



From: *Creating Self-Regulated Learners: Strategies to Strengthen Students' Self-Awareness and Learning Skills*

By: Linda B. Nilson

Chapter 1

What Is Self-Regulated Learning and How Does It Enhance Learning?

A major goal of higher education is to create lifelong learners – intentional, independent, self-directed learners who can acquire, retain, and retrieve new knowledge on their own (American Association of Colleges and Universities, 2002, 2007; Wirth, 2008a). Only lifelong learners will be able to keep up with the explosive growth of knowledge and skills in their career and to retool into a new career after their previous one runs its course. This need to retool is already a reality in this society – witness the unprecedented expansion in adult education and the high unemployment rate among workers who haven't met this challenge – and it will become the norm for this generation of traditional-age students as well as subsequent ones. Turning our students into lifelong learners no longer translates into the academic ideal of producing widely-read cultural elites. It now means equipping our graduates with basic economic survival skills. We *owe* our students lessons and practice in how to learn at a fairly high level. And letting them

slip through college without solid learning skills and, subsequently, with only fleetingly superficial knowledge, is professionally irresponsible, if not unethical.

Yet few of our students show the signs of being intentional, independent, self-directed learners.

Our Students as Learners

A recent study asked 132 veterinary students to identify the factors that they considered important in their learning (Ruohoniemi & Lindblom-Ylaine, 2009). They most commonly cited the planning and practices of the instruction they were receiving, including the work load in their courses and the curriculum as a whole. The respondents – and remember that these are professional students – rarely named their own effort, learning skills, or study methods. As they perceived it, learning was something that was “happening” to them, and the faculty’s job was to make it happen. These learners were not at all intentional, independent, and self-directed.

Not surprisingly, research on younger, undergraduate students reveal the same mind set. Specifically, these students take little or no responsibility for their own learning, blaming their shortcomings in achievement on their “ineffective” instruction and the “too-advanced” or irrelevant course material (e.g., Elliot, 2010; Singleton-Jackson, Jackson, & Reinhardt, 2010; Twenge, 2007). Furthermore, they admit to having little or no interest in learning, certainly not for learning’s sake (Pryor, Hurtado, DeAngelo, Palucki Blake, & Tran, 2011), which no doubt broadens their definition of “irrelevant.” Reinforcing their avoidance of responsibility for their learning is their widespread belief that learning should not require effort. It didn’t seem to in elementary and high school, where many of them got credit just for showing up, so why should

learning require so much time and hard work now? They are speaking from twelve years of experience in school, more than half their lives, making their expectations quite reasonable. These students were also led to believe that they were born smart, which furnishes another justification for their not having to work hard. First their parents created this self-concept, then their schools by awarding trophies indiscriminately to everyone (Elliot, 2010). Therefore, learning, along with strong reading comprehension and communication skills, should come quickly and easily. If they don't, students logically reason, the fault lies with the instructor or with their own lack of flair for the particular subject matter. If they attribute their problem to the latter, most of them still figure that there's no use in trying hard, let alone persevering, because they were born that way. In other words, they have been socialized into accepting a fixed-intelligence mind set (Dweck, 2007), a belief that actually had currency until the neuro-cognitive research showed otherwise during the past decade.

Given their beliefs about the sources of their achievement, it is understandable that our students lack certain kinds of knowledge about learning, cognitive tasks, and the way the mind processes and stores new input. In the language of the self-regulated learning literature, they have very little of these kinds of knowledge (Hofer, Yu, & Pintrich, 1998; Pintrich, 2002; Pintrich, McKeachie, & Lin, 1987):

- *Strategic knowledge*, which encompasses knowledge of the following: different learning strategies and heuristics for different types of tasks; the steps and algorithms needed for solving problems and executing technical tasks; the need to plan, monitor, and evaluate their learning and thinking; and effective strategies for rehearsal (memorizing), elaboration (using learning devices such as summarizing, paraphrasing, and linking new

knowledge to prior knowledge), and organization of the material (such as concept-mapping).

- *Knowledge about cognitive tasks*, which includes comprehending the directions (such as knowing the verbs mean), assessing the difficulty of the task, and deciding wisely which learning and thinking strategies to use when.
- *Self-knowledge*, which entails knowing one's strengths and weaknesses as a learner, accurately judging one's command of the material, and knowing what strategies work best for oneself to accomplish given tasks.

