



What every student should know: Seven learning impediments and their remedies

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Many well-intentioned students fail to thrive in a university environment, not due to lack of effort, but because of a deficient mind-set and/or methodology. While a wide variety of problems can result in sub-optimal learning performance, there are seven main categories of learning impediments that hinder student learning with alarming regularity. You may be facing one, or more, of these impediments. Not to fret though; each of these debilitating impediments can be surmounted with self-awareness and some effort, paving the way for enjoyable, and productive, learning experiences. In this article, I will identify the offending learning impediments and propose plausible remedial policies to counter each.

Is there anyone so wise as to learn by the experience of others?

—Voltaire



IMAGE LICENSED BY GRAPHIC STOCK

First impediment: Having a fixed mind-set

Psychologists have highlighted the self-enforcing propensity of the human mind-set in that human optimism and pessimism are both self-fulfilling. As Henry Ford said, “Whether you think you can or think you can’t—you are right.” A *fixed mind-set*, a mind-set model proposed by researcher Carol Dweck, takes the pessimistic approach to the concept of intelligence and skill development. It characterizes a belief that intelligence or talent are *fixed* human traits

that cannot be significantly developed beyond a certain degree. Students with fixed mind-sets obsess over documenting their intelligence instead of focusing on developing their intelligence. Many fixed mind-set students are gifted students who have not learned how to struggle or the value of hard work. While they aced school subjects with little effort, when confronted with more significant intellectual challenges in a university setting that require more effort, these students capitulate easily while resorting to the excuse of a lack of aptitude. Why else would they—being such intelligent students—be confused?

What can be done: The antidote to this problem is to: 1) have a growth mind-set, 2) aim for mastery, and 3) use intrinsic motivation.

Catch phrase for the solutions: The sky is not the limit—your mind is. Conquer your mind to realize your potential.

Remedy 1: Have a growth mind-set

A *growth mind-set* student believes that hard work, grit, and

conscientiousness are the necessary factors that lead to success—brains and talent are just the starting point. A student with a growth mind-set sees himself/herself as being in the driving seat and when confronted with a challenge, is not averse to grappling with it for extended times. They can tolerate temporary failures without losing enthusiasm—they treat mistakes as learning opportunities. Such a mind-set also enables students to adopt the various solutions outlined in this article more easily. For example, students with growth mind-sets accept feedback from teachers more readily and do not consider critical feedback as an attack on their person. Dweck's research has shown that growth mind-set characterizes successful people in a wide variety of fields, and is a reliable predictor of student success.

Remedy 2: Aim for mastery

Educational psychologists have noted that students can have different attitudes toward studies—in particular, students can have a *performance orientation* or a *mastery orientation*, which critically impacts students' learning habits. Students with mastery orientation are motivated by the desire to master a concept rather than by external rewards such as grades, degrees, fame, or a teacher's approval. Performance-oriented tactics include rote-memorization, glancing at a problem's solution before attempting the question, and learning problem solving by observing solved questions (without attempting to solve the problems independently).

A student with a mastery orientation focuses on the process and not solely on results; such a student is more likely to persist when faced with a challenging problem since the student recognizes that learning requires hard work. Paradoxically, while the explicit goal of a mastery oriented student is not extrinsic rewards, mastery of a subject often leads itself to these rewards.

Remedy 3: Using intrinsic motivation

Students' motivation determines, directs, and sustains what they do to learn. Student motivation is boosted when they have *self-efficacy*—i.e., a belief that they can attain success. Student motivation is also based on the perception of the value of a particular goal (in terms of its relevance, utility, and importance). It is not only important for a student to be motivated but also to have the right kind of motivation.

Extrinsic motivation refers to the motivation for external rewards such as grades, grade-point average, and the approval of others (mostly, parents and teachers). Intrinsic

motivation—the more desirable kind of motivation that is known to foster deeper engagement, conceptual understanding, and creativity—relies on the value of the learning activity itself for motivation. Previous research has noted that students with intrinsic motivation are more likely to engage in deeper learning and use the various strategies highlighted in this article.

