mutually exclusive or else one of the actions is compromised.

-Neurological Damage: an unfortunate result of a developmental disability, through a traumatizing accident, or through the abuse of drugs and alcohol. Neurological damage is an unnecessary and, in some cases, unavoidable impediment to your ability to perceive input.

Encode

Now that you've brought information into your head, the next step is to keep it there so it doesn't fly out the opposite ear. This involves **Encoding**.

The information we process falls into two categories: learning **skills** and learning **information**. Each category requires you to take different steps to encode and understand the information you are learning. In the following section we will discuss the difference between these two categories and explain the processes in both.

Learning Skills in three stages

- Cognitive (mechanical):* In this stage of learning a skill you are merely committing facts to memory and rehearsing those facts. This is similar to memorizing a theorem or equation. (i.e. the Pythagorean Theorem- $a^2 + b^2 = c^2$ – that you learned in high school algebra).
- Associative (functional):* This stage involves chunking and error elimination. Here you learn how to use the Pythagorean Theorem – in a blatantly obvious problem. This is the point where high school stops.
- Autonomous (communicative):* The abstract jump. At this point you tune, problem solve, and transfer skills. The Pythagorean Theorem is used in application to solve a real-life problem where you dig through the “tools” in your tool box for the correct “tool”; in this case, it's the Pythagorean Theorem.

Learning Information through Elaborative Processing:

- Reciting requires you to repeat what you have learned either through notes or verbal recitation.
- Visual imaging is the act of associating an image (map, drawing, picture, chart, or etc) with what you are trying to learn. Imaging is very helpful in complex subjects where recitation may leave you confused.
- Metacognition is confirming with yourself that you understand what is going on. Do you understand what you are learning so well that you can explain it to others?
- Deduction: With deduction you are developing analogies that will help you learn and recall information. This is where you can use metaphors and similes to relate what you have learned previously to what you are trying to learn now. You may also use schemas (things) and scripts (events & scenarios) to develop an understanding of the information.

Retain and Retrieve

Retention and Retrieval can be the most critical challenge in the Computational Theory of Mind. If you cannot retain and retrieve knowledge that you have acquired, then it does you no good to acquire knowledge at all. In this section we will discuss the mechanics of retention and retrieval, and also offer you the three most important concepts you will ever know with regards to learning: **RECENCY, FREQUENCY, and DEPTH OF PROCESSING**.

Retention: Retaining information is essential in your career at college and is also an integral part in making you an educated member of society. Retaining knowledge does not come without effort, however. In fact, by understanding three concepts – recency, frequency, and depth of processing – you

will be well on your way to retaining any information you wish.

- **Recency:** When was the last time you reviewed your notes for your toughest class? Do you review them every day? Twice a day? These are the questions you should consider when you desire to remember skills or information. You must practice what you desire to learn, and how recently you have practiced makes an incredible difference in your ability to recall information.
- **Frequency:** As a professional athlete, one must practice and perform drills EVERY DAY! Likewise, as a successful student you must also practice every day. Reviewing your notes, quizzes, and previous tests frequently is essential in your quest to remember information.
- **Depth of Processing:** Everything you learn is related to something you have learned before or something you will learn in the future. Your ability to link these things together and build on previous knowledge is your depth of processing. This step allows you to retain certain information longer.

Retrieval: Simply put, retrieval is your ability to recall information that you have restored and retained. As with perceiving and encoding, there are activities that can help you retrieve information, and other activities that impede your ability to retrieve information.

Impediments—

- **Decay:** The longer stored information is stored, the more difficult it will be to retrieve. The pathway/map to the information can be re-established when a thought is triggered. Keep in mind that you NEVER LOSE information, it just falls below the threshold to recall it. Therefore, even though you *think* that you forgot your high school Chemistry class, if you were to retake it, you would perform better because you have already learned the information.
- **Interference:** Pre-existing memories can also interfere with your ability to retrieve information. For instance, when you are trying to think of the name of an actor/actress and although you can see their face, you continue to think of the wrong name. Finally, new information can interfere with retrieval of information in the same manner that pre-existing memories interfere with retrieval of new information.

The bulk of our discussion so far has been concerned with Learning and Forgetting. Specifically, what you must do as a student to acquire and retrieve information. Sometimes, in addition to remembering information, it is also important to remember it quickly. For example, recalling information for a test would require a certain quickness of memory. Recalling information quickly means increasing the activation strength of that information. Activation strength is how fresh a particular memory, relationship, or series of memories is in

your mind. For instance, if I were to ask you what the “BILL” meant to you, you could reasonably respond any number of ways. These could include “Bill Clinton”, “Bill (my uncle)”, “Duck Bill”, “Pay Bills”, or “To pass a Bill through legislation”. Depending on your particular activation strength for any of these topics you may relate the word “BILL” to any one of them.

To illustrate how recency and frequency correlate with the following adages:

- Use it or lose it
- Practice make perfect

The following graphs further illustrate the affect that recency and frequency have on your activation strength and memory:

Discussion Topics:

1. What are some ways we deteriorate our ability to remember things.
2. How can strengthening your memory benefit you?
3. Is it easier to remember some things rather than others?
4. Can we create memories of events that we haven't necessarily experienced?
5. How does our memory and the “road map” concept relate to processes like brainstorming and problem solving?

Reading: PQ4R

“Reading furnishes our mind only with materials of knowledge; it is thinking that makes what we read ours.”
– John Locke

Read with a plan. Why are you reading about reading? Well, if you are reading this section merely to complete it, then you will not glean much from it and you’re wasting time. But if your plan is to get a boost in your reading efficiency and effectiveness, then you’re not wasting your time. Of course, you will also complete it, and with more intentionality. Whether you’re reading a nap-inducing text book or an adventurous novel it can be difficult to pay attention if your “head’s not in the game”, as your high school football coach would say. Usually we read haphazardly and lack any kind of organization or deliberate effort. Such reading is sufficient for high school where successful regurgitation of material was key, but college reading involves more application, and with it, comprehension. Recognizing this cold-shower fact means you must read for understanding. College reading assignments are long, complex, and require deep understanding. It is necessary for you (qua student) to have a comprehensive and systematic reading approach to effectively aid your studying.

PQ4R is a reading technique that is proven to enhance your comprehension and improve your retention of any reading material. **PQ4R** stands for **P**review, **Q**uestion, **R**ead, **R**eflect, **R**ecite, and **R**evise. Notice how Memory and Reading coincide. For instance, *reciting* is emphasized as an important method in both sections as a valuable tool for retaining valuable information.

Preview: Like viewing the trailer to a movie, reading the headlines of today’s newspaper, and looking at the pictures in Cosmo, previewing sets the stage in your mind to prepare you for the content. Notice the visual pop outs: table of contents, **bold** titles, subtitles, pictures, diagrams, summaries, etc.

Question: While previewing, formulate questions that you would like answered as you read. In doing so, you will establish a purpose for reading – read with a plan. For example, before reading this chapter you could have asked, “What is PQ4R and how will it compare to my current reading style?”

Read: Now dive! To read for understanding is a thoughtful process that requires concentration. Have you ever reached the end of a section and had no recollection of what you just read? Gone on a mini-vacation? This is a common occurrence. Suggestion: Read actively. Search for the information that *looks* important and answers your questions. Take small “bites”. Read each section carefully, looking for key statements and the main idea, then make mental or physical notes about that section (**Reflection**). If you think a section will take 4 hours to read, then break it up and rest

your mind with a 5-10minute breather after a subsection/chapter, or after a an hour of steady reading. Disregard the speed at which you read; your goal is to understand the material. If you are the first to finish reading and are unable to write a brief synopsis, you lose. However, avoid slogging through the mire of details on your first run-through. Instead, recognize the Big Picture and Main Idea. If you get stuck in minutiae, don’t fret; **Review** the material to sort details. Read for understanding because what you understand is what you remember. This strategy takes time initially, but it saves you from frantically cramming at the end of the semester.

Reflect: Are you intrigued, bouncing off the wall, flummoxed, or perturbed? How does this reading make you feel? Why? While reading, you will automatically feel the pain of characters in a story if you’ve been in a similar scenario. This is making a connection in your mind by relating this new information to what you know already and this connection will aid comprehension and retention..

Write while you read. Reflecting also entails **note taking**. Jot down notes in the margin or a rough outline on a sheet of paper; highlight, underline, etc. State the message of the section in your own words, translating the material into your own understanding. This aids in the elaborate process of memory.

Recite: Teaching is like learning twice. Approximately 1/3rd of your study time should be spent on self-recitation. Acting like the teacher is a sure fire way to reveal what you know and don’t know. Have a patient friend, stuffed animal, roommate, or mirror? With these people/objects practice the material out loud to reinforce your knowledge of the material. Don’t be shy; this is proven to be most effective in the retention of information. It digs a deeper ditch in your memory for the data. Go to GH108 and be the professor while your study group listens to you.