These are skills that we may have acquired along the way, but we are professional learners. Without these abilities, we might not have gotten so far in the education system. But few of our students have been taught these in the past or have picked them up on their own, as some of us did. Is it any wonder that students rarely have questions on the readings and lectures? They do not know what they have and have not understood, so they optimistically assume they *have* understood and will therefore remember the material. Of course, learning does not work this way, but they know neither how learning works nor what they have to do to ensure it.

The literature on self-regulated learning tells us that deep, lasting, independent learning requires a range of activities – cognitive, affective, and even physical – that go far beyond reading and listening. It entails, first, setting learning goals for a class period, an assignment, or a study session. Then the learner must plan how to go about the task effectively – perhaps actively listening, taking notes, outlining, visually representing the material, occasionally self-quizzing, reviewing, or writing a summary. While executing the plan, she must direct and

control her focus and behavior to stay on task, but allowing herself appropriate short breaks for revitalizing her brain. At the same time, she must be observing and monitoring her mind and actions to ensure they aren't succumbing to distraction, fatigue, discouragement, or detrimental self-talk ("I'm just no good at ____."). She has to maintain and reinforce her motivation to learn this material, perhaps by considering its relevance to her experiences or her future. If her mind wanders astray from the task, she has to bring herself back to it. She also has to be aware of how well she is understanding and absorbing the material by occasionally pausing to evaluate her command of it. Can she paraphrase the most important points? Can she perceive and organize the interrelationships among them? Are her learning strategies and schedule working for her? If not, how can she regulate them to achieve better results – not only this time but the next time she tackles in a similar task?

In short, self-regulated learning is total-engagement activity involving multiple parts of the brain. It encompasses full attention and concentration, self-awareness and introspection, honest self-assessment, openness to change, genuine self-discipline, and acceptance of responsibility for one's learning (Pintrich, 2000; Zimmerman 2001, 2002; Zimmerman & Schunk, 2001). These components sound more like dimensions of character than cognitive ability. Indeed, the literature contends that that self-regulation has little to do with measured intelligence and can be developed by just about anyone (Davidson, 2003; Schraw, 1998; Schraw & Dennison, 1994; Schunk & Zimmerman, 1998). In fact, the initial research on self-regulation, which goes back to the early 1960s, was conducted by social cognitive psychologists studying how children developed self-control. They found that response inhibition, the ability to delay gratification, and the acquisition of self-regulating norms furnished the basis for self-control. So,

given these terms, the literature seems to suggest that character, or at least some aspects of it, does play a major role in defining self-regulated learning.

Self-control, self-discipline, perseverance, and determination in pursuing long-term goals outweigh IQ as predictors of post-secondary academic success and, among children, performance on a spelling bee (Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Seligman, 2005; Tough, 2012). Anyone who has completed a Ph.D. would probably agree these traits are more important than just being bright. Also critical to academic achievement is the ability to delay gratification, which a considerable literature finds is closely associated with self-efficacy beliefs and reassurances, intrinsic motivation, perceived task value, a “mastery” or “learning” (versus performance) goal orientation, help-seeking, use of proven cognitive learning strategies (rehearsal, elaboration, organization, and metacognition), and control of study-related behavior and environment (see next section) (Bembenutty, 2011). All this research strengthens the case that self-regulated learning is interwoven with a constellation of behavioral practices, values, beliefs, and personal traits, some of which are fall under the umbrella of “character.”

Why don't our students come to college with these aspects of character? We can point to various suspects in their past, but it really doesn't matter who or what may be at fault. We have these young people now, and if we do not help them make up for the shortfalls of their socialization, they will not learn what they will need to become contributing citizens, wise consumers of goods and information, productive workers, and survivors of what promises to be an economically and technologically volatile future. To date, we have been doing too little to help students acquire self-regulation skills and assume responsibility for their learning (Zimmerman, 2002).