Second impediment: The failure to engage yourself in learning

Many intelligent students cruise through high school materials but struggle at the university level. It goes without saying, and sadly without introspection on the part of students, that one has to pay attention before any learning can take place. Students sometimes fail to recognize that learning is not a passive activity. It is important to actively engage “your person” in this activity by reflecting on the things learned in the light of your prior knowledge. Each student is a distinct individual with a unique set of prior knowledge, background,

and training. This unique scholarly “DNA” of every student means that different students bring “intellectual baggage” to the class and will learn differently from the same lecture or knowledge source.

What can be done: The antidote to this problem is to 1) ask questions, 2) study more actively, and 3) make efforts to enjoy the subject.

Catch phrase for the solutions: Knowledge will not give a part of itself until you give to it all of yourself.

Remedy 1: Ask questions

Questioning is the ability to organize our thinking around what we don't know. While we're all hungry for more answers, asking questions

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remains the quintessential human skill that computers have found elusive, even with the advances in information technology and artificial intelligence. Thinkers such as Socrates and innovators such as Steve Jobs were remarkable not because of their ability to answer but due to their capacity for asking the right questions. If we imagine that the purpose of education is to bring forth the latent abilities of the students and to inspire them toward a passion of lifelong learning, then it is at least as important—if not more—for students to learn how to ask the right question as it is to know the right answer. Asking the right question can invigorate thinking, catalyze learning, and produce action and results. The path to discovery, research, and scholarship, often starts with a question!

Remedy 2: Study more actively

According to our current understanding of learning, learning is at

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least a three-step process: *first*, information is encoded initially in short-term memory; *second*, information encoded in short-term memory is consolidated in long-term memory as a cohesive knowledge representation—thereby, facilitating connections to past experiences, and reorganization with previous knowledge, to provide meaning; *third*, retrieval allows updates to learning and enables of knowledge stored in long-term memory as it is needed.

A student should study actively—the more active, the better. There are various steps a student can take for active learning including taking notes, practicing retrieval, and teaching. Note-taking is an art that many students fail to master. Rather than trying to copy every statement the teacher says into a notebook, a student should focus on highlighting the important points and prioritize the significant over the trivial. It has been shown in literature that practice retrieval from learning is an especially effective active learning technique.

Remedy 3: Make an effort to enjoy the subject

Plato is reported to have said that all learning has an emotional base. A student who makes an effort to enjoy his or her academic pursuits will connect at an emotional level with studies that can sustain and catalyze the student's learning. The learning of an emotionally engaged student is also more richly encoded in the brain and can be recalled more easily. An effective way for a student to be engaged in a subject is to have the student realize the importance of the learning objectives and of the studied subject. Stephen Covey listed the principle "start with the end in mind" as one of the habits

of highly effective people in his best-selling book, *Seven Habits of Highly Effective People*.

Third impediment: The failure to manage time

With various technologies—such as mobile phones, TV, and online social networking services—competing for scarce attention resources, maintaining a focus on studies can be a real challenge. The (hyper)linked nature of the modern Internet makes it easy to find endless amusements online. Few students have the discipline to manage their day according to a schedule and resist the lure of purposeless browsing. The typical student strategy for "inventing new time"—which is to reduce sleeping hours and forgo physical exercise—is also problematic since it reduces cognitive performance and is unhealthy.

What can be done: The antidote to this problem is to 1) form good habits, 2) learn mindfulness and the art of focusing, and 3) practice prioritization and discipline.

Catch phrase for the solutions: "Until we can manage time, we can manage nothing else."

—Peter F. Drucker

Remedy 1: Form good habits

Human beings are on autocontrol for a major chunk of their daily routines. It stands to reason then that a student must strive to establish conducive habits, which can involve dedicating a certain time of the day for some study related task. One should try to determine the time of the day where he or she feels most energetic and dedicate those value periods to creative work, thinking, and learning. It is important to get ample sleep since rest has been shown to remove toxins from the brain and is a key to improved cog-

nitive performance. Establishing good time-management habits can also benefit from measuring how time is actually being spent. Many students do not realize that they are wasting major chunks of their time unproductively. It is also the case that the environment plays a big role in strengthening, or weakening, of human willpower. Much research has shown that willpower does not remain the same and is easily depleted. A student can exploit this knowledge by establishing environmental cues that limit distractions and encourage, rather than detract from, learning.

