

Teaching Resources
How to Get the Most Out of Studying

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The resources include:

- 1) Purpose of the Videos
- 2) Video Guide
- 3) How to Use These Videos
- 4) Outlines of the Videos
- 5) For Further Reading
- 6) Sample Concept Map of Levels of Processing

Purpose of the Videos

The purpose of these videos is to teach students the basic cognitive principles they need to understand in order to become effective learners. The lack of adequate preparation of high school graduates for college level work is of tremendous concern. In 2011, only 25% of high school seniors met all four ACT College Readiness Benchmarks in math, science, English, and reading. That means a large percentage of high school graduates are capable of college level work, but ill equipped to handle it. The success of these students depends on their ability to transform themselves into effective college learners. The video series is intended to help students accomplish that. The videos present a comprehensive, empirically validated framework of principles on how people learn that enables students to develop their own learning strategies and skills. There is really no other resource like it. The videos translate cognitive theory and research into simple, accessible, and practical practices that students can use in their study. The videos are broken down into brief modules, so that students can choose the ones that are most relevant to their needs, and each module is designed to be clear and engaging.

Video Guide: How to Study Long and Hard and Still Fail...or How to Get the Most Out of Studying

The overall theme of the videos is if students use ineffective or inefficient ways of studying, they can study long and hard and still fail; but if they use effective strategies, they will get the most learning out of your study time and be more likely to succeed. Each video lasts 7-8 minutes.

Video 1: Beliefs That Make You Fail...Or Succeed

The first video examines common mistaken beliefs students often possess that undermine their learning. The video tries to correct those misconceptions with accurate beliefs about learning.

Video 1: <http://www.youtube.com/watch?v=RH95h36NChI&feature=related>

Video 2: What Students Should Understand About How People Learn

The second video introduces a simple but powerful theory of memory, Levels of Processing, that can help students improve their study.

Video 2: <http://www.youtube.com/watch?v=9O7y7XEC66M&feature=related>

Video 3: Cognitive Principles for Optimizing Learning

The third video operationalizes the concept of level of processing into four principles that students can use to develop effective study strategies.

Video 3: <http://www.youtube.com/watch?v=1xeHh5DnClw&feature=related>

Video 4: Putting the Principles for Optimizing Learning into Practice

The fourth video applies the principles of deep processing to common study situations, including note taking and highlighting while reading.

Video 4: <http://www.youtube.com/watch?v=E9GrOxhYZdQ&feature=related>

Video 5: I Blew the Exam, Now What?

This video addresses what students should and should not do when they earn a bad grade on an exam.

Video 5: <http://www.youtube.com/watch?v=-QVRiMkdRsU&feature=related>

A playlist for the series of videos is found here:

http://www.youtube.com/watch?v=RH95h36NChI&feature=list_related&playnext=1&list=SP85708E6EA236E3DB

A description of the presentation to freshmen upon which videos 1-4 is based can be found here:

<http://www.psychologicalscience.org/index.php/publications/observer/2010/april-10/improving-classroom-performance-by-challenging-student-misconceptions-about-learning.html>

How to Use these Videos

The videos were designed to be used in multiple ways and for multiple purposes. They are geared toward the transition to college and they have been used in many freshman orientation programs and introductory level courses where there is heavy freshman enrollment. They have also been used, however, in high schools, especially for AP level courses, and for more advanced college students to help them continue to improve their learning skills. Although the examples in the videos are drawn from psychology, the videos have been used in a wide variety of disciplines, including English, physics, geography, economics, and geography. Finally, a number of Teaching and Learning Centers are using them to train faculty to develop effective teaching practices that takes advantage of how people learn.

The most common use of the videos is for students to view them on their own. Faculty typically have placed the link on their syllabus or course management software. Students have also discovered them on their own or been sent the link. Although this was certainly one of my intended uses of the videos, I worry that the videos may be a bit densely packed with information for students to take in the key information in one viewing. Ideally, students would view them all, and then review the relevant individual videos when they face particular challenges or when they need reminding of certain concepts and practices. My hope is that students can get more and different information out of the videos as they view them for different classes and as they grow as learners. I'm a bit concerned that the viewing pattern thus far. The first video is by far the most viewed and the number of viewers declines with each successive video. I worry that students may be viewing one or two videos and assuming they have already gotten all they need without viewing the whole series.