Self-Regulation versus Metacognition

You may very well be familiar with the concept of metacognition and may be wondering whether it and self-regulation are the same thing. My unequivocal answer is “yes” and “no.” While some may disagree, self-regulation is the more general concept, and metacognition is a major facet of it (Husman, 2008). Specifically, metacognition is one’s conscious control over one’s *cognitive* processes – such as focusing on given input, dialoguing with it, observing one’s preconceptions and consequent resistance to novel or conflicting inputs, and reviewing and reflecting on an experience (Husman, 2008). Zimmerman (2002) calls metacognition “the awareness and knowledge about one’s own thinking” (p. 65), and Schraw (1998) defines it as thinking about how one performs a skill (Schraw, 1998). Recall from the previous section the types of knowledge that most students lack: strategic knowledge, knowledge about cognitive tasks, and self-knowledge, at least as far as learning is concerned (Pintrich, 2002); these are types of metacognitive knowledge. From whatever perspective, metacognition involve self-feedback on one’s learning, and it is an essential component of meaningful learning and transfer (Bransford, Brown, & Cocking, 2000; Schraw, 1998).

By contrast, self-regulation encompasses the monitoring and managing of one’s cognitive processes as well as the awareness of and control over one’s emotions, motivations, behavior, and environment as related to learning. “Behavior” includes self-discipline, effort, time management, and, when deemed necessary, help-seeking from the instructor or some other more knowledgeable party (Karabenick & Dembo, 2011). “Environment” encompasses the use of technology, task management (single versus multi-tasking), and sensory inputs, such as place, temperature, background sounds (for example, music), and physical position. This means that a

learner has to find out what kind of environment works best for her learning. The process starts with self-observation and task-oriented self-talk, as in talking one's way through a new task. The learner must experiment with and observe the effects of various emotions, motivations, behaviors, environments, and cognitive processes and decide which ones maximize and which ones impede her learning. Those with positive effects tend to reduce her cognitive load while she is engaged in learning (Husman, 2008). Finally, she must exercise self-control in creating the optimal cognitive, affective, and physical settings and the best schedule for her learning.

Most of our younger students have not mastered these processes. In addition to their poor metacognitive skills, they have issues with regulating their motivation and emotions, controlling their study-related behavior, and making wise decisions about their learning environment. On the affective level, many have trouble deferring gratification, shutting out competing stimuli, motivating themselves to tackle hard tasks, and maintaining the self-confidence and longer-term outlook needed to persevere. They typically externalize their locus of control, take a passive view of learning, feel entitled to academic rewards for modest effort, and have an inflated, unearned sense of self-esteem. Behaviorally, their self-discipline and time management skills are weak, and they subvert their learning environment with social and technological distractions and multiple-task rotation (Bauerlein, 2008; Dweck, 2007; Lancaster & Stillman, 2003; Nathan, 2005; Pintrich, 2002; Pryor, Hurtado, DeAngelo, Palucki Blake, & Tran, 2011; Singleton-Jackson, Jackson, & Reinhardt, 2010; Twenge, 2007). Of course, these apparent behavioral weaknesses may reflect the higher priority that students are giving to their jobs, social life, family, athletic development, or something else. Still, to transform these young people into self-directed lifelong learners, we have a lot of work to do.

Self-Regulation versus Deliberate Practice

A concept in psychological research that is similar to self-regulated learning is “deliberate practice.” Ericsson, Krampe, and Tesch-Römer (1993) proposed it to explain the genesis of expert performance, countering the popular belief that genetically endowed talent is behind it. According to their findings, experts engage in countless hours of a systematic practice. This involves breaking down the elements of the skill or performance and, with each practice, carefully monitoring one’s performance to identify errors, no matter how minute, in the elements. The next steps are to isolate the source of each error and to strive to correct it with each subsequent practice. Experts-to-be may work on only a couple of errors at a time, but they work their way through every one. Teachers or coaches usually enter the picture to help them find and correct errors. In addition, experts-to-be hold themselves to increasingly rising standards, aiming for mastery. Deliberate practice, then, revolves around finding and eliminating mistakes and doggedly pursuing a moving target. It’s hard, long, repetitive work – mentally demanding, emotionally straining, and life-engrossing. But it goes far in explaining improvement and even exceptionalism in performances in music (Duke, Simmons, & Cash, 2009), sports, and business, among other areas (Colvin, 2008).

