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title:

IT IS FALL 1993, AND 18-year-old Linda McAfee, valedictorian of her high-school class, in Waynesboro, Ga., has finally broken away from the Southern comfort of home and hearth and headed off to seek her fortune as a chemical-engineering major at Clemson University, in Clemson, S.C. Her out-of-state tuition--which her family couldn't otherwise afford because her father is out of work--is covered by a scholarship. She is proud, her parents are proud; about 150 miles back south, her entire hometown is proud. "Waynesboro is so small; everybody knows the valedictorian and salutatorian," she says. "Everybody's always kept up with me, and whenever I go home, they always ask, 'You still makin' A's?'"

But a few weeks into the semester, McAfee finds she can no longer smile so sweetly at inquiries from the folks back home. Tears come to her eyes when she has to explain it to her parents. The truth: Despite good marks in everything else, McAfee is on the verge of flunking the one class in which she ought to be excelling--Chem 101. And if she fails, she's in jeopardy of losing her scholarship. Her family is so concerned that her father drives all the way up from Waynesboro, three hours, on drop day--the last opportunity a student has to withdraw from a class without a grade--and takes her out for Mexican food. "I think you should drop the course," he tells her.

"Dad," she says to him, "I love you, and I value what you and Mama think, but I think I can do it."

And so a few days later, locked on a collision course with fate. Linda shows up at the office of Professor Jeffrey A. Appling, Ph.D., director of general chemistry and, as it happens, author of a text called Math Survival Guide: Tips for Science Students, "I go in there holding back tears in my eyes because the thought of making a D is something I'm not accustomed to," McAfee says. She blathers to Appling something about not understanding stoichiometric equations--she doesn't know what to do; she's--desperate, she needs help.

"And he says, 'Tell me how you study.'"

INSTEAD OF MERELY SHOWING HER a few equations for determining the proportions at which chemical elements combine--stoichiometry--Appling introduced McAfee to a host of study techniques she had never before considered. She learned about time-management tools, a new system of note taking, tips for getting the most out of her chemistry textbook and all the rest--tools with which she could unlock the mysteries of education by herself.

McAfee's experience is not so unusual. After years of lagging behind elementary and secondary schools in pedagogical reform, colleges and universities are beginning to pay serious attention to helping students succeed academically. As a result of decades of research, cognitive psychology, the science of how human beings perceive, process and recall information, "is finally beginning to tell us there's a significant difference in our styles of learning," says Paul Naour, Ph.D., director of the Center for the Advancement of Learning at Muskingum College, a 1,200-student Presbyterian school in New Concord, Ohio. At Muskingum, Naour says,

approximately one out of every 10 students is considered "learning-disabled" by federal standards--even though they have IQ scores of 100 or better. Most of these students, Naour says, merely suffer from minor neurological problems that make it more difficult for them to, say, translate spoken lectures into notes. All they need to succeed, he says, is to understand their weaknesses and adopt strategies that compensate for them.

And in that there's a lesson for all college students: namely, that learning is a continuum, not a condition, and at a certain point along the spectrum, anyone can break down. Even a student with a brilliant academic history can suddenly "get into some paradoxical situations," says Robert Blanc, Ph.D., an associate professor of medical education at the University of Missouri-Kansas City (UMKC). Blanc directs an intensive six-month study program for second- and third-year medical students who find themselves in danger of flunking out. Participants in the programs Blanc offers come from all over the country, and while many of them have failed their board examinations twice already, about 90 percent of those who pass through the programs go on to become doctors.

"Perhaps the most common problem I see," Blanc says, "is that a student has developed certain skills to a fairly high degree that got them along very well through high school and college, but now they need a new set of skills." For example, he says, many coast for years on their ability to memorize and recall data. Then, in their second year of med school, "all of a sudden, they're in a situation where photographic recall is no longer a highly valued skill. They're not being tested on what they recall but on what they understand; they're being asked for comparisons on a higher level. People who develop skills like that don't see the mismatch, and they don't know why they're not being as successful as before. Nor do their professors."

Likewise, Blanc says, students "don't sometimes really understand the nature of the task they're being asked to do. For example, they may perceive that their job is to memorize certain material--say, biochemical pathways--when, really, the task is to understand how these pathways work, to understand the relationship between one part and another. When all of a sudden the demands of the situation have changed, they're blindsided."

That doesn't have to be you. And if it is, there's no reason why things have to stay the same. Herewith, the ROLLING STONE guide to getting the most out of your study time.