Teachers tell me that they have shown some or all of the videos in class for discussion. I think this is an excellent way of using the videos. Teachers can help the students understand the information in the videos and explain how it relates to their particular classes. I have also seen a webpage that students can complete that has one of the videos and then a form to answer questions about the video and reflect on it. I think this an excellent use of the videos. It can be done online or using paper and pencil, and can be done as a class assignment, for extra credit, or just as an optional assignment.

I intended for the videos to be a resource for faculty when working with students, especially struggling students. The teacher may recommend that a student view one or all of the videos. I think an even more effective use of the videos would be if the instructor would suggest the student view the videos with a goal of paying particular attention to certain concepts, and then having the student return to discuss how the concepts can be used to help the student.

One other observation is relevant here. I've been surprised at how few questions I've gotten from students (or faculty) about the information in the videos. There is a lot of important information about learning that I had to leave out of the videos due to time constraints. I expected the videos to generate questions, but thus far I've had only a handful e-mailed to me or posted on the comments. Perhaps the video format inhibits questions or students are content with the information and suggestions in the videos. I hope that when faculty discuss the videos with their students, good questions arise. If I can be of help in answering any questions that come up, feel free to contact me (slchew@samford.edu).

These are just my thoughts about how to use the videos. If you have other ideas or have feedback about your experience with the videos, I welcome your comments.

Video Outlines: How to Get the Most Out of Studying

Video 1: Beliefs That Make You Fail...Or Succeed

- I. We made these videos to help students to make the transition, but the information will be helpful to people in most any learning situation.
 - a. I'm not peddling any quick fixes or magic products that will make you an "A" student overnight and with little effort. Such things don't exist
 - b. The bottom line is this: there are many ineffective and inefficient ways of studying. If you use these kinds of strategies, you can study long and hard and still fail. But, if you use effective strategies, you will get the most learning out of your study time and you will be more likely to succeed.

- II. In this first video, we examine your beliefs to see how accurate an understanding you have about how people learn.
 - a. All students base their study behavior on their beliefs about how they best learn. Do I need to go to class? Do I need to read the textbook? How much do I have to study

material before I've mastered it?

- b. The more accurate your beliefs, the more effectively you will learn (and make better grades). The more flawed your beliefs, the less effective your study (and the worse your grades). Your beliefs can make you fail, or succeed.

III. Common misconceptions about learning that I call, "Beliefs That Make You Stupid". These beliefs undermine your learning.

- a. Learning is fast
 - i. Most first year college students grossly underestimate the time required to complete assignments or study material effectively.
 - ii. Always plan in extra time for assignments and plan to finish reading material enough in advance to allow for review
- b. Knowledge is composed of isolated facts
 - i. Students often write out the definitions on note cards and memorize them as isolated facts.
 - ii. The problem is that good teachers test for comprehension, the meaningful relationships between the concept and other concepts.
- c. Being good at a subject is a matter of inborn talent rather than hard work
 - i. Many students believe that people naturally good or bad at a subject, such as writing, or math, or science, and there is nothing that can be done to change that.
 - ii. But, academic success is much more a matter of hard work than inborn talent
- d. I'm really good at multi-tasking, especially during class or studying
 - i. The research evidence is overwhelming that we are bad at multi-tasking, especially if one of the tasks takes a lot of effort and concentration, like studying.
 - ii. If you want to be successful, reduce or eliminate distractions while studying.

IV. Metacognition refers to your awareness of how well you truly understand a concept.

- a. Weaker students are grossly overconfident in how well they understand the material. As a result, they don't study as much as they really need to, they take the exam and they believe they have done really well, and then they are stunned when they find out they've done poorly.
- b. The problem for college freshmen is that they spent years honing their sense of metacognition for high school. Now they come to college and their metacognitive sense is all wrong.
- c. Having bad metacognition may indicate that you have poor study skills, and if that is the case, then just studying more won't help.
- d. A key aspect of poor study skills is they increase confidence without increasing actual understanding. They make you overconfident

Video 2: What Students Should Understand About How People Learn
(or, as the video title says, “Sudents”)

- I. How accurate is your understanding of how people learn? Pick the one that represents the most important factor in successful learning. Only one is correct. Keep in mind that if you picked wrong, chances are your study strategies and behaviors are less than optimal, ineffective, or maybe even self-defeating.
 1. The intention and desire to learn
 2. Paying close attention to the material as you study
 3. Learning in a way that matches your personal Learning Style
 4. The time you spend studying
 5. What you think about while studying