Deliberate practice does indeed incorporate self-regulated learning. While some people adopt it with a grand goal in mind – to perform at an extraordinarily brilliant level, typically in a career – others use it just to get better. However, the term usually applies to working on one specific (however complex) skill or performance, while self-regulated learning encompasses an interrelated web of skills, from reading different genres to writing various types of assignments to solving a wide range of problems. However, if you keep deliberate practice in mind, you may

notice more resemblances to self-regulated learning. Those who practice either one of them seem to share beliefs about themselves, attitudes, and character traits.

Theoretical Roots of Self-Regulation

The concept of self-regulation emerged from Albert Bandura's seminal theory of self-efficacy (Zimmerman & Schunk, 2003), which was later incorporated into social cognition theory. While studying children, Bandura (1977, 1997) found that their beliefs about their self-efficacy seemed to determine how capably they thought they could self-regulate their thoughts and behavior. In turn, the children with greater self-regulation were able to learn more, which in turn enhanced their sense of self-efficacy. These findings led Bandura (1986) to counsel K-12 educators to teach self-regulated learning in school. He recommended specifically that teachers focus on these three practices to foster students' self-efficacy and learning: first, their self-observation and self-monitoring of their performance; second, their self-evaluation of their performance against their personal standards and values, referential performances (models), and the determinants of performance; and third, their cognitive, affective, and tangible responses to their performance evaluations, including self-correction. Students with this kind of education would be less likely to buy into the notion of fixed intelligence (Dweck, 2007). For whatever reason, Bandura's recommendations did not transfer into educational practices, at least not as he intended them. The K-12 focus has been on cultivating student self-esteem rather than self-efficacy and self-regulation.

While self-efficacy and social cognition theory parented self-regulated learning, Zimmerman (2001) was able to reconcile self-regulated learning with the perspectives of six other prominent psychological theories: behaviorism, phenomenology, information processing,

volition, Vygotsky, and constructivism. The neat fit of self-regulated learning with other theories enhances the validity of both the concept and the research findings based on it. Full details are found in Zimmerman & Schunk (2001).

Self-regulated learning has also helped elaborate the distinction between novice and expert thinking. Drawing on the work of Schraw (1998), Bransford, et al. (2000), and Zimmerman (2002), Grossman (2009) analyzed the very different perspectives that novices and experts take on their own learning. According to Grossman, novices tend to believe in an external locus of control and may give up on learning challenging material because they see their innate abilities as inadequate for the task. When they do choose to learn, they go about it in a rather haphazard manner. They do not set goals or break up the task into steps or monitor their learning progress. They fail to evaluate and re-orient their learning methods, if necessary. They rely on the feedback of others and compare their performance with that of others, rather than self-assessing and restructuring goals they have not met. In problem-solving situations, they rarely progress beyond exploring the problem (Schoenfeld, 2010). Experts, on the other hand, manage and control their learning all along, acknowledging failure as a signal to modify their learning strategies (Zimmerman, 2002). In problem solving, they read, explore, analyze, plan, implement their plans, and evaluate on their way to a solution (Schoenfeld).

Because self-regulated learning takes place over time before, during, and after a learning session, Schraw (1998) developed a three-stage model of the process: planning, which precedes the learning task; monitoring, which goes on during it; and evaluating, which takes place immediately after it. At each stage, he posited, the self-regulated learner answers a “regulatory

checklist” of questions, much like those that experts ask themselves while they are learning or problem solving. The questions below are representative.

- Planning questions: What kind of a task is this? What is my goal and how will I know I have reached it? How motivated am I to perform the task, and how can I increase my motivation if it’s low? How much time and how many resources will be necessary? What do I already know about the topic? What additional information, if any, will I need? What strategies should I use? What strengths can I bring to the task? How can I compensate for my weaknesses? What might interfere with my completing the task, and how can I prevent this interference?
- Monitoring questions: Am I sure I know what I am doing? Does my approach to the task make sense? How well are my strategies working? Am I making good progress towards my goal? What changes in approach or strategies should I make, if any? What material is the most important? What material am I having trouble understanding? What material am I having trouble recalling? How does what I am learning relate to what I already know? How does it relate to my experience or my future? How is my thinking on the topic changing?
- Evaluating questions: How well did I achieve my goal? How well did I master what I set out to learn? How well did I avoid sources of interference and stay on task? What approach and strategies worked well? What didn’t work? What do I need to do differently when taking on a similar task? What were the most important points I learned? What am I still having trouble understanding? What do I need to review? What questions do I have and should bring to an expert? How does what I learned relate to other things I’ve been learning or have experienced? How has my thinking on the topic changed?