#### ALL IN DUE TIME

THE HACKNEYED truth is that you're on your own now. High school is over; nobody's holding your hand anymore. It's your responsibility to get to class, to take notes, to read the book, to do the lab work--and to demonstrate what you've learned. You can't waste all your time going to parties, listening to bands and attempting to fornicate. If you don't want to flunk out, you have to treat college like a 40-hour-a-week job. Horrors.

Actually, it doesn't have to be stultifying. Presumably you came to school to learn something. And if you manage your time properly and marshal your resources, you may, in fact, find the experience liberating. That is, you may wind up with better grades--and more free time.

Set up your study timetable. How often do you study? When do you do it? How much time do you spend at it? At the University of Southern Indiana, in Evansville, students who enroll in a half-semester study-skills course spend two weeks learning how to manage their study time. Following a template used in similar courses all over the country--and which you can easily replicate on your own the students are required to log all their daily plans and activities on two

different schedules. On one chart they list how they intend to use every hour of every day: sleeping, eating, going to classes, studying, partying and so on. On the other chart they record what they actually did. "We work on the fact that we all have 168 hours in a week," says academic skills coordinator Carolyn Smith. By the time the two weeks are up, she says, "it's a rude awakening to many of them to realize how much time they spend doing nothing."

Smith says the students then work out a compromise schedule. The emphasis is on recouping little bits of lost time--the wasted hours between classes, the late afternoons killed lolling in front of MTV, whenever. They also learn to manipulate their schedules to fit the specific demands of their course work. "If you're going to do a participation class like speech," Smith notes, "the best time to study is right before class. If you're taking a lecture class, you want to study right after you've taken the notes."

Avoid wasting precious time. You are an adult now. It's time you had your own Filofax. Seriously. Get a daytime planner and record all the important deadlines for all your classes in one place. You don't want to forget something like three midterms on the same day. Do you have a different notebook for every class? Rethink that strategy. Carol Shulman, a study-skills instructor for six years at Miami University, in Oxford, Ohio, recommends keeping everything--syllabuses, notes and handouts--from all your classes in a single three-ring binder. Not only will you have the ability to review any or all of your subjects whenever you have a few spare minutes, but keeping everything together means you don't waste valuable study time hunting for your materials.

Don't be a martyr to the clock. According to UMKC's Robert Blanc, numerous studies have shown that you get the most out of a subject during the first hour that you study it. In each successive half-hour, your learning curve deteriorates geometrically. After four or five hours studying the same thing, you're worthless. Consequently, Blanc's remedial med students are trained not to study any subject in the same manner for more than an hour. "When you feel yourself flagging, take a break. Then come back and hit a different subject. "Keep renewing that high productive return," Blanc says. "Being a better studier is like being a good lover: It's knowing when to quit doing one thing and when to start doing something else."

#### NO TO HIGHLIGHTERS, YES TO SQ3R

THROW AWAY your highlighter. Now. While he has no scientific evidence to support his claim, Clemson's Jeffrey Appling subscribes to a theory held by a number of study-skills experts: "Highlighters delay learning." When you're skimming a textbook and marking up long passages with fluorescent ink, you're subconsciously telling yourself, "Oh, yeah, that's important, I'll concentrate on it later," Appling says. Better to annotate the margins of the book with a pencil. Writing down observations and questions reinforces your comprehension of what you've read and shows you where your understanding breaks down.

Sometimes the best techniques for approaching an ancient skill such as reading are themselves quite old. A good case in point is a method of critical reading called SQ3R, developed in the 1940s by Ohio State University psychologist Frank Robinson. The acronym stands for survey, question, read, recite and review, and according to the University of Southern Indiana's Carolyn Smith, the method is simple.

Before you delve into a chapter on, say, the great battles of World War I, skim all the headings and subheads. Look at all the pictures and captions and boxes. Study the summary at the end.

When you've got some sense of what's up, go back and turn all the heads and subheads into questions. Who were the combatants? What were the primary reasons for the conflict? Now start reading closely, a section at a time. Keep each heading--and the question it poses--in the front of your mind. When you've finished a section, cover it up and try to recite what you've learned. Then uncover the words and review to make sure you've gotten it right. Some educators add a fourth r to Robinson's classic formula: for 'riting. As in: Jot down a summary before you move on to the next section.