- II. In order to find out the correct one, I want you to imagine you are in a classic psychology experiment by Thomas Hyde and James Jenkins from 1969.
 - a. Hyde and Jenkins looked at the impact of two variables on learning. The first one is whether or not you knew you are going have to recall the words after all of them were presented. If you were in one of the two groups in the *Intentional* condition, you were forewarned that you would have to recall the words after they were all presented. If you were in one of the two groups in the *Incidental* condition, you weren't forewarned about the recall test
 - b. The other variable Hyde and Jenkins looked at was how participants rehearsed or encoded words, what became known as level of processing. Two groups had to listen to the words and check whether or not it had the letter “e” in the spelling. The other two groups had to rate whether they found the word pleasant or not.
 - i. If you are checking for “E”s, then you are focusing on the spelling of the word, which is called shallow level of processing.
 - ii. If you are rating its pleasantness, you are thinking about the meaning of the words related to your own experience. That is called deep level processing.
 - iii. The two variables combine to give you four different groups. There was a fifth group just told to memorize the words as best they could. So participants were presented with 24 words, and each group carried out its instructions. Then they were all asked to recall as many of the words from the list as possible.
 - c. Results
 - i. First, did the intent to learn matter? It did not. Knowing about the recall test had no effect at all.
 - ii. You see the deep processing groups recalled a lot more than the shallow processing groups.
 1. Deep processing led to better recall whether a person intended to learn or not. People who wanted to learn but used a shallow strategy, didn't learn.

2. People who processed words at a deep level, even if they weren't trying to learn, remembered them just as well as the control group who were doing their best to learn. So, you can have every intention to learn, but if you use a shallow strategy, you won't learn.

III. Levels of processing says that memory is composed of a continuum of levels from shallow to deep.

- a. Shallow levels involve studying meaningless, superficial properties of what you are trying to learn, like mindless re-reading or memorization.
- b. The deepest levels of processing involve thinking about material meaningfully, interpreting the information and relating it to your prior knowledge or experience, or creating a mental image of the information.
- c. Deeper processing leads to better recall.
- d. **Orienting tasks** make people process information at a certain depth. In this case, checking for E's is a shallow orienting task, making people process words at a shallow level. Rating a word's pleasantness is a deep orienting task, causing people to process deeply and thus learn the words.

IV. Now let's return to the question of the single most important factor in successful learning.

- a. We can rule out number 1, because we just saw that intention and desire to learn are not important.
- b. Number 2 is also not correct. In the study, both groups paid close attention to the words to do their orienting task.
- c. You hear a lot about learning styles. There is simply no good research evidence that supports the validity of learning styles, so forget about them. Besides, if you plan to be successful, you should become good at learning in multiple ways.
- d. I did make a big deal about committing enough time to be successful. But time alone is not sufficient for successful learning.
- e. Number 5 is correct because it relates to depth of processing.
 - i. If you read a text without comprehension, or if you memorize definitions without really understanding them, you are using shallow processing and you will not learn.
 - ii. If you think about meaningful connections, you are using deep processing, and you will learn whether you intend to or not.

V. Let's summarize what we have learned in the first two videos.

- a. Here are the factors that don't help or hurt your academic success:
 - Motivation to learn
 - Amount of time studied with shallow processing
 - Memorization of isolated facts
 - Learning styles
 - Multi-tasking

Now I'm not saying that desire to learn, attention, or engagement are bad things, but deep processing is the critical element.

- b. Here are the factors that do contribute to your academic success:
 - Minimizing distractions; Maximizing focus
 - Developing accurate metacognition
 - Deep, appropriate processing of critical concepts

Video 3: Cognitive Principles for Optimizing Learning

- I. Review
 - a. Effective studying is more than just a matter of having a desire to learn and devoting sufficient time and effort. Students have to use effective learning strategies.
 - b. If they use ineffective strategies, they can study long and hard and still fail.
 - c. Developing effective study skills is not easy.
- II. In this video, I explain the basic principles of how people learn best, and how you can apply these principles to your study.
 - a. Levels of Processing framework, which views memory as a series of levels that vary in depth.
 - i. At shallow levels, information is processed superficially, without meaning or association.
 - ii. At deep levels, information is represented by its meaning or by visual imagery.
 - iii. The deeper you process information; the better you will recall it.
 - b. Basic principles of achieving deep processing, and questions you can use to satisfy each principle as you study.
 - i. Elaboration: How does this concept relate to other concepts? Elaboration means making meaningful associations between the concept you are studying and related concepts.
 - ii. Distinctiveness: How is this concept different from other concepts? Distinctiveness means that you have to make clear contrasts between the concept you are studying and other concepts.
 - iii. Personal: How can I relate this concept to my own personal experience? Relating concepts to your personal experience helps increase meaningfulness, elaboration and distinctiveness.
 - iv. Appropriate Retrieval and Application: How am I expected to use or apply this concept? Practice recalling the information and using the information in the way that your teacher expects you to be able to do.
 - 1. Many textbooks have review questions in each chapter.
 - 2. Textbook websites that offer review tests.