Zimmerman (1998, 2002) proposed a somewhat similar but more abstract framework of three “phases” of self-regulated learning: forethought, performance or volitional control, and self-reflection. Within each of these are two “classes” or classifications of more specific mental processes.

- Forethought
 - Class #1: task analysis, to include goal setting and strategic planning
 - Class #2: self-motivation beliefs, to include self-efficacy beliefs about one’s learning, expectations about the personal consequences of learning (perceived value), intrinsic interest in the task (perceived value), and goal orientation (a learning orientation being better than a performance orientation)
- Performance/volitional control
 - Class #1: self-control, to include use of imagery, self-instruction, attention focusing, and application of task strategies
 - Class #2: self-observation, to include self-recording and self-experimenting (testing alternatives to see what works best).
- Self-reflection
 - Class #1: self-judgment, to include self-evaluation of one’s apparent performance against some standard (one’s prior performance, another person’s performance, or some absolute standard) and one’s causal attribution of results (beliefs about locus of control)

- Class #2: self-reaction, to include the degree of self-satisfaction, which enhances or undermines further motivation, and adaptive/defensive adjustments, which will lead either to more effective learning strategies next time or to self-image protection (such as missing the test or dropping the course).

Both Schraw's and Zimmerman's schema drive home the temporal nature of self-regulated learning. It is an ordered mental process – a sequenced *routine* practiced automatically by experts and seasoned learners.

Emotional Self-Regulation

Emotional control is an essential part of self-regulated learning, and Zimmerman's framework highlights affect in two of his three phases. During forethought, the learner must motivate herself to tackle a learning task by consciously affirming her interest in doing it, its value to her, her sense of self-efficacy, and her desire for mastery. During the self-reflection that follows completing the task, she first judges her performance, then reacts emotionally to her judgment. Her being pleased reinforces her motivation and no doubt some of the other positive emotions she generated during forethought. Her being disappointed may lead to either her improving her learning strategies or her defensively withdrawing her energy from the task achievement goal. This last reaction may in turn undermine the positive emotions needed in the forethought phase of the next learning task.

The importance of positive feelings in the learning process cannot be overemphasized. No rational, mentally healthy person pursues a goal that defies one's reach or that evokes negative affect toward oneself. But beyond this truism is a recently identified physiological link

between emotions and cognitive acuity and task performance (Immordino-Yang & Damasio, 2007; McCraty & Tomasino, 2006). For instance, research conducted on high-school students has found that high test anxiety, especially measures of worry, significantly depresses their performance on high-stakes tests (Bradley, McCraty, Atkinson, Tomasino, Daugherty, & Arguelles, 2010). In this same study, the experimenters introduced an intervention called the TestEdge® Program in which the students in the treatment group successfully learned how to reduce their test anxiety and overall stress and how to generate positive emotions. In the matched-pairs analysis, these students achieved marginally significant higher test scores than those in the control group (Bradley et al.). While the testing context is not directly relevant to self-regulated learning, this nascent line of research is pertinent to emotional self-regulation. The intervention program involves breathing slowly “through the heart,” initiating thoughts that produce positive affect, and other mental exercises. Hopefully, the researchers will examine the effects of this simple intervention on learning. It could help break the indifferent, anxious, and defensive emotional attitudes that inhibit the learning process of many students.

Now let’s examine the research on the effects of self-regulation on learning and related cognitive and affective processes.

The Benefits of Self-Regulating Learning

As mentioned earlier, self-regulated learning is a sequenced series of practices that virtually any learner can understand and develop. It does not require any particular level of ability or intelligence (Schraw, 1998; Schraw & Dennison, 1994; Schunk & Zimmerman, 1998). Rather it takes, first, learning about the practices and their benefits, and then either wanting to

implement these practices or responding positively to the external pressure to do so. For less internally motivated students, instructors can supply that pressure.