Jeffrey Appling is adamant that his students write or type out summaries of their reading material. In many courses, especially science courses, it's simply not practical to lug around mammoth textbooks. The general chemistry primer at Clemson, Appling notes, "is a monster; you could break your foot if you dropped it." But if you can distill 20 pages of reading into three pages of notes, Appling says, you can easily carry them around and study them anytime. As you approach a test, he says, concentrate on reducing your three-page summaries to one page each. "Every time you go through an iteration like this, you're packing things away in long-term memory. So by the day of the exam, you're just reviewing the things you're shakiest on."

#### DID YOU GET THAT DOWN?

TAKING GOOD notes is an acquired skill. "I find that students either try to take too many notes and try to write down everything, or else they think it's common sense and they don't write it down, and then they can't recall it to study it," says Carol Shulman. According to Kenneth A. Kiewra, an associate professor of educational psychology at the University of Nebraska-Lincoln and former director of that campus's defunct Academic Success Center, studies show that most students take down only about 30 percent of what they should in lecture courses and that freshmen often get as little as 11 percent of the important stuff.

Part of taking good notes is just common sense. If the instructor writes something on the board, it's probably worth taking down. Ditto if he repeats himself. Learn your professor's body lingo. Does she employ certain gestures or assume certain postures when she's closing in on a big point? Listen for telltale inflections and phrases: "the fundamental reason," "a critical role," "the important factor," et cetera.

There are also several note-taking strategies you can adopt to help you remember more of what's said in lectures.

**Mind Mapping** Some people--perhaps 25 percent of the students who take the How to Study class in Smith's Academic Skills program at the University of Southern Indiana each semester--are extremely visual thinkers. These students, Smith says, are often drawn to a widely popular system of note taking called mind mapping. The basic principle is to represent the relationship between ideas in a geometric rather than hierarchical fashion. That is, rather than using headings and subheads, you put an important idea in a box in the middle of the page. Then you array secondary points in boxes around the central idea. You show the relationships between bits of information by connecting the boxes. If you want to get really fancy, you can use different colors of ink to denote different types of relationships.

**The Cornell Method** If mind mapping seems a bit foreign to you, you can almost certainly benefit from following the set of venerable principles set forth by famed Cornell University psychology professor Walter Pauk: the time-tested Cornell Method, easily the most popular and

enduring academic note-taking system ever devised.

Take a sheet of notebook paper. Draw a vertical line down the page about two and a half inches in from the left edge. Then draw a horizontal line all the way across the page, about two inches up from the bottom. During a lecture, take your notes in the disproportionately large upper-right quadrant of the page. Try to get things down in a rough outline. Use your own words.

Abbreviate. As soon as possible after class, go over what you've taken down. Use the left margin to flesh out ideas you earlier glossed, to highlight key points and to note questions you need to answer. After that, summarize everything on the page in one or two sentences in the space across the bottom. "One of the nice things about the Cornell Method," says Smith, "is that if you take two or three sheets and overlap them, you can use them to study by hiding the answers and questioning yourself about the main points."

### GET THEE TO A STUDY GROUP

SIMPLY PUT, the most efficient way to learn is to stash small bits of information in short-term memory and then pull them out and use them regularly, which is to say, organize them, analyze them, rehearse them. The idea is to allow your brain to establish relationships, like hypertext links, between seemingly disparate pieces of information. It's these associations that allow you to dredge up real knowledge from the depths of long-term memory. That's why the SQ3R text-reading system and the Cornell Method of note taking are so revered by study gurus: They are built around constant review.

No matter how diligent you are, however, it's possible to lull yourself into a false sense of security. "One of the things that we see [in failing med students] is that people study almost entirely by themselves," says Robert Blanc. "Now that doesn't seem to be problematic on the face of it, except that when you study by yourself, it's hard to know when you've really understood or mastered something. Self-deception is easy. The real proof of whether you understand something is whether you can explain it to someone else." Thus, Blanc says, "study groups are key."

Often the best study groups are organized by academic departments or campus learning labs. At Syracuse University, in Syracuse, N.Y., the campus learning center, in collaboration with academic department heads, hires and trains graduate students from different disciplines to conduct twice-weekly "study circles" for participants in the Syracuse Academic Improvement Program (SAIP), a nearly 3-year-old project aimed at saving students in danger of flunking out.