Remedy 2: Learn mindfulness and the art of focusing

Students increasingly suffer from chronic partial attention due to a depleting sense of focus and mindfulness. With multitasking being the norm, we are constantly juggling tasks and battling distractions. Cognitive research results show that human beings are not primed for performing more than one cognitive task at the same time. The cognitive penalty that arises from the overhead of shifting contexts between different tasks is greater than the benefit of multitasking. A student, therefore, should do well to avoid habitual multitasking.

Remedy 3: Practice prioritization and discipline

Since all of us only have 168 h per week with multifarious demands on our time, it becomes important that we learn how to budget our time while prioritizing the more important tasks. Prioritization invariably involves saying no to people and things; however, through this process of prioritization, the student can find the freedom to spend more time on what is important. It is also important for a student to practice discipline and conquer procrastination. With a little conscious effort at prioritizing the various demands, students can avoid time-sinks and lead a balanced and productive life.

Fourth impediment: Failing to realize that failing is key

Learning is a messy process reached through seeking and blundering. The philosophy of avoiding failure by not trying—borne out of a defeatist attitude and a fixed mind-set—is a sure recipe for developing mediocre, passive, and ignorant students.

What can be done: The antidote to this problem is to 1) embrace failure and mistakes, 2) value effort over intelligence, and 3) value the process and not external rewards.

Catch phrase for the solutions: Err unabashedly and learn—like a child does.

Remedy 1: Embrace failure and impediments

One of the most important lessons for students is that learning involves reaching, failing, reflecting, and making new connections in the brain. There is no royal road to learning, mastery, and success that bypasses hard work and mistakes. While we have a tendency to glorify scientific inventions as flashes of brilliance, the road to innovation is replete with theories and experiments that failed. It is also true that failures act as the portals of discovery, providing feedback on how and where to improve and eventually succeed. In this light, we see that failing is not only acceptable, but it is critical to success. Not all mistakes are desirable though. The mistakes that result from carelessness, not learning from mistakes, or the timidity of not trying out new ideas are harmful and do not lead to improvement.

Remedy 2: Make peace with confusion

Confusion often stems from challenges that make us reach out of our comfort zone. While admittedly uncomfortable, such reaching out is essential to learning. Coming to terms with confusion should be an essential part of the training of a serious student interested in learning. Most students aim at the ideal of errorless learning under the mistaken belief that errors are counter-

productive and must be avoided at all costs. However, recent research has supplanted this “effortless learning model” with another model that emphasizes *desirable difficulties*. Difficulties are desirable only when they are suitably challenging—i.e., challenging enough to engage the student’s capabilities and background knowledge; such difficulties can trigger cognitive processes that support learning, remembering, and comprehension. Somewhat counter-intuitively, the effort that is required to learn, relearn, and retrieve something is correlated with the strength of learning—i.e., the more effort that is required to retrieve, the more

effective the relearning will be in affecting a student’s permanent knowledge. Thus a student should not be deterred by confusion and errors while learning but should exploit them to improve learning.

Remedy 3: Value effort over intelligence and the process over extrinsic reward

It is easy to get overawed while observing masters at work and to think they were always this good. What we cannot observe is the hours of hard work and the great obstacles that were overcome on the road to that mastery. While it is true that intelligence has a certain role in the success of students, we typically exaggerate the genius genes while downplaying the effort that is needed to develop “genius.” Research has shown that students who subscribe to a mind-set that values effort over intelligence, and emphasize the process rather than external rewards—both features of a growth mind-set—are more likely to sustain motivation and put in the hard work necessary to succeed in their tasks of interest.

Fifth impediment: Failing to realize that learning is social

A mistake often made by students is going on a solo learning mission and avoiding social learning interactions with professors and other students, missing out on the essence—and the main value proposition—of a university education. This indicates a failure to understand that learning is a social enterprise.