Review: Aaah, you’re finished; was it painful? Now, if you don’t want to cram this in your head the night before the exam, it is imperative that you review. Firstly, reviewing involves rewriting/reorganizing your notes from the reading (see Note Taking). Put them into a format YOU understand. Do this within 24 hours of reading. The fun doesn’t stop there, for reviewing is a recurrent process (Remember: Frequency, Recency, and Depth of Processing). This means that you want to make your notes easily accessible so that when you have a few minutes of down time (waiting for a friend at Starbucks), whip out your notes and refresh your memory. Also, set aside 30 minutes each night to simply review all material from your classes. Or, when you study new material for, say, biology glance at your previously taken notes to refresh your head, especially for a comprehensive subject such science where the material builds on itself.

“C’mon, we’ve got to get going; there’s so much time and so little to do!”
– Willy Wonka

Lacking Motivation? Sure, we all do when we’re saturated with projects, papers, and deadlines. When we have a plethora of commitments it’s hard to focus on just one thing at a time. Here are some suggestions:

-*Good grade.* Remind yourself that your diligence and perseverance will pay off with a good grade. This is external motivation. If it doesn’t, knowing that YOU gave it your best is enough to deem your work successful. Learn from it, let it go, and be self compassionate.

-*Bribe yourself.* Promise yourself a reward when you finish your assignment in the same way you reward a dog with a biscuit when it takes care of business outside. Watch an episode of your favorite TV show, talk on IM for 10 minutes, play videogames for 15 minutes; the fun ideas are endless. Just be watchful of your “fun” time.

“Concentration is essential to comprehension.”

–Ron Fry

Can’t Concentrate? Stolen concentration drags out your study time and exacerbates your frustration. Previously it was mentioned to Read Actively in order to stay focused, which you should do regardless, but these help too:

-*Eliminate distractions.* Are you near the computer?...around a group of friends?...at Starbucks? Find an optimum study environment that’s NOT conducive to socializing. Because reading is a solitary activity you should find the best place for YOU: in a quiet corner, in the library, in a random room in Jordan, or on the cement bulldog outside Atherton.

But don’t get too comfortable. Some people like to study on their bed or in a comfortable chair. This is cautioned against because, like a fact-crammed text book, these places are nap-inducing. If you find yourself dozing off to sleep change your location to an upright chair that’s less comfortable.

Your own thoughts getting in the way? Not only are we distracted by our physical surroundings, but our own thoughts can be equally, if not more, distracting. Like air particles bouncing around in a balloon, this mental pressure builds in our noggin when we have a fight with a friend, a huge test the next day, or just too much to conceivably do in general. To relieve this mental and emotional pressure it is helpful to briefly write down the issue followed by possible solutions. This deflates the balloon of hindering thoughts, which allows you to focus on what you’re currently studying by setting aside other issues for another time.

-*Exercise.* Burn your physical energy in order to direct your mental energy to reading. Plus, a healthy body is a healthy mind.

-*Plan breaks.* When your mind begins to wander off to Michael Jackson’s Neverland ranch, it’s time to step away. Come back after 5 minutes and/or work on something else for a while. In fact, marathon study sessions are NOT effective. Breaking up your reading into 3 half-hour chunks is more effective than one 1.5 hour chunk.

“Rate” your concentration:

1. When I read, do I often allow random thought to steal my focus?
2. As I read, am I easily distracted by noises or other activities?
3. Am I watching the clock to see how long I have been reading?

If you answer YES to the preceding questions, do not hesitate to employ the aforementioned suggestions.

Note taking

Does length really matter?

Firstly, it should be mentioned that there is no correct way to take notes. Notes are as personal to you as your personality. But just as sometimes you need an attitude adjustment, you may also need a note-taking adjustment. There is a plethora of helpful hints that you can gather from your professors, friends, and, heaven forbid, this study guide. And because note-taking is rarely taught or practiced, it's not a bad idea to be open to suggestions that will help you study better and, as a result, get better grades. Studies show that poor note taking leads to poor grades. So, who doesn't want the inside scoop on how to get a better grade?

Why take notes? Why not just absorb the information and remember it like a waiter at an up-scale restaurant? Well, in order to encode the information you must frequently review it in an effective manner. (Frequency, Recency, Depth of Processing – Memory). And that information must be well documented for your understanding. In other words, your notes must be clear, concise, and thorough or else studying for your test will be a freaking nightmare.

Now, here's the breakdown: **Lecture notes** (before, during, and after class), **Textbook notes**, and **Literature notes**. Most of your notes (qua Butler student) are most likely to be Lecture notes. Let's begin with helpful hints for taking notes during Lecture.

“He listens well who takes notes” – Dante (1265-1321)

Lecture notes

You're sitting in Dr. Steiner's Roman Civilization class and your neighbor is frantically scribbling every word while Dr. S. explains the adoption of the Christian faith into Roman society under Constantine in the 4th century AD as well as the events that led up to that point. Dates and names are coming at you like white dots in the Starfield Simulation screensaver and your neighbor can't keep up. Meanwhile you coolly record the main point: that this was a climacteric point in the history of ancient Rome. As you actively listen you understand *why* Dr. S. explained all of the surrounding info, which your neighbor scribbled down illegibly, and you know that the dates and names are in your book already. Why is your neighbor sweating to get it all down and you're not? A couple reasons: 1) he is ill-prepared for lecture and is insecurely uncertain of the main points in Dr. S's lecture. Or 2) he learns best when he gets it all down, but does not have good streamlining techniques that will help him get it quickly. Point being: There is no “right” way to taking notes for lecture. But, depending on how you learn, there are helpful hints that will improve your note-taking abilities. Let's break down lecture notes a bit further.

B4 Cls

Organize yourself – get a 3-ring binder and put all of your notes in it: **textbook notes** and handouts. It's easy to divide and insert your new notes, and to remove old ones.

Read text – stay a step ahead of your instructor. Know what parts of lecture to write and not write since you already know what's in the text, like the cool student in Dr. S's class.

Complete all assignments – do the assigned reading and homework *before* class begins. How can you participate without reading beforehand? You want to be able to evaluate the relative importance of the professor's remarks and be prepared for when the professor calls on you. It's a lousy feeling to know you'll be called on and not know the material at all. It pays to be prepared.

Review notes – you don't watch “Lord of the Rings – The Two Towers” without reminding yourself what happened in “The Fellowship of the Ring”. Remind yourself what happened in the previous lecture by skimming your notes; this builds a foundation for understanding new material that will be covered in the next lecture.

Have questions ready – be daring and ask questions when the professor fields them. Chances are you're not the only one with a question, but the only one with the courage to ask.

“The highest result of education is tolerance.” – Helen Keller

Dmg Cls

You may have a professor with an outfit that's just as tousled as his lecture, but you still have to process the information presented or else you risk failure. Yes, it's difficult to pay attention sometimes, but while you're woolgathering the unorganized professor may hit some important points. Concentration (see Memory) is the key to listening actively and consequently recording succinct notes.

Listen actively – Shut out competing thoughts like, “I wonder how many squirrels call Butler home and what their names are.” Listening involves voluntary concentration on what is being said, making sense of it, and thinking of it in a way that permits it to be easily recalled when you review (see Memory). By listening you pick out what you *should* write down. Here's how to bring rapt attention:

- a. **Sit near front of room** – the profs think that the best, most engaged students sit near the front. It's also less intimidating to ask questions b/c you can't see the other students looking at you, as they do when you sit in the back and ask a question.
- b. **Ask questions** – gauge when the prof will field questions and be the first to fire away. If you do it first, then others are likely to feel more comfortable to follow. You become personally engaged in the material, which will enhance your understanding.
- c. **Avoid distracting classmates** – some people find it more difficult than others to mentally leave high school; simply position yourself away from them.
- d. **Pick out verbal clues** such as:
 - o Pausing
 - o Repeating the same point
 - o Slowing down
 - o Speaking more loudly

- Phrases like, “don’t forget...”, “this will be on the test...”, “it’s important to remember that...”
- e. **Pick out nonverbal clues** – how something is said is sometimes more important than what is said. A tape recorder cannot record the prof’s nonverbal clues, such as:
 - Facial expressions – note to self: the prof’s eyes widen when she explains the life cycle of a fruit fly!
 - Gestures
 - Loudness

Streamline your note-taking – shorthand abilities will quicken your step in writing down notes. If you need to write close to everything the prof is saying, then you must write quickly to get it all. Here’s how:

- a. **Don’t write in complete sentences** – It’s okay to make a fragmented sentence. Remember, be succinct and quick; you can’t if you’re writing word-for-word what you hear.
- b. **Eliminate vowels** – like the Hebrew text, write only the consonants of most words save the obscure ones. If u cn rd ths, u cn tk qk nts.
- c. **Use word beginnings** – i.e. “mem” for memory, or “Con” for Constantine.
- d. **Forget the periods** – all of those periods add up
- e. **Use standard symbols** – here are just a few useful symbols that are often used:

Symbol	Meaning
≈	Approximately
w/	With
w/n	Within
w/o	Without
wh/	Which
→	Resulting in
←	As a result of/consequence of
+	And or also, in addition to
* or !!	Most importantly; Important
cf	Compare; in comparison, relation to
ff	Following
<	Less than
>	More than
=	The same as, equal to
↑	Increasing
↓	Decreasing
esp	Especially
Δ	Change
b/c	Because
i.e.	That is; that is to say
e.g.	For example
?	Question
	Therefore

Fill in the symbol for “Therefore” – it’s a 3-dotted triangle. MSWord can’t do it!