The pay-offs for learners are significant and varied, although students may not believe this until they try out the strategies. Research has amassed overwhelming evidence that self-regulated learning enhances:

1. student performance/achievement (learning) in courses and course units (Azevedo & Cromley, 2004; Boud, 1995, 2000; Cooper & Sandi-Urena, 2009; Garner & Alexander, 1989; Glenn, 2010; Kitsantas & Zimmerman, 2009; Lovett, 2008; Masui & de Corte, 2005; McDonald & Boud, 2003; McGuire, 2008; Ottenhoff, 2011; Pintrich, 2002; Pressley & Ghatala, 1990; Rolf, Scharff, & Hodge, 2012; Schraw & Dennison, 1994; Zimmerman, 2002; Zimmerman, Moylan, Hudesman, White, & Flugman, 2011);
2. the amount and depth of student thinking (Jensen, 2011);
3. students' conscious focus on their learning (Ottenhoff, 2011); and
4. the development of reflective and responsible professionalism (Sluijsmans, Dochy, & Moerkerke, 1999).

In fact, the ability to self-regulate predicts SAT scores more strongly than do IQ, parental education, or parental economic status (Goleman, 1996).

Let's look at the relationship between learning and one mental process that plays prominently in self-regulated learning: self-assessment. It only makes sense that inaccurate self-assessment would be associated with poor self-regulation, but the former is also related to poor

performance. In Kruger and Dunning's studies (1999, 2002), college students who ranked in bottom quartile of the skills tested overestimated their rank by an average of 50 percentile points. Poor performance and inflated self-assessment of one's work were also linked in medical students (Edwards, Kellner, Siström, & Magyari, 2003) and undergraduates in other studies (Bell & Volckmann, 2011; Longhurst & Norton, 1997; Ottenhoff, 2011). One solution that was tried, having students develop their own grading criteria, proved ineffective. It failed to improve 1) students' ability to discriminate levels of quality and 2) the agreement between their grades and the grades given by the instructor and other students (Orsmond, Merry, & Reiling, 2000). The only silver lining here was some evidence that that poorer performers are less confident in their distorted self-estimations than are stronger performers in their more accurate self-estimations (Miller & Geraci, 2011).

Conversely, students who assess their work accurately – that is, the same way their instructor does – tend to be higher-achieving and more advanced (Boud & Falchikov, 1989, which is a broad literature review; Edwards, Kellner, Siström, & Magyari, 2003), as well as more motivated (Longhurst & Norton, 1997). They are also more likely to be found in science (Falchikov & Boud, 1989) and mathematics courses like statistics (Edwards, 2007) than in other disciplines. Of course, this finding probably reflects the fact that, at the undergraduate level, scientific and mathematical problems usually have only one correct answer and limited ways of obtaining it.

Recall Bandura's findings that self-regulation and self-efficacy reinforce each other. As a result, the successful learner internalizes her locus of control and feels empowered to attribute her successes and failures to her own study habits and efforts (Glenn, 2010; Masui & de Corte,

2005; Zimmerman, 2002; Zimmerman et al., 2011). Self-efficacy theory also tells us that a sense of control, choice, and volition enhances a person's motivation to perform a task. So it is not surprising that self-regulated learning is motivating in itself, even if the task is not particularly appealing to a learner. In a recent experimental study (Rolf, Scharff, & Hodge, 2012), two groups of mathematics students were given pre-class JiTT (Just-in-Time Teaching) homework assignments that required them to complete a reading and answer questions on it. The instructors then modified class activities based on students' responses. In the multiple-section treatment group, the instructors explained the learning benefits of the JiTT assignments and had the students complete three reflection forms on the effects of the JiTT process on their learning. The control group received neither the explanation nor the reflective assignments. The results confirmed the positive impact of the metacognitive experiences – the instructors' explanations and students' reflections on their learning – on multiple facets of learning, including cognitive, affective, and motivational. The treatment-group students 1) performed better on the final exam, 2) expressed greater appreciation of the benefits of these assignments, and 3) were more likely to answer the optional JiTT questions over the semester.