What can be done: The antidote to this problem is to 1) dream big and have ideals, 2) have a mentor and seek feedback, and 3) teach.

Catch phrase for the solutions: No one can do it for you, but you can’t do it alone.

The philosophy of avoiding failure by not trying—borne out of a defeatist attitude and a fixed mind-set—is a sure recipe for developing mediocre, passive, and ignorant students.

Remedy 1: Have a mentor

While it is true that the success of a student ultimately rests on the student himself/herself, a lot of research has shown that having a mentor can accelerate a student’s development. A student can learn about the discipline, as well as patterns of thinking about the discipline, by interacting with professors. The student’s pattern of thinking, judgment, and learning can benefit by working alongside an accomplished mentor. The traditional mode of apprenticeship has thrived over the history of mankind due to rapid gains that a learner can reap under such an association. Having a demanding mentor can help a student aim high—which can offset a student’s typical tendency to aim too low, not realizing his or her own potential. The importance of expert mentorship is highlighted by Mihaly Csikszentmihalyi in his book *Creativity*, which contains interviews of over 91 of the world’s most creative people (including 14 Nobel Laureates) and noted that almost all of them had mentors when they were

of university age, with many of them working under competent mentors from very early in life.

Remedy 2: Seek feedback

At the heart of a mentor-mentee relationship is the process of feedback. A feedback loop allows you to spot errors as they occur. Feedback—even harsh critical feedback—can provide hints on how to improve. By recognizing a failure, we can recast it into something more likely to succeed. One of the most common mistakes is that students do not actively seek feedback. It has been shown in various studies that people who specifically seek out negative feedback do better on performance reviews at work and studies. While the first step is to seek feedback, it is more important to dispassionately learn from the feedback. Students with a fixed mind-set are particularly prone to construe criticism of ideas as a personal criticism. It is important to

Sixth impediment: Being a learning monogamist

Most of what we study in universities can accommodate diverse interpretations, and no single model or narrative can completely capture the “real” phenomenon. The problem of learning monogamy stems from being “married”—i.e., single-mindedly devoted—to any one method, technique, or knowledge source. This can lead to an incomplete, inflexibly dogmatic, and unsound understanding.

What can be done: The antidote to this problem is to 1) avoid the illusions of learning, 2) seek diverse knowledge sources, and 3) adopt diversity in study techniques.

Catch phrase for the solutions: Encourage learning polygamy.

Remedy 1: Avoid the illusions of learning

Learning involves rewiring the connections in the network. To sustain

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outgrow this natural tendency and to approach critical feedback as a learning opportunity.

Remedy 3: To learn and teach

It is said that much of the actual learning in elite universities, such as the Massachusetts Institute of Technology (MIT) and Stanford, goes on in residential halls in which the students learn through interacting with each other. Realizing the potential and utility of this practice, many instructors are incorporating the strategy of *peer teaching* and other methods of active learning into the classroom experience. Peer discussion is highly effective since it allows students to actively exchange their perspectives, receive feedback, and calibrate their learning.

long-term learning, it is important to avoid the illusory or superficial kind of learning. It is also possible to be mistaken in the belief that one has learned something correctly while possessing an incomplete, and wrong, model. Rote memorization, particularly when carried out in bulk in a single setting, leads to superficial knowledge that will be soon forgotten—unless reinforced. Repeatedly solving problems of the same type that you already know how to solve gives the false confidence of competence—this illusion of learning can be understood by the metaphor of a merry ice skater joyfully moving from skating on a lake’s frozen surface to the lake’s unfrozen part, extrapolating the universality of the lake’s frozen surface.

Remedy 2: Seek diverse knowledge sources

Students can supplement traditional sources of information such as textbooks and lecture slides, among others, by the wealth of scholarly information available online. In particular, with the rising trend of offering open courseware (pioneered by MIT and followed widely by different universities on various online platforms such as iTunesU) and free online courses (including the massive open online courses, or MOOCs, offered by organizations such as EdX, Coursera, Udacity), there is no shortage of access to quality resources.