- f. **Create your own symbols and abbreviations** – whatever you can do to speed up the note-taking process, the better. Your objective is to listen and then quickly get it down.
- g. **Write small** – it’s quicker to write smaller; it reduces the amount of paper fumbling.

Record notes logically – you want to understand your notes in the most organized fashion. Here are a few hints:

- a. **Cornell method** – ever wondered why that red line exists on the left-hand side of your note paper? This is for margin notes. In the Cornell method, this red line divides main ideas (left column) from your regular notes (right column). Feel free to draw your own line for more room (≈ 1½ inches). The LEFT column, also called the “recall” column, is used to write notations that stimulate your thought, such as questions, key terms, hateful remarks, main ideas, etc. You can fill in this column while taking notes and when reviewing to make studying easier. The RIGHT column houses your regular notes, which are filled with headings, explanations, examples, and details. You know, just typical notes.
- b. **Date** – what if your friend missed a day and he wanted to see your notes? Um...what’d we do that day? Dating your notes will greatly boost your organization and help you find and compare notes more easily.
- c. **Question Mark “?”** – What did the prof say before his tangent? Put a “?” in the LEFT column where revision and further explanation are needed. Leave space to fill in that part after class.
- d. **Color usage** – how pretty! Use different **colored pens** to brighten up and divide topics, examples, etc. Use black for main headings and subheadings, and blue for examples and regular notes. Or, use green for one whole topic and red for another topic so they don’t run together. **Highlighters** are greatly stimulating to your vision. You may not have time to color during class, so do it while you’re reviewing; it’s just as effective.

Aftr Cls

Now put those succinct and fancy notes to good use. **Review ASAP after class!** Approximately 90% of new info is forgotten w/n 24hrs unless it’s reviewed. For 15-30 minutes after class, simply remind yourself of the material you just learned by rereading and reflecting on your notes. Break out the highlighters NOW. Don’t wait until the night before the test to look at your pretty notes again. If you do, you’ve wasted your time taking them in the first place.

Remember memory? – hm. You want to encode the info. (i.e. put it in a format that you understand). Then you want to retain the info and correctly retrieve it when the test

comes. Here are helpful hints to effectively hold your notes in your head:

Encode, Retain and Retrieve

- a. **Fill in the “blanks”**– with the info still fresh, it’s easy to recall the lecture and fill in the gaps where you missed something. If the instructor’s still around, ask them to help you fill in what you either missed or didn’t understand. It will also be helpful to draw diagrams and maps of the content in your notes to help you grasp a BIG picture of the material.
- b. **Compare your notes** – synchronize information with a friend from class to be sure you didn’t miss something.
- c. **Mark down key info in left column** – use the left column to jot down key terms, personal questions and possible test questions, ect. Write anything that will help you recall the lecture and fix info in your mind.
- d. **Reflect on Meaning of Lecture** – this is be used in conjunction with metacognition. Questions to ask: “Do my notes do a good job at representing what was presented in lecture?”; “Do I understand the key points and do they reflect the instructor’s presentation of them?”
- e. **Rewrite** – if illegible. Some portions of your notes may need a complete overhaul due to sloppiness or because you added info. If so, then it will be helpful to rewrite that section, not everything from lecture.

“Work smarter, not harder.” -Ron Fry

Textbook Notes and Literature Notes

Effective Note Taking skills should:

- help you reorganize the most important points of a text
- make it easier for you to understand those important points
- enhance your memory of the text
- provide a highly efficient way to study for exams.¹

Taking notes for expository texts is easier than lecture since the material is already organized for you. For Literature it’s not as easy since the topics aren’t so blatantly laid out. It’s best to organize the information you read for yourself. Reading it once will not make it stick as well, but taking notes in addition to reading will ensure you remember. Here are some suggestions as to how you can study your text or other book without falling asleep (see **Reading**):

1. **Read first, then annotate** – put on your “read with a plan” shoes and run through the reading, double fistng a pen and highlighter. Use the reading techniques (see Reading), then take notes in Cornell format for the material that is pertinent to the test.
2. **Marginalia** – margin notes of a text book will help you find key points faster but don’t rely on these to

study, they can get unorganized and messy. They force you to reread the text and only make sense in context. After making the margin notes during your reading, be sure to record them in the notes that you make afterward.

3. **Integrate lecture and textbook notes** – remember that new 3-ring binder you bought at Staples? Well, put it to good use and insert your textbook notes with your lecture notes for a rockin’ good time.
4. **Flash cards** – ah yes, the portable flashcards. These are best utilized in subjects where you memorize small bits of information, such as foreign language vocabulary, formulas (math, physics, chemistry), or structures (organic chemistry). Best of all, you can stuff them in your pocket.
5. **Create a timeline** – horizontally or vertically, whichever works for you. Visually seeing how events relate to one another in time is much more effective than simply reading about it. It also puts events into context. Feel free to draw a BIG timeline on a blank sheet of paper.
6. **Draw a concept tree (a.k.a. Mapping)**– Visually seeing how concepts and characters relate is much more effective than reading about it. When possible, draw a diagram of your material and how the topics relate. This helps to encode information (See memory).

=====
Ask yourself the following:

- **What can I do before class to make my lecture notes efficient as possible?**
- **How can I take effective notes quickly during class?**
- **What annotating techniques can I employ that will help me remember my textbook?**

1. Fry, Ron. Ron Fry’s How To Study Program. Take Notes 2nd ed. Career Press. Copyright 1994.

Problem Solving: A general method

- *The process of generating alternatives to work on*

Two trains are headed towards each other, one traveling 30mph faster than the other. How long will it be before...

Ugh...not another trivial train problem. In real life the majority of problem solving occurs beyond abstract, often unrealistic situations found in math texts. We solve problems every day, such as the following. What do I wear today? How do I manage to study for my test and complete my paper in the same evening? These issues are more realistic than the trivial train problem, but regardless of their superficial difference, both problems fundamentally require the same thought process in order to find a solution.

The ability to champion problem solving is a learned skill that is valued by employers. No matter what you do in life, you can always count on having to solve problems; not everything comes with handy dandy instructions or a troubleshooting manual.

This section discusses a general method to solving problems. One caveat: there is no "magic bullet" when it comes to solving any problem. As with other topics in this text, the general method to problem solving is a systematic approach that will assist you with problems that blind side you with increased complexity and challenge.

This chapter discusses a comprehensive approach adopted from various sources, which all suggest the same basic plan. Engage yourself in the reading technique while going through this approach; that is, question how this procedure will assist you with your current predicament – whatever that may be.

"Problems are only opportunities in work clothes"

- Henry J. Kaiser, *Maxim*

Sample problem:

A fire had swept through a vast section of forest, and a ranger had rapidly assembled twenty-seven volunteer fire-fighters. He divided them into groups and, working quickly, gave each group a two-way radio.

"A helicopter will patrol the area," he announced. "If you get in trouble, radio the 'copter and it will pick you up." Then each team was instructed in the use of the radio.

Later, when the fire was extinguished, one of the groups (consisting of three men) was missing. After a 2-day search, their charred bodies were found in a valley¹.

Question: Why are these men dead?

Answer: *I don't know, let's figure it out...*

Step 1: So what's the problem?

Before jumping to conclusions and putting the cart before the horse, it's imperative that you cut out the excess fat and find the backbone of the problem – determine the primary unknown. This could be clearly stated in the question like in our fire scenario or math problem, or it may take some time, for it's not always easy to find the primary unknown in life's messier, ill-defined problems like stopping terrorism.