- c. Effective study hits some or all of these elements.
 - i. Good students have multiple ways of studying depending on the teacher and the subject, but all their study strategies are based on these elements.
 - ii. Effective and ineffective study strategies can look superficially similar, but lead to very different results. If you just re-copy your notes to make them neater without thinking about them, that is shallow processing and it is not an effective strategy. If, however, you reorganize your notes to help you see connections and relationships among concepts, then that is deep processing and it is an effective strategy.
- III. Automaticity
- a. An automatic process is one that is so highly practiced that you can do it without any conscious thought or effort.
 - b. Any task that is practiced enough can become automatic, including study skills.
 - c. When you get to college, your old study habits are automatic, which makes them very hard to change.
 - i. Successful learning isn't just a matter of developing more effective study skills; it involves overcoming ineffective or counterproductive skills that are highly practiced and automatic.
 - ii. Overcoming these bad study skills is an effortful, conscious process that usually takes weeks if not months and it involves some experimentation, trial and error, and some setbacks along the way.
 - d. Once you develop good study habits, they will become automatic and should serve you well in any learning situation.
- IV. Overlearning
- a. when you study a subject beyond the point where you can recall it successfully; you study it until you can recall it quickly and easily.
 - b. Overlearning information helps prevent forgetting and it makes recall fast and easy.

Video 4: Putting the Principles for Optimizing Learning into Practice

- I. Some learning strategies that are based on these cognitive principles.
 - a. Think of study strategies as orienting tasks that make you to process information at a certain level of processing.
 - i. Good study strategy makes you process information deeply.
 - ii. Bad study strategies make you process information at a shallow level.
- II. Three research based strategies for achieving deep processing while reading.
 - a. **Question generation.** After you have read a chapter or reviewed a section of notes, generate some questions over the material.
 - i. Try to make the questions as meaningful as possible. Here are some questions you might generate based on the videos up to now.

ii. Some example questions based on these videos:

1. What is metacognition?
2. In the video, how did the teacher test for metacognition?
3. How does poor metacognition hurt academic success?
4. Why would metacognition that was good in high school be bad in college?
5. What are the critical differences between deep and shallow processing?
6. Name a task you already do where you automatically use deep processing.

iii. At first, generating questions will seem a bit awkward, especially the deeper questions, but like anything, it will become more automatic with practice.

b. The second method is creating a **concept map** of the ideas you are studying. (A sample concept map is included in the Teaching Resources)

- i. A concept map is a diagram of nodes and links.
- ii. The nodes are concepts or facts that are linked together.
- iii. AT the end of this document is a concept map I constructed for levels of processing, I drew this out by hand first, but you can do them by directly on a computer.
- iv. Concept maps take time and effort to do, but they don't have to be neat and perfect and the very act of creating them helps you process information deeply.

c. The third method is to **practice retrieving and using the information** in ways your teacher expects you to be able to do.

- i. Practice recalling the critical information without referring to your notes or book.
- ii. Practice using the information in ways that the teacher is going to test you.
- iii. After you have practiced recalling, you can check yourself to see how accurate your recall was. This will allow you to identify the weaknesses in your understanding.

III. Note taking

a. Three functions.

- i. First, it provides a summary of key points from the lecture that you will need to understand and recall later.
- ii. Second, you are creating a set of reminders for the information that you didn't record.
- iii. The third function is that note taking is an orienting task.

b. Taking notes engages you in the class, and how you take notes determines if you process the information in a deep, meaningful way or in a superficial way.

- i. if you think of note taking as simply recording as much of the lecture as possible without thinking about meaning, then you are processing the lecture at a

shallow level and undermining your learning.