Apart from accessing textbooks, students should also learn from original sources wherever appropriate. However, this advice—while powerful and liberating—should be used sparingly, especially by undergraduate students for whom too much diversity can be damaging. For such students, a textbook can establish a scaffolding framework that provides a point of references within which the student can assimilate the variety of diverse opinions that can exist on a topic.

Remedy 3: Adopt diversity in study techniques

Students typically rely on a limited number of intuitive study techniques. Studies have shown that, by far, repeated reading is the most popular technique among students—although, it is also one of the least effective. A student should also learn about other study techniques including chunking, spaced repetition, elaboration, and retrieval practice.

Chunking works by blending the new ideas with the previous ideas such that the information can be recalled in a smooth chunk and pulled out whenever wanted. Spaced repetition is another technique that can facilitate long-term retention. Studies have shown that rereading can be helpful if done after some time. Elaboration is another study technique that involves reflecting on the relationship of what is learned through a processes of comparing, summarizing,

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and questioning. Finally, retrieval practice is a technique that emphasizes attempts to retrieve information from long-term memory after studying. Recent research has shown retrieval activity to be a very effective learning technique.

Ironically, the more effective learning techniques, such as elaboration and retrieval practice, are used less often by students since they are counterintuitive, require much time and effort, and their efficacy is not well understood by students. Students can benefit significantly from learning about, and using, the various study techniques that have been shown to be effective.

Seventh impediment: Not learning how to learn

It is said that the art of teaching involves the teacher making himself or herself gradually redundant by imparting the skills of “how to learn” to the students. While students do spend a lot of effort in learning various subjects, they unfortunately fail to focus on, and learn, the art of learning. A student who learns how to learn, knows enough—for he or she is empowered to be a lifelong learner.

What can be done: The antidote to this problem is to 1) develop metacognitive skills, 2) learn critical thinking, and 3) become a lifelong learner.

Catch phrase for the solutions: Don't be an “A-grade sheep.”

Remedy 1: Develop metacognitive skills

Metacognition refers to students' understanding and monitoring of their own thinking process. Improved metacognition has been shown to be correlated with improved student learning. Better metacognition is helpful in myriad ways: it provides better self-awareness, it allows better decisions, and it allows us to get better by reflecting on how we might improve. With better metacognition, students can monitor and control their learning, thus making metacognition an essential skill for lifelong learning. Sadly, many students are “unskilled

and unaware of it” due to poor metacognition, thus making improvement more difficult. One aim of this article is to help develop students' metacognition by allowing greater insights into how students think. While I have proposed various antidotes to common student mistakes, metacognition is the first step to recovery, for it leads to the realization that there are deficiencies that need improvement.

Remedy 2: Learn critical thinking

Critical thinking is necessary for systematic thinking—especially on open-ended problem solving. Critical thinking facilitates us in analyzing the logical connection between ideas; to identify, analyze, and deconstruct arguments; to reason well; and to detect inconsistencies in reasoning. In the modern knowledge economy, change and development happens fast. To thrive in this era, it has become important to acquire critical thinking skills with which students can reconcile divergent opinions and analyze, integrate, and evaluate diverse knowledge sources for problem solving. Critical thinking is a necessary tool for recognizing authentic scholarship and for developing the collective capacity of society to strive for democratic ideals.

Remedy 3: Become a lifelong learner

With the focus on learning various subjects, the more important skill of *learning how to learn* is sometimes undermined. Learning in life does not stop when we get our university degrees and diplomas. It becomes essential, therefore, to develop a toolbox of techniques, and an inclined mind, for lifelong learning so that you are able to acquire whatever skills as and when they are needed.

Conclusion

To make no mistakes is not in the power of man; but from their errors and mistakes; the wise and good learn wisdom for the future.

—Plutarch

You've always been in the driving seat and the director of your learning. And with a better awareness of common learning impediments, along with a knowledge of their remedies, it is hoped that you will get higher returns on your efforts.

Read more about it

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