Next, you may recognize other parts to problems that need to be solved in order to find the primary unknown; these are the secondary and tertiary unknowns, depending on how many exist. These can be found when you proceed through the following: What do you want to know? What needs correcting? Sometimes defining the unknowns is the most difficult part, especially if it's not clearly asked in the end. In unclear problems you may sense something is wrong, but you're unable to be precise. You will know what answer(s) to seek with illustrations, simplification, and assumption. Consider the following:

-Illustrate the Problem - for our sample problem, this might be too graphic. But for other problems that are more visual, such as a ballistics problem in physics, it would be best to visually reproduce it in order to lay out the BIG picture.

- Can you draw the problem or unknown? – A map of the valley would be useful.
- Can you make a table?
- Is there anything about the problem that you can write out?

-Simplify - This step is crucial to cutting out the fat to expose the backbone of the problem. It's best to break the problem down into pieces with the following:

- Form questions around the problem. – What killed these men? Why weren't the men rescued?
- What is the initial set of facts? – Big fire. Helicopter patrolled area. Radio contact established. Missing 3 men found dead.
- What will assist you in solving it? – Any equations, theories, or common sense? Perhaps more information from other steps.
- Which parts of the problem appear to be most critical to finding a solution? – The fact that these men were not rescued.
- Is there some information that can be ignored due to irrelevancy or redundancy? – The fact that they were volunteer firefighters; that it was a 2-day search.
- Can you solve a secondary or tertiary unknown? – Are there things we need to find first before moving forward?

-Assume - Assumptions are necessary, say, in physics when we can assume gravity is 9.8m/s^2 , or that friction is actually taking place even though it doesn't say so in the problem.

- What assumptions must be made, if any? - Let's say there was no radio contact between the 3 men and the helicopter. But why? This can be our secondary unknown.
- Are they correct? – We'll see...

So, what exactly *is* the unknown problem in our sample problem?

Answer: *three men are unexpectedly dead. But why?*

Step 2: Analyze This

Now that we've gathered the facts they need to be mixed together. This is the Brainstorming portion where we need to find out as much about the situation as possible with the facts and assumptions in mind – what's their connection? The key to this step is being creative and thoughtful.

-Ask more detailed questions – find out as much as you can about the situation now that you've established the main question. Questions here include *what, when, where, who, why, to what extent, and how?*

- Where, when, and by whom were the men last seen?
- Did the helicopter crew receive a call from the men?
- Was this the only failure of the rescue plan, or were there other, more minor failures?
- Where and in what condition were the remains of the men (and radio) when found?
- Have there been similar failures of the rescue plan before?
- How can we prevent further accidents of this type?

-Work backward – start at the desired solution or goal and move away from the goal working backward. This works if you know what's at the end.

In our example we are working backwards like a detective case would. Knowing what happened in the end, we piece together the pieces between the beginning and end.

Academically speaking, since you know what classes are required for graduation, you can work backward to determine your schedule each year. Another example: Organic Chemistry synthesis. You know your final product, starting material, and reactants allowed. Work from the final product toward the starting material, it's easier.

-Consider the Opposite – sometimes it's easier to see what you're looking for when you see the opposite of the problem you're trying to solve. In our case, would the same problem occur if the men were not instructed on the use of the radio? For example, instead of defining "good mental health" try to define "bad mental health".

Draw relationships:

- Have you seen a similar problem before?
- Are there auxiliary problems that could lead you to your solution?
- Is there a theorem that could be useful?
- Can you restate the problem?
- Can you solve part of the problem?
- What definitions apply to the unknown? The problem?

-Use Analogies – comparisons between concepts or objects that are alike in some respects, but dissimilar in most others. Analogies take abstract concepts to concrete illustrations that are easier to understand. They help us gain additional insight to the problem at hand, and they may provide an alternative

framework for interpreting the information that is provided². For instance, we all are familiar with Forests Gump's analogy: "Life is like a box of chocolates, you never know what you're going to get". As you accumulate years in life this analogy will become clearer, for life is what happens to us when we are busy planning other things (John Lennon).

As a college student, you're so busy that you're backed up like a bad sewer. Or one who can't face the music may fold like a cheap card table. Silly analogies such as these bring the abstract and unfamiliar to concreteness and familiarity. They also help you to remember.

-The Abstract Jump – This is the *Autonomous* stage in memory (pg.3) where you're required to use the tools you've learned and make something with them. Many problems require you to make a connection between the given information and the solution. We call this the "abstract jump" and it can be a difficult leap without patience and thought. For example you know what the Pythagorean Theorem is, right? You can use this tool to solve a complicated math problem, which may not spell out for you what tools are needed. The abstract jump is to know what tools to use in application to "real" problems.

From our sample problem we attempt an abstract jump by keeping in mind what is known. Here we are feeling for a probable solution with clues that the ranger has gathered. Upon analyzing the situation, we learn the following:

- The helicopter crew said that they had not received a call from the three men
- The men were last seen walking over the crest of a hill, into the valley in which their bodies were later found.
- Another group of firefighters, trapped on a knoll by encircling flames, had radioed the helicopter and were rescued.
- None of the other firefighters needed rescuing
- During another fire, 9 months earlier, a team of firefighters had died in the flames; the helicopter had reported receiving no call for help; the bodies were found in a dry streambed between two hills.

-Another Perspective – Has someone ever said to you, "Well, (your name here), have you thought about it this way"? Try to put yourself in the problem. If it's a test question, look at it from the professor's perspective. On what topic or concept does the professor want to test your knowledge? In our sample problem picture yourself in the shoes of those who died. What could you be doing? Or the helicopter pilot...the ranger who is investigating the accident.

-Forget about it – Step away from the problem and come back later. The subconscious mind will hit you with a possible solution when you least expect it, such as when you're in the shower, driving, or studying another subject. Next we assess the Potential Solutions that may explain the failure of the rescue plan.

Step 3: Assess the Potential Solutions

Test the results of your brainstorming to see if they work. If you find that they don't work, go back to verify your facts and mix them together differently to conjure up another possibility.

From the information supplied in the Abstract Jump, we have come up with possible reasons as to why the men weren't rescued:

- (a) The men did not know how to operate the radio.
- (b) The members of the helicopter crew *did* receive a call for help, but said they didn't in order to hide their failure to rescue the men.
- (c) The radio signal was cut off by the crest of the hill and was never picked up by the helicopter's receiver.
- (d) The radio was defective, possibly from the heat.
- (e) The men panicked and were unable to radio for help.

Step 4: Test and Verify the Chosen Solution

Which of the possible solutions is the right one? Let's see. First, we compare the possible solutions with the facts generated in Step 1 and the analysis from Step 3. Whatchya thinkin'? If you're thinking the most probable solution is (c), then you're right on. "The radio signal was cut off..." This best fits all the facts and analyses: that no call for help was received; that the radio was found near the bodies; and that in the other incident, 9 months ago, the men perished in a similar location—between two hills. Why aren't the others as likely?

Going through these steps will range in time requirements; from 7 minutes for a small problem you're familiar with on a test to a few days for an issue you've faced in your personal life. The steps are designed to effectively solve problems, and not designed to jump directly to the conclusion. This is a difficulty most people face. This method will reduce your stress in conjuring up a feasible solution. Go ahead; try it on your next test or personal problem.

NOTE: all steps will not be used for every problem. Math problems and "real life" problems differ, and so would the exact steps.

Discussion Topics:

1. How did you decide to come to Butler University?
2. What problems do you face on a daily basis?
3. What alternative approaches have you used to successfully solve a problem?

1. Apps, Jerold W. Study Skills for Today's College Student. McGraw-Hill. 1990. 134 139.

2. Feldman, Robert S. Power Learning, Strategies for Success in College Life. 2nd Ed. McGraw-Hill. 2003. 293 297.

Test Taking

"What is the answer?...In that case, what is the question?"

- Gertrude Stein

Writer; reportedly her last words

Run away, run away!!! Tests have the mysterious ability to bring a human being to his knees with sweaty palms and knots in the stomach. That is, if you let it. You may approach the classroom the day of a test like a dog that knows it's in trouble – with its tail between its legs. Or you may approach the test without a care in the world and a slight grin on your face. How we approach a test depends on our confidence. And our confidence is dependent upon our feeling of preparation. How do you know if you are well prepared? If you don't feel confident, then you may still be nervous, despite being well prepared. Nervousness is also translated as test anxiety, and it's a common reaction to tests, which can be harmful.

We are all different in our test taking abilities. You may hear people say, "I'm not good at standardized tests", or "tests never reflect how much I learned". To an extent, the latter comment may be true in some instances. For the most part, however, tests level the playing field. Tests are a relatively objective way to measure what you've learned in comparison to what has been taught.

This section will point out helpful hints that will hopefully assist you in your future testing experiences.

Preparation

GERTRUDE: "Hey Fanny, how was your day?"