- ii. It is tempting to look at note taking as simply writing down what the teachers says without thinking about it, and that is especially true if you take notes on a laptop
 - iii. The real danger of using a computer to take notes is the temptation to check e-mail or browse the internet during class.
- c. A few of other things
- i. If you missed information during the lecture, get the information right away from the teacher or classmates.
 - ii. Taking good notes is very effortful and usually requires your full concentration. If you have trouble writing fast enough, then consider asking the professor if you can record the lecture.
 - iii. Borrowing notes from another student is a poor substitute for missing a class.
 - iv. Notes are most helpful if you actively organize them, review them, and think about them.

IV. Using deep processing when reading a textbook.

- a. Highlighting can be seen as an orienting task.
 - i. Highlighting in a shallow way can actually hurt your learning.
 - ii. Highlighting for meaning can help your learning

Consider the following paragraph, which was modified from an old psychology textbook. How would you highlight it? It is tempting to go right to the bolded terms and highlight them, as shown below. You've skimmed over important information and you've set yourself up to memorize isolated facts, a terrible study strategy.

Freud found that his patients were often unable to remember the disturbing events he believed must have occurred; he therefore concluded that their memory for those events must be hidden from their conscious awareness. Freud therefore developed the picture of the mind [as an iceberg]. [T]he **conscious contents of the mind—what we are readily aware of—** are symbolized by the tip of an iceberg jutting out of the water. Hidden “below” consciousness are the unconscious contents of the mind—what we are not aware of at any given moment—symbolized by the bulk of the iceberg, submerged below water. The unconscious is further divided into the **preconscious, containing material that we can easily retrieve from our memory, and the unconscious, containing material that is locked away and therefore not easy to retrieve.**

To highlight for deep processing, read all the text, then be selective about what you highlight based on its importance and how it relates to other information.

1. Highlight connections, key distinctions, and applications.
2. Don't highlight complete passages;
3. Good highlighting requires multiple readings of the text and meaningful decisions.
4. It is slow and effortful and, to be effective, you must review your highlighting later.

Here is how I would highlight the Freud passage.

Freud found that his patients were often unable to remember the disturbing events he believed must have occurred; he therefore concluded that their memory for those events must be hidden from their conscious awareness. Freud therefore developed the picture of the mind [as an iceberg]. [T]he conscious contents of the mind—what we are readily aware of—are symbolized by the tip of an iceberg jutting out of the water. Hidden “below” consciousness are the unconscious contents of the mind—what we are not aware of—at any given moment—symbolized by the bulk of the iceberg, submerged below water. The unconscious is further divided into the preconscious, containing material that we can easily retrieve from our memory, and the unconscious, containing material that is locked away and therefore not easy to retrieve. ...Freud believed that the greater part of the mind—including most of the powerful forces that determine behavior and therefore personality—is beyond consciousness.

The first line of highlighting contains the main theme of Freud’s theory. I highlighted the key parts of the definitions of conscious and unconscious, and the breakdown of the unconscious into preconscious and unconscious. I have the definitions and the distinction between them. Finally, I have another theme of Freud’s theory. Different students will highlight a passage different because they have different perspectives. The important thing is that however you highlight should follow the principles of deep processing for you.

V. Studying in Groups.

- a. Studying in a group can be effective, but it is also one of the easiest ways of fooling yourself into believing you are prepared when you really aren’t.
 - i. If the group norm is that everyone studies hard and uses good study strategies, then the group will succeed.
 - ii. If the norm is that group uses bad study strategies and has many distractions, then you won’t learn.
- b. Guidelines for effective group study.
 - i. Group study is a business meeting. There should be a goal for the meeting and an agenda.
 - ii. Everyone should come prepared and ready to contribute.
 1. Set conditions for participation. For example, everyone should have read the chapter and have three questions ready to ask about it.
 2. If you aren’t prepared and can’t contribute, then don’t come.
 - iii. Everyone keeps the ultimate goal of learning in mind.
 - iv. Everyone has a chance to ask and answer questions from other group members.
 - v. Any member can express the understanding of the whole group.

Video 5: I Blew the Exam, Now What?

- I. You want to do things that will help you improve and avoid doing things that will make the situation worse. Here are things to avoid:
 - a. The two worst things you can do is panic or go into denial.
 - b. Students who panic stop coming to class or procrastinate on making changes.
 - i. Stay calm and take positive steps right away.
 - c. Denial is not one of those positive steps. I have students who fail three exams before coming to see me and asking what they can do to raise their grade. By then, there are few if any options.