If you can't find a sanctioned review session, set up your own study group. But be smart about it. Study groups have a way of degenerating. Don't just plan to get together and discuss. Jeffrey Appling recommends structuring study groups around mock exams. Each member shows up with, say, 10 test questions of his or her own invention. As soon as everyone's there, exchange exams with the person next to you. Try to complete the questions in the same amount of time you would allow in a real exam. When everyone's done, pass the tests back and grade them. "Then," Appling says, "the author has to explain the right answers to the group. Typically they'll fall into categories. 'Oh, mine was like that, and I got it wrong, too.' This helps you focus on the stuff people don't understand, not the stuff you do understand."

### THE RULES OF CRAMMING

NOTHING SETS study-skills experts to cursing and swearing oaths like cramming. An idiotic practice, they say, antithetical to all the lessons of cognitive psychology, and unnecessary

assuming that you never miss class, that you take notes like a court stenographer and that you pore over your readings in every spare minute like a Talmudic scholar.

Assuming you haven't reached such Platonic heights of studiousness, however, you'll probably want to stay up all night drinking coffee, smoking butts and cramming.

While he doesn't endorse the practice, Blanc knows that sometimes you have no other choice. His down-and-dirty advice for those in dire straits: "Cramming technique is really just a function of how much time you've got. If you've got one hour and that's all, then you'd better get last year's exam and do the very best you can to remember all the answers, because that's going to give you the highest return." The best predictor of what a professor will ask on this year's exam is what she asked on last year's exam. If you've got all night, you're still going to want to sit down with last year's exam. But now you've got time to sit down and do it with a roommate.

"And if you've got to read Jane Eyre tonight for an exam tomorrow, you'd better go to the library and check out a book called Masterplots. Who uses Masterplots? Faculty who make up tests. And honors students."

#### WHEN ALL ELSE FAILS

GROWING UP IN Washington, Pa., near Pittsburgh, Heidi Willis was no academic Wunderkind. "When I was in high school, I was an average student, a C student," she says, "and I didn't do very well in my science classes." When she was accepted into the speech-communication program at Muskingum College last year, it was with a caveat: She would have to spend a full year following a special regimen overseen by the campus learning center.

Thus, in her second semester at Muskingum, 18-year-old Willis lives according to a schedule designed to optimize studying. Every Thursday at 11 a.m., she finds herself in a cubicle with a tutor. Together they spend 30 minutes going over subjects with which Willis is having trouble. If the tutor can't help, he finds someone who can. Willis also attends mandatory study workshops on prescribed evenings. She takes her notes according to the Cornell Method.

And it seems to be paying off. In Willis' first semester she got a 3.3--A's in math, speech and composition and a C minus in biology. "To be honest," she says, "I didn't expect to get an A at all. I came out of the semester a totally different person."

Early--and intensive--intervention of the sort directed at Willis is fairly common on college campuses nowadays. Marist College, a small liberal-arts school in Poughkeepsie, N.Y., for example, has a special six-week program designed to acclimate incoming freshmen to college life. Basic courses are taught with the emphasis heavy on time management, study skills and behavior-modification techniques that can help new students deal with the stresses of life away from home. At Syracuse University, students experiencing academic difficulties can participate in highly regimented six-week summer courses where every moment that's not spent in class is dominated by study-skills instruction, tutoring sessions and study groups; participants even live in dorms supervised by older "peer mentors" with related majors.

Chances are your school has a learning lab where you can at least get tutoring, basic study-skills instruction and referrals to organized study groups. Maybe more. Marist College, for example, has a proofreading service wherein undergraduates can drop by and have their term papers critiqued on the spot by specially trained upperclassmen and grad students. Many Marist instructors also allow students to take exams without time limits under the supervision of

learning-center proctors. It can't hurt to find out if those options are available to you, too.

Just in case you're wondering, Linda McAfee did, in fact, pass Chem 101 at Clemson. After her initial meeting with Appling, she immediately threw away her highlighter and began scrutinizing her schedule to find unused study time. She started scribbling in the margins of her book and distilling each chapter into a notebook she carried everywhere.

On her next exam, McAfee got an 84; on the final, a 96.

"I remember exactly when I got my grades," says McAfee, now a sophomore. She was back home in Waynesboro for the Christmas break, and she and a friend were getting ready to go out caroling to all those familiar neighbors. Just as they were heading out the door, McAfee's parents pulled into the driveway waving an envelope. "I opened it up and started screaming and shaking, I was so happy." She had earned a B for the course. She kept her scholarship.

And the next semester she enrolled in Chem 102. In this class, she got an A.

LAMAR GRAHAM IS SENIOR WRITER AT "MEN'S JOURNAL." THIS IS HIS FIRST PIECE FOR "ROLLING STONE."