FANNY: "Oh my gosh, like, totally dreadful. I just studied for my biology test all day for, like, eight hours straight in the science library and I feel so unprepared".

GERTRUDE: "What?! You were in there all freakin' day?! I spent only two hours running through my notes. Is the test going to be that hard?"

FANNY: "I'm sooooo stressed about it, Trude. Like, I could kick myself for, like, not paying attention to that advice about studying and stuff."

GERTRUDE: "For real though, Fan. I greatly benefited from those helpful hints on how to study. Next time start to study from the get go instead of sacrificing your sanity with a crazed cramming marathon."

What Gertrude realizes is the advantage of getting a head-start in preparing for a test. She has avoided Fanny's plight by preparing for her test from the first day of class: incorporating good note-taking strategies, memory encoding techniques, and reading techniques, in addition to managing her time well.

When you read actively and review notes frequently you are studying for your test. Some students think that a test is floating by itself in space like a balloon that gets loose from a child at a carnival. Nope. In reality everything done within the course including attendance, listening skills, thorough notes, and homework are all integral parts of "studying" for your exam. Studying smarter, not harder will decrease your stress and increase your confidence.³

A few helpful hints to **STUDY SMARTER**:

- ☺ **Old tests.** Consider looking at old tests; that is, if your professor has reserved a few from previous years. They give you an idea of what your test will be about (i.e. format, kinds of questions, what kinds of

questions are preferred over others, and the how test is prepared).

- ☺ **Advice.** Find someone who had your professor in a previous semester for tips, hints, or warnings.
- ☺ **Eliminate.** Disregard material that you're convinced will not be on the test, but not without a cursory review of it first. This allows more time for you to concentrate on material that will be included.
- ☺ **Study Sheet.** Logically organize your studying with a list of clear objectives. This minimizes procrastination and gives you "jolts" of accomplishment as you check off each item. For example, your list can be the following: books to review, notes to review, specific topics, principles, ideas, and concepts to review, etc.¹

How to CRAM...if you absolutely have to:

Sometimes you will find yourself in the situation where you have no choice but to quickly force-feed yourself a month's, or worse, a semester's worth of material in one night. We've all done it at some point, for some reason. What is one to do if one wants to be at least marginally successful at cramming? Consider the following six steps:

1. **Get Real.** Okay, this is not the ideal predicament. But face the music and set yourself into "doing" mode. To brood about this will only make you miserable. Tell yourself you will never do this again and make the most of your situation at hand.¹
2. **Choose wisely.** Pick out the most important elements of the material and focus on these. It's better to know a lot about a little than a little about a lot. You can't learn it all when you cram.³
3. **Check it.** It's easy to panic and jump right in. Don't. Because you have limited time there's no better way to organize yourself than with a checklist of items to study. You'll save time and work faster.³
4. **Recite ad nauseam.** Pull out the stops for memory download because this is the big one. Recite, Recite, Recite. There is no other study technique that can burn facts into your brain faster than recitation. Use flashcards; use a mirror; or a fellow cramming companion.¹
5. **Chill.** Cramming can be stressful, and since you don't learn as much, it's easier to freeze and forget under exam pressure. Practice relaxation techniques that relieve test anxiety (See Test Anxiety section).³
6. **Sleep.** When you come to the point when you can't remember your name, you've reached study exhaustion. Give it up and get some sleep. Lack of sleep is stupid, for you can't function at all without it¹. According to recent research sleep can restore memories through a biological process, which stores and consolidates them in the brain's deep complex circuitry.⁴

Be mindful of the costs of cramming, for you greatly limit yourself. Cramming will NOT work if you have woolgathered through every lecture (assuming you attended them) and ignored all reading and homework assignments.

In addition, you are cheating yourself out of a true education. You're not learning if you're cramming. Instead, you are memorizing information that you will undoubtedly forget. This is

not efficient, especially for final exams. Ultimately, cramming is a waste of both your time and money.

Test Anxiety

FANNY: "Trude, my body is, like, shaking because of this test. I also put on, like, a double application of deodorant because I'm, like, scared that I'm gonna, like, sweat a lot. Oh my gosh, Trude, what if I, like, forget everything? I'm so dead.

GERTRUDE: "Fan, just relax. Don't be a spaz. Take some deep breaths and focus on what you know instead of what you don't know. This test isn't quite the end of the world.

Gertrude is right. The test is not the end of the world. We tend to place tests in a sacred hoop through which we must magically pass without popping or else it's all over. Bring it back to reality and put the test's "importance" into context by evaluating the exam. The following questions are helpful:

1. What material will the exam cover?
2. What percentage of my semester grade is based on this exam?
3. What kind of questions are on the exam?
4. How many of each type of question will be on exam?
5. How many points will be assigned to each type of question?³

You're not alone if your nerves go haywire over a test. Test anxiety comes in different shapes and sizes from a small feeling of butterflies to a severe case of physical sickness. There are three reactions in test anxiety: (1) Mental blockade reaction where the gates close to the info you need to access; (2) Physical reaction where you sweat, feel butterflies, or feel ill; (3) Both mental and physical reactions.

Here some ways to **combat insecure, nervous feelings:**

- ☺ **Study Early and Often.** Like our exemplary student Fanny, studying early and often will instill confidence and security about the material. This does not help you now if you are cramming, but it will help you the next time.
- ☺ **Practice Relaxation Techniques.** Anyone up for some **yoga**? Go to a **happy** place. **Run** around campus. Hey everyone, let's **meditate**! Rid your body of nervous energy and force it to harness the mental energy you possess. Taking **deep breaths** is the simplest of these techniques. (**Squeezing and relaxing muscles** while sitting in class helps). The idea is to relax your body by focusing your mind on one thing at the exclusion of everything else³. You will greatly increase your performance with an confident attitude than with a stressed attitude.
- ☺ **PRACTICE HOW YOU PLAY.** If your test is in GH108, go there to study and/or take a practice test. Put yourself in the location in which you learned the material; this will make for a faster recall of information (see Memory).
- ☺ **Avoid Other People.** Sometimes a cadre of students will gather in the hallway before a test to hammer out last minute details. Also, you may be asked, "How

much did you study for this test?” Avoid these situations like the plague. Your anxiety will only be fueled by this situation as you begin to wonder if you studied enough. You don’t want to second-guess your confidence of knowing the material.

- ☛ **Consider the Worst.** What’s the worst that can really happen? Fail test → Fail class → Lose scholarship → Kicked out of school → Live with parents the rest of your life → STOP the insanity! You may chuckle about the absurdity when you deduce the outcomes. The first deduction – failing a test – may be justified. Will you survive? Probably so. Just take the class again if you need to. The hard facts are rarely as bad as our worst fears. Facing your fears make them more manageable.¹
- ☛ **Get Professional Help.** If you find yourself withdrawn, having thoughts of death, depressed for several days, or feel hopeless, you’re not alone. These feelings are common for students. For young adults ages 15-25, suicide is the second leading cause of death¹. Visit the **Butler University counseling center** for help (940-9385). They also have helpful strategies to counter test anxiety.

6. **Watch Your Watch.** Pace yourself throughout each section. For instance, spend 10 minutes on each essay and 25 minutes on the short answer and multiple choice sections. If you don’t know an answer, move on and come back to it, for it may come to you by the end of the test.



Types of Tests

Essay

When taking essay tests, you’re in control. You’re not hampered with possible wrong answers that someone else has devised to confuse you like with multiple choice or true/false sections. This is the opportunity to strategically dump your knowledge.

Wording. Now it’s time to dump all that botanical information you know about Sporophytes and Gametophytes into one of Dr. Schmid’s essay questions. Get ready for a hand cramp! But wait. How are you to write about them? Pay special attention to KEY WORDS in the instructions on essays (circle, underline, or highlight them), for a misinterpretation of “compare and contrast” could send your grade south regardless of the lengthy, flowery writing that simply *explains* the two distinctly. The following KEY WORDS are commonly used to distinguish essay questions.

The BIG Day

You may now turn over your tests. This is the moment for which you’ve pined so long. Okay, perhaps not. But you’ve prepared yourself for this point. Taking a test is **90% preparation and 10% strategy**, which means that there is **no magic bullet to acing a test** without preparation. Here are some strategic moves that will increase your test-taking efficiency:

1. **Preview.** You don’t want to dive into the deep end without scanning the pool for sharks. Look over the test for **point distribution, types of questions and how many of each, “hard” vs. “easy” ones, etc.** Without previewing you may find a surprise essay at the end (shark) just as the prof collects the remaining exams.
2. **Dump Your Memory.** Unload those nagging equations, formulas, facts, ideas, etc. somewhere on the test so you don’t forget them later.
3. **Start Wherever.** For some it’s best to get the essays out of the way and work down to the easier questions. Others like to build upward from the Multiple Choice questions to the essays. The idea is to build confidence as you accomplish each portion of the test. If you do this by starting with the “smaller” questions, then go for it, and vice versa. But do not start at the beginning simply because it’s the beginning. Be strategic about it.
4. **Answer What You Surely Know.** Move through the test without stopping for 5 min. to deeply ponder a flummoxing question you don’t know. COME BACK to it after you answer the ones you *do* know.
5. **Look For Clues.** It’s difficult for the prof to make a test without providing scattered pieces of helpful information. In writing your essay you may forget the number of ATP produced in anaerobic respiration, and conveniently find the answer along with the enzymes involved in a multiple choice question. Be observant. Names, dates, terms, and other questions may spark your memory.