- II. Positive steps to take
 - a. Identify what went wrong with your preparation on the exam.
 - i. First, be honest with yourself.
 1. How thorough was your preparation?
 2. Did you commit sufficient time for both study and adequate review?
 3. Did you go to class and pay attention?
 4. Did you do all the assigned work? If you haven't done a big part of the assigned work, a poor grade may have been the best you could have hoped for. There are courses where you don't have to all the work to pass the course, but you are far better off over-preparing for the first exam and then streamlining your study than you are blowing an exam and starting out in a hole.
 - ii. Review your exam to see what you missed.
 1. Diagnose what went wrong and how to change for the next exam
 2. If your mistakes were spread out, it means you need to make comprehensive changes to your study strategies. If they are focused on particular topics, you need to figure out why that topic gave you trouble.
 3. See if you misinterpreted a question or you didn't follow instructions.
 4. See if you had recorded the information needed to answer the question correctly. If you did not have the key information in your notes, then you need to improve your note taking. If you didn't have the information highlighted in your text, you need to improve your reading.
 5. The key point is that you have to read, take notes, and study at the depth of detail and analysis your teacher expects. If your level of understanding is too shallow, you will fail no matter how much you study.
 6. Discuss how you prepared and what you discovered from reviewing your exam with your teacher.
 - a. Most faculty want to see their students learn and succeed, and faculty are most willing to help students who are taking steps to

help themselves

- b. It's the struggling students who don't come to see us who are most likely to fail the course.

- b. Examine your study strategies to see if they are effective or not.
 - i. Poor study strategies are often appealing because they are easy and mindless to do, like re-reading your notes without really thinking about them, skimming text without really trying to understand it, highlighting only bolded terms, or studying in groups where you aren't really studying.
 - ii. Bad study habits can also be hard to do, but they don't require deep thinking, like memorizing definitions or re-reading notes without thinking about them.
 - iii. Bad study habits allow for a lot of distractions.
 - iv. Good study habits are effortful and force you into deep processing. Think about what your study strategies are making you do and use the principles of deep processing to see if they are effective.
 - v. Effective and ineffective study habits can look similar on the surface. Mindlessly recopying notes is not effective but re-organizing notes to be more coherent is effective. Mindless highlighting is ineffective but highlighting key meanings is. Scanning over notes or text is ineffective but reading while generating questions is effective
- c. Finally, come up with a plan for better preparation and study to improve your scores.

III. Some basic strategies you can use to help raise your grade.

- a. Commit the time and effort required to develop and use effective study strategies
- b. Minimize distractions; maximize focus on studying
- c. Attend class, read all assigned materials thoroughly and plan to finish with plenty of time for review
- d. Set realistic study goals. Space out study time; avoid cramming; and maximize review time.
- e. Don't start letting some classes or assignments slide to try to catch up with others. You can easily end up in trouble in both classes. Figure out a way to do the best you can in all your classes.
- f. Don't give away points. A lot of times I will see struggling students give away points by failing to follow directions or skipping certain assignments because they are only worth a few points. Giving away easy points makes it that much harder to make a good grade.

IV. A list of things NOT to do.

- a. Don't be the student that...
 - i. Keeps studying the same way and hoping for improvement
 - ii. Waits until the end of the semester to seek help
 - iii. Starts skipping some classes or assignments to focus on other classes or assignments

- iv. Falls farther and farther behind waiting to find time to catch up
 - v. Crams at the last minute to read the material
 - vi. Doesn't do assignments because they are late or only worth a few points.
 - vii. Panics and gives up.
- V. Diagnose your problems, develop a workable plan for improvement, and set realistic goals.
- a. Put yourself in the best position to improve and do better.
 - b. If you have poor study habits, it will take a sustained effort to improve them because you have to both overcome entrenched, overlearned bad study habits and develop new, more effective ones.
 - c. You may have to try multiple different study strategies before you find the ones that work best for you. There will be setbacks, and success probably won't happen as quickly as you like,
 - d. Once those good study habits are established and automatic, they will give you an edge in any learning situation.

For Further Reading

If you would like to read more about the cognitive basis of effective instruction, especially with regard to student beliefs and behavior, I recommend the books and articles below. Much of the information in the videos is covered and elaborated upon in these readings. I have included links to some of the articles, which were working when I wrote this. The other articles can easily be obtained through an internet search. I did not include the links because they were on personal websites.

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Willingham, D. T. (2010). *Why Don't Students Like School?: A Cognitive Scientist Answers Questions About How the Mind Works and What It Means for the Classroom*. San Francisco, CA: Jossey-Bass.

Sample Concept Map of Levels of Processing from Video 4.