Analyze	Break into separate parts and discuss, examine, or interpret each part.
Compare	Identify and explain similarities of two or more things.
Contrast	Show differences. Set in opposition. ¹
Criticize	Judge and analyze, explaining what is right – and wrong – about a concept. ²
Define	Give the meaning within context of course
Describe	Give a detailed account. Make a picture with words. List characteristics, qualities, and parts. ¹
Discuss	Free to write about any conflict. Consider the pros and cons of an issue. Compare and contrast. ¹
Evaluate	Give an opinion (yours or expert) with support. Consider pros and cons of an issue. ^{1,2}
Explain	Make an idea or concept clear with clean, logical writing on how it is developed. Give reasons. ¹
Justify	Why can/is a concept supported? Use examples and other support. ²
Illustrate	Provide concrete examples and/or analogies. ¹
Prove	Convince reader of point with evidence and arguments. ²
State	Explain precisely. ¹ Assert or explain. ²
Summarize	Give brief, condensed account with conclusions. Leave out details. ¹
Trace	Show order of development for events with a history or time line. ^{1,2}

Organization. You’ve read the essay question and picked out the KEY WORDS, now what? The best thing to do is make an OUTLINE. Nothing fancy, just a brief listing of points upon which you would like to expound.

Subjectivity. Like it or not, essay tests are graded with a mix of objective and subjective analysis. Because of this it’s not only important to have all the facts straight, but it’s equally important to

have your writing under control as well. In other words, WRITE LEGIBLY. Sloppy, unorganized handwriting will certainly not help your grade.

Brevity. Avoid flowery filler sentences that do nothing but fill space. (e.g. “Mother Nature shines true beauty through the alternation of generations of the Sporophyte and gametophyte phases in great green mosses.”) How touching. Now what about comparing and contrasting in a BRIEF, CONCISE MANNER? (e.g. known as alternation of generations, diploid sporophyte and haploid gametophyte phases occur in all multicellular plants.”) There, that’s a pithier starter statement for an essay. Keep it brief and stick to the wording from the instructions.

Timing. If you find yourself short on time, WRITE SOMETHING. Do NOT leave an essay blank, for you can rack up partial credit with each piece of info. Make an OUTLINE of what you’re going to say. This will show the prof your intentions, which is better than showing you don’t know anything at all. Remember to watch your watch and stick to the time that you’ve allotted for each section.

Multiple Choice

Remember the elementary school notes you passed to the girl or boy you liked in class that went something like this: “Do you like me? Circle one – “YES” or “NO”. If you were sly, you opted to add your own answer to circle – “MAYBE”. This is the primitive form of a multiple choice question. Now you have more complicated choices and more pressure to get the right answer, but the thought process used to circle your answer is the same. Let’s take a look at that process.

Think Before You Peek. When you read “Do you like me?” you automatically thought of your answer before you looked at the choices given. You didn’t say, “Hm, I wonder what the right answer is.” You knew you had the “hots” for her/him and so you told yourself YES and then circled the corresponding answer provided.

When answering a multiple choice section on an exam, THINK FIRST what your answer will be, THEN LOOK at the contrived answers. With your own answer in mind, you are less likely to second-guess yourself and be thrown off by the multiple answers from which you’re asked to choose.

Use POE If You Don’t Know. If you don’t know the answer, then the previous suggestion is of no use. **The Process of Elimination helps you make the educated guess you desire!** There’s no harm in guessing strategically. Here are a few suggestions:

- 1. If two answers (i.e. words, phrases, quantities) are similar in nature, choose one of them.¹
- 2. If answers such as quantities cover a wide range, choose from the middle (e.g. 2, 5, 10, 100).¹
- 3. Be suspicious of answers that are obvious to a 2 year old.³
- 4. “All of the above” if you’re completely stumped.⁵

NOTE: the preceding suggestions are for guessing only, and **not** to be used as a substitute for studying.

Keep The First One. In response to the question “do you like me?”, it would be mean to circle “YES”, scribble it out, and then circle “NO”. You want to go with your first answer; if you can strongly prove otherwise; change your answer only if you are absolutely sure.

True/False

With only two choices from which to choose, the best odds of getting a right answer are in the T/F section (50-50). But what if you’re completely at a loss? You can increase your chances by guessing with these helpful hints in mind:

- 1. Answer those questions you know for sure.
- 2. Next, look for KEY WORDS. Absolute statements that contain “never”, “always”, or “none” are often false. Qualified statements that contain “usually” or “sometimes” are most often true.
- 3. If even a small piece of a statement is false, then the whole statement is deemed false.
- 4. If you have absolutely no clue about a statement, then MARK IT TRUE.
- 5. **Keep The First One.** (see above)

Matching

There are few “tricks” for matching questions, but there are techniques that may help you lessen confusion that may arise.

- 1. Read the **definition or phrase first** and then look for the corresponding answer. This reduces the amount of reading.
- 2. Mark those first about which you are certain.
- 3. Cross out items in both columns to organize yourself. This allows you to effectively use POE, unless an answer can be used more than once.

Life After The Test

YOU DID IT!!! Whew. Now that it’s over, relax and reward yourself with a movie, a good book, or some good friends who don’t have tests in the very near future.

Be sure to get a copy of your test with the CORRECTED answers for future reference (i.e. Final exam study, MCAT study, etc.)

Analyze your tests to plan how you might be better prepared the next time.

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Time Control

“Time moves quickly, but passes slowly.”

– ALICE WALKER, *The Color Purple*

How would you define time? Is it an object that can be seen, felt, smelled, heard, or tasted? We can see the effects of time on such things as our bodies, but we can't see time itself passing by as we would a train. Our modern culture defines time as “a nonspatial continuum that is measured in terms of events which succeed one another from past through present to future”.⁵ Because of time's abstract nature, multiple ancient civilizations had their own versions of time, which were visually represented in the form of calendars. For instance, in 46 BC the Roman astronomer, Sosigenes, was asked by Julius Caesar to develop a new calendar – the Julian calendar, which was further modified under Pope Gregory XIII and thus become the calendar we use today – the Gregorian calendar.⁸

One thing is for certain about our definition of time – it's an equal-opportunity employer. Time is equally given to everyone of creed, color, and continent no matter how it's measured. We are given in one year, twelve months; in one month, four weeks; in one week, seven days; in one day, twenty-four hours, etc. (infinitely). The accomplishments of great scientists such as DaVinci, Einstein, and Edison, entrepreneurs like Ford and Rockefeller, and philosophers like Plato and Sophocles were done in the same time allotments as you are given – 7-day weeks, 24-hour days. What great accomplishments (goals) would you like to achieve in your time? How will you achieve them? J.R.R. Tolkien's character, Gandalf, from the Lord of the Rings series says it best: “all we have to decide is what to do with the time that is given to us”.⁷ You have the time to do great things like other great minds, and accomplishing your goals starts with organizing your self and learning how to get the most out of this time given to you.

Many of you may have already decided what to do with the time given to you: obtain a successful career, own a nice home, establish a happy family. But how will you accomplish these goals? To step toward your career goal, you decided to go to college; toward your family goal, get involved or go to parties to meet someone special. Now it's up to you to control a balance between your given time allotments and with what you want and need to do in order to accomplish that dream job and obtain your dream spouse. Planning your life years ahead is all the more reason for you to plan for your life hours, days, weeks, months, and semesters ahead.

This section focuses on three aspects of controlling time:

- **Organization** – creating a big picture
- **Optimization** – making the most of your time
- **Procrastination** – combating the time-wasting temptation

“Dost thou love life, then do not squander time, for that's the stuff life is made of.”

– BENJAMIN FRANKLIN

Organization – the creation of a BIG picture

Earline has a myriad of commitments to which she must adhere, which begin to flood her memory at the first punch of the snooze button: *9am management quiz...go to library after class to find sources for philosophy paper; 2pm...go to mathlab for help on homework; 4pm ...meet with business class group for presentation practice; 6pm...work at front desk 'till 10pm; 10:30pm...meet for group study.* She has the nagging feeling that there's something missing from her memory-driven calendar, but she can't make it surface. Glancing at her alarm clock, she notices that it's turned off. Instead of hitting snooze she inadvertently shut off the alarm, which means that she now has only ten minutes to get up and out to class. As a result of having no time to look at the material beforehand, she goes into the quiz cold. Earline has been awake for less than thirty minutes and she's already behind schedule.

Have you experienced a day similar to this? Are you trying to balance everything in your head? The best way to “see” your calendar of events is to physically make one. If you keep everything locked in your head, and only in your head, then you run the risk of forgetting something. This is analogous to saving your term paper only on your computer's hard drive. If it's not saved elsewhere and your computer crashes, then your paper is lost.

The first step to getting organized is to see the BIG picture in a **three-part system**:

1. **Master Calendar** – semester breakdown
2. **Weekly Timetable** – weekly and daily schedule breakdown
3. **To Do List** – daily accomplishments/goals according to importance and urgency.

👁️ **A Master Calendar.** Start with this, the master calendar; it is a BIG calendar of the semester on which you record important dates for school and your personal life. Mark in pencil the days for tests, papers, vacations, weddings, meetings, etc. for the entire semester. For instance, you may use MS Outlook to print a page for each month of the semester, from August to December. Or you may use a calendar with cute puppies. Whatever the case, the master calendar will provide you with a **bird's eye view to keep you informed of what lies ahead.**

Use your **syllabi** to note assignments and test-dates on your **Master Calendar.**

The course syllabus is an important resource when you're looking for important dates to record on your Master Calendar – test-dates, assignment due-dates, etc. Too often students discard the syllabus or stuff it in the back of their notebook on the first day, never to look at it again. Unless you enjoy the challenge of not knowing what to expect from class,

then keep your syllabus handy. If the professor does not provide the dates of assignments, ask; they will have a general idea if they don't know the exact date.

“Our costliest expenditure is time.”

Theophrastus, quoted in Diognese Laertius' *Lives and Opinions of Eminent Philosophers*, tr. R.D. Hicks

☞ **A Weekly Timetable.** Now we zoom further to view just one week on your calendar. On a weekly schedule you see finer detail from your master calendar. Typically, your weekly schedule is determined over a week in advance. As a student you have blocked out class time, and other regular commitments, and fill in the space between these fixed commitments with things that suddenly or expectedly come up. To keep it all straight, record the details of your schedule for each day of that week, noting specific times and locations of prescheduled events and one-time commitments such as quizzes, exams, projects, talk with a friend, meeting with a professor, study table, etc.

A good example of a weekly timetable is the Gavel, Butler's customized agenda, which shows a layout of each week. Planners vary in their format; find one that works best for you.

☞ **A Daily To-Do List.**

To-Do List		Priority A - high B - med C - low
Date: _____	Item	
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		

Your to-do list is composed of small daily tasks that are minute compared to the overall Master Calendar.

Each day or every few days you will

have specific items, appointments, or duties of which you will need to be reminded. These are things for which you can not reasonably schedule a time. If you scheduled time in your weekly schedule for minute tasks such as “write a thank-you card” or to “call a friend” you would spend more time planning than doing, and be driven by a calendar 100% of the time.

A great way to stay on track with small items is with a To-Do List. On a small piece of paper jot down **tasks that you need to accomplish** on each day or within the next several days, such as starting your research, writing a thank-you card to a friend, or running an errand during lunch. You can also note an item's importance by marking a priority level to remind yourself of its urgency: **A** – most important, **B** – mildly important and **C** – least important.

This piece of paper can be placed inside your weekly timetable (e.g. Butler Gavel). It's the **best prevention for forgetfulness** and a great way to **stay on top of your game**.

Optimization – the way to get the most out of now

Excuse me, do you have a minute? Now that you can see a concrete schedule of events for the semester, would you like to see how you can get the most out of that time? Let's examine WHEN, WHERE, and HOW you can study to **get the most out of now**. Mark, circle, or highlight suggestions that will best work for you.

▷ *Make puddle jumps instead of large leaps – Sub-goals*

Your ultimate goal is a valuable force, like the goal “to be a doctor”, but it is remote as a college student; so vague and nebulous it will not empower you to get up every morning or to do every tedious task. To keep moving through everyday life you want to have **sub-goals**: intermediate steps toward your main objective. For instance, more immediate plans “to be a doctor” may include getting an “A” in organic chemistry, studying for the MCAT, applying to medical school, and so on.

The same idea can be applied to an assignment such as a term paper. Using your master calendar, mark the date the paper is due. Then note the dates on which you want to complete the first draft, final section, middle section, first section, source collection, etc. Accomplishing these smaller tasks will give you a boost of confidence as you move along, and the work will most likely be of higher quality than if you were to wait until the night beforehand in order to start.

In addition, the idea of sub-goaling ties with procrastination in that you will see the paper as being less daunting and overwhelming if it's in pieces, allowing you to more willingly work on it in a more timely fashion.

▷ *Be aware of your best time of day – Prime Time*

Do you wake up at 6am every morning to study microbiology, or are you still dreaming of cute Butler squirrels scampering through campus? Are the creative juices flowing at 11pm and on through 3am? Some of us discover our most productive times of the day while in college. This is the time where your mind processes information smoothly, and your body welcomes the task of studying.

If you find yourself dozing off at 11pm with a book in hand or repeatedly read the same paragraph for five minutes, perhaps sleep is the best option. Wake up early to read or wait until the afternoon. **The important thing to recognize is the time of day when you feel the most productive.**

▷ *Study difficult (or boring) subjects first.*

If you loathe the thought of working on chemistry problems, do them first **while your mind is fresh**. We tend to do the difficult subjects last and the easy ones

first. If you do this you may find that your mind gets tired the longer you study, which makes for more difficulty in concentration. **Later in your studying, work on less mentally-demanding subjects.**

► *Utilize spare minutes*

You want to **get the most bang for your buck** in those **spare minutes of the day**. Everyday there are spare minutes just lying around waiting to be utilized. Whether it is five minutes at a table in Starbucks while you're waiting for a friend, waiting for class to begin, or that twenty-minute time space where it's not worth going back to your room before a meeting begins. Spare minutes are short, ranging from **3 minutes to 30 minutes**. It's not possible to clump spare minutes together for extra time at the end of the day. But it is possible to use those spare moments effectively, which will **add to productivity**. Consider the following:

In five minutes, you can:

Review notes.
Update your schedule or calendar
Revise your To-Do List
Respond to an email

In fifteen minutes, you can:

Straighten your room
Read the paper or a magazine
Take a relaxing walk
Skim a chapter

In thirty minutes, you can:

Run errands
Begin library research
Brainstorm ideas for your paper
Write part of your paper
Make a phone call

► *Multitask*

Be creative and think of ways to **squeeze two minutes into one**. Here are some helpful hints:

- Rewrite notes onto note cards and review them as you walk around campus
- Read or review notes while eating
- Think about what you will study tonight as you walk to and from class
- Study while doing laundry, waiting for *The Price Is Right* to start, or waiting for pre-party festivities to commence.

► *Get a Healthy Balance*

Students are so involved with studying and activities on campus that they get buried neck-deep in the minutiae of academic and human affairs. When and how do you relieve pressure from school and relationships? To refresh your mind and renew yourself, try to **get off campus**. Because of Butler's location in Indianapolis, there are a myriad of accessible options for students to escape from campus. The

idea of stepping away from campus is parallel to the idea of taking a short break from studying (5-10 minutes) – renewing your mind. Stepping outside the Butler bubble and immersing yourself with society will remind you of your fortunate role as a student in American society and will help you regain an appreciation for education – a good source of motivation.

Saying “NO” is at the opposite end on the scale of a healthy time balance, which should balance evenly with Getting Out. If friends ask you to see a movie on Wednesday night and you're in the middle of studying for your economics test, what will you tell them? If you say “no” because you obviously need to study, then you have taken responsibility for yourself – a sign of maturity. If you say “yes”, then you (a) were simply looking at your econ notes for pure entertainment and now have a better option, or (b) feel extremely confident that you have the test in the bag. It's okay to say “no”; your friends will understand and respect your decision. Remember: you do what *you* have to do.

If you are a “YES” person, then you may find yourself buried deeply over your head in activities and things to do. There is a limit to how much you can do, and saying “yes” to every single organization will leave you without adequate time for yourself and school.

“Nothing is so fatiguing as the eternal hanging on of an uncompleted task.”

-WILLIAM JAMES
distinguished American psychologist

Procrastination – the antithesis of optimization

When you have something pressing that needs to be finished, do you find that everything else besides that pressing task becomes apparent and demands attention? Your 500-word essay is due tomorrow, but as you reluctantly sit down at your desk to type, type, type, you find that your desk is too cluttered for comfort. So, you reorganize your desk; throwing away old papers, placing books back on the dresser or shelf where they belong, and throwing away the dirty plate with dried Chinese food. Now, you can type away, but wait; you suddenly notice dust balls rolling across your newly uncluttered desk; time to break out the disinfectant because you certainly can't concentrate in filth. You run to retrieve it and then suddenly remember that the girls upstairs borrowed it the other night. You pick up the phone, dial their number and ask if you can come up to retrieve the disinfectant. As you enter their room, you see that they are popping popcorn and readying themselves for a fun night of watching *Bring It On, 1 & 2*. They invite you to stay and you simply can't resist. You tell them that you can only stay for the first part, and then you have to get going. The first part comes and goes quickly as you say the lines along with the movie.

Suddenly you notice the time on the clock and a heavy feeling looms over your head – it's been 2 hours since you attempted to finish the 500-word essay. You rush out of

the girls' room, run down to yours, and open the door into total darkness; your roommate's asleep, your computer has gone to standby, and everything else is how you left it – desk is still blanketed with dust balls and your 500-word essay remains unwritten.

The preceding scenario is a classic case of procrastination. And in some way or another, everyone has experienced the procrastination bug. Even though we know that procrastination usually makes things worse, we insist that the task can wait until a later time, as if it will magically get done by just thinking about it. But why? – These are various reasons which all come down to your state of mind.

Who's inside you? – A child, critic, or adult.

When you procrastinate, there are two forces pulling you away from that certain task: the **child** and **critic**. The child within does not want to do those tasks that appear boring and/or difficult. The critic within doubts your abilities, goals, and makes you question your competence. These two negative forces combine to pull you into a loathing state of mind in which the necessary task is all but conquered.

When the inner **adult** takes the reins there is a mature voice of logic and reason that focuses your attention and strengthens your confidence. The adult must have a stronger voice than the child and critic. “Yes, this task is hard, but I've done more difficult assignments before, so I can certainly do this one.” “My background is not strong enough in this topic, but I can learn.” “Other students have succeeded; therefore, so can I.”

The girls watching *Bring It On* brought out the child in you, since a **child's primary behavior is lack of productive activity**. Leisurely hanging out with the girls and having fun prevented the child from ever getting to work. **The critic's primary behavior is worry**. Instead of just doing it, the inner critic will bring up worrisome questions. “Can I learn this? What if I don't? What if I fail? What will I do? What will others think?” The time the critic spends on worrying soaks up time the adult could spend being productive. **The adult takes direct action** with problem solving ideas to get the task done. “What do I have to learn?” What would be the best way to learn this? Am I learning it? If not, how can I rethink my understanding?”

Your inner adult has to take the reins in order to get started with the task. But HOW do you get motivated to start and WHERE do you begin? **The first step to combating procrastination is to get motivated**. Motivation is the key to engaging your inner adult in “doing” mode.

Motivation

What is procrastination but a lack of motivation? Are you motivated to run four miles, three times a week? If this excites you simply because you enjoy running, then you are **intrinsically** motivated. If you absolutely abhor running but push yourself to run simply to impress the gorgeous guy who invited you to join him, then you are **extrinsically** motivated.

Intrinsic motivation comes naturally. If you signed up for ballroom dance class because you love to dance, then you don't have to force yourself to enjoy it.

Extrinsic motivation takes thought. For instance,

Have
your
dreams
be your
drive.

one student thought about her career as a teacher – guiding young minds and making an impact on society one child at a time – to help her get through an exhausting math problem. Where do you see yourself in five or ten years? Let your future be your external motivator.

Think about more immediate external motivators, such as how good your GPA will look if you get an “A” in chemistry, or the rewards of finishing your business project in time to attend the Butler basketball game with your Dawg-Pound buddies.

If you don't have a grand goal in mind, then it's no wonder *why* you can't get motivated; there is no future to work toward.

Techniques

Now that you're motivated to work, the next step is to act in order to combat further procrastination and to complete your task. Here are several steps to help you:

Make plans public. You're least likely to put off your plans if you **make them official**. Simply tell a friend what your plans are, such as, “I'm going to finish my chemistry problem set this weekend so we can study it together on Monday night.” This way your study buddy will count on you to be ready to study, and you can't let her down.

Use the five-minute plan. Getting started is always the hardest part. Here's a way to make a game of procrastination: give yourself **only five minutes to work on the awaiting task**. After the five minutes, you choose whether to stop or keep going. Chances are you'll choose the latter. This strategy allows you to slyly defeat your opponent – procrastination.

Break large tasks into small tasks. If an assignment appears dauntingly overwhelming, consider completing it in smaller bites as opposed to all at once. A 20-page paper becomes a section every few days or 3-5 pages every week, provided you're given several weeks.²

Be specific. A large task such as writing a research paper or studying for an exam is daunting when viewed as a whole chunk of undefined proportions. Students will often tell themselves, “I need to start my paper” or “I have to begin studying for my test.” It sounds like a monstrous task with such nebulous reference. Instead of heightening your anxiety for a large task, **approach it in a more defined manner** by zooming in on a **specific aspect** of the paper. For instance, you tell your friend, “On Friday I will gather the sources for my paper” or “On Saturday I will review my notes for my test.” James R. Sherman, author of *Stop Procrastinating* says it well: “A job well-defined is a job half-done.”⁶

Work with others. Being in the same physical location as other diligent students like yourself will allow you to focus on the material at-hand. Ask a friend to study with you at the library, even if you're not working on the same material, you'll at least **make one another accountable for staying awake**. One caveat: groups consisting of four or more are at-risk for ill-productivity. Some group members may be further along in their studying than others, or more gregarious, which is not beneficial if you need to accomplish work.

Utilize your momentum. Take advantage of your energy if you're on a roll. Once you've finished working on one project, **keep going and begin work on a harder one**. Don't stop to take a long respite, otherwise you'll lose your energy.

Step back. Lift yourself from the minutiae of your work to check your progress. This will keep you moving to reach your desired goal. For instance, say you plan to finish reading the chapter about enzymes in your biology text. You read, reread, and fine-tune your notes for a single section about temperature effects on enzymes, you may be just procrastinating. **Step back to see how much is left and move forward if you're spending too much time** on this section. Keep your plan in mind. Remember that it's best to **come back for more detail once you see the bigger picture**.

Bear in mind the adverse effects. Procrastination will only make your life more miserable; **with less time to complete the task, it becomes harder**. In addition, the quality of your work is sacrificed, which your grade may reflect, thereby causing you more frustration. The worst-case scenario is not completing your assignment at all – now consider your grade.

Hopefully you have extracted helpful hints about controlling the time you're given and getting the most out of it. Try taking this survey to see if you are a procrastinator. If so, try employing some strategies mentioned above to help you overcome it.

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Are You a Procrastinator?

1. **TF** I often find myself performing tasks that I had intended to do days before.
2. **TF** I often miss concerts, sporting events, or the like because I don't get around to buying the tickets on time.
3. **TF** When planning a party, I make the necessary arrangements well in advance.
4. **TF** When it is time to get up in the morning, I most often get right out of bed.
5. **TF** A letter may sit for days after I write it before I mail it.
6. **TF** I generally return phone calls promptly.
7. **TF** Even with jobs that require little else except sitting down and doing them, I find they often don't get done for days.
8. **TF** I usually make decisions as soon as possible.
9. **TF** I generally delay before starting on work I have to do.
10. **TF** When traveling, I usually have to rush in preparing to arrive at the airport or station at the appropriate time.
11. **TF** When preparing to go out, I am seldom caught having to do something at the last minute.
12. **TF** In preparing for some deadline, I often waste time by doing other things.
13. **TF** If a bill for a small amount comes, I pay it right away.
14. **TF** I usually return an R.S.V.P. request very shortly after receiving the invitation.
15. **TF** I often have a task finished sooner than necessary.
16. **TF** I always seem to end up shopping for birthday or Christmas gifts at the last minute.
17. **TF** I usually buy even an essential item at the last minute.
18. **TF** I usually accomplish all the things I plan to do in a day.
19. **TF** I am continually saying "I'll do it tomorrow."
20. **TF** I usually take care of all the tasks I have to do before I settle down and relax for the evening.

Scoring:

- Give yourself one point each for questions 1, 2, 5, 7, 9, 10, 12, 16, 17, and 19 that you answered TRUE.
- Give yourself one point each for questions 3, 4, 6, 8, 11, 13, 14, 15, 18, and 20 that you answered FALSE.
- Add points for a total score.

Total ≥ 9: Above average in your tendency to procrastinate

Total ≥ 13: Demonstrate extreme difficulty with procrastination