While Bandura (1977, 1997) linked self-regulation and self-discipline in children, no one has attempted to relate self-regulated learning to self-discipline in young adults. However, it is reasonable to expect a connection. Self-regulation requires self-discipline, and vice versa. Self-regulation also contains elements of character and no doubt builds “intellectual character.” It fosters responsibility, introspective honesty, self-examination, and the pursuit of improvement. Schwartz and Sharpe (2012) had similar ideas in mind when they coined the term, “intellectual virtues,” in which they placed the love of truth, honesty, and perseverance, among other positive traits. And we can now better appreciate that developing self-regulated learning habits in our

students is essential for higher education to realize its long-term goal of producing intentional, independent, self-directed, lifelong learners who can meet the burgeoning knowledge demands of the future.

Research tells us that one aspect of self-regulation, the ability to defer gratification while young, has profound effects on adult behavior and abilities. It fosters goal-setting, planning, self-esteem, ego-resiliency, stress management, educational attainment, and social and cognitive competency (Mischel & Ayduk, 2002; Mischel, Shoder, & Peake, 1988; Mischel, Shoder, & Rodriguez, 1989; Shoder, Mischel, & Peake, 1990), as well as income attainment (Evans & Rosenbaum, 2008).

The Structure of This Book

The next eight chapters comprise a catalog of activities and assignments in which students self-regulate their learning – to include cognitive processes, emotions, motivations, behavior, and environment – around different course components and on various schedules. These include “metacognitive assignments,” which I call “meta-assignments,” in which students monitor and document their own thinking and actions in completing content-based assignments. Elliot (2010) coined the term “meta-assignment” as a means to help the Millennial (“trophy”) generation develop sharper “intellectual clarity.”

Along the way, you will also come across the term “wrappers,” which Lovett (2008) conceived, to designate activities and assignments that direct students’ attention to self-regulation before, during, or after regular course components. As the word suggests, they “wrap around” assigned readings, videos, podcasts, lectures, regular course assignments, and quizzes

and exams. Their purpose is to heighten students' conscious awareness of their learning process: what they are and are not understanding or retaining, how they are or are not learning, what they are deeming important, how they are tackling and proceeding with an assignment, how they are processing and responding to a learning experience, how well they are executing and realizing their plans and goals, what value they are obtaining from a learning task, how much they are progressing on a given skill, how much confidence they have in their knowledge and skills, how much they may be overestimating their knowledge and skills, and how effectively and diligently they are preparing for quizzes and exams. Wrappers then not only enhance students' performance on the regular course components but also teach them how their mind works and how to make it learn and perform better. In doing so, wrappers multiply the learning value of every standard class activity and assignment.

We know that students, even at the elementary level, acquire self-regulated learning strategies by witnessing others modeling these techniques, whether the modeling is being done by the instructor (Butler & Winne, 1995) or student peers (Schunk, 1989), and then by practicing them on their own (Brown & Pressley, 1994; Delclos & Harrington, 1991; Kuhn, Schauble, & Garcia-Mila, 1992; Schraw, 1998; Schraw & Dennison, 1994; Siegler & Jenkins, 1989). So observing a model "talking out" a self-regulatory process may be the first stage of skill acquisition for students, but they must then engage in activities or assignments to develop their nascent skills. To the extent possible, these tasks should be worth something toward the course grade. Giving credit drives home to students the importance we give to learning how to learn, and it need not take more than minutes of our time. But we will delay issues of credit and grading until Chapter 10.

In Chapter 11, we will consider ways to integrate self-regulated learning into course design. This integration, which should be evident in the syllabus, communicates to students that learning how to learn is a worthy, if not critical, learning outcome in itself. Actually, this outcome is really a package of outcomes focusing on different aspects of the self-regulation process. After addressing the objections that faculty may raise to this integration, the chapter offers recommendations on which assignments and activities to incorporate first. Those suggested demand little or no class time and grading time but, at the same time, have a major impact on student achievement. Hopefully, they will give instructors the confidence to add a few more easy-to-implement self-regulated activities and assignments over the next couple of times that they teach the course, and some earlier additions are suggested. One option for achieving a fully integrated course is to have students assemble a learning portfolio that includes all their self-regulated learning products as well as their content- and skills-related work. Chapter 5 examines different types of portfolios as meta-assignments.

The final chapter offers models for integrated course design. It describes a number of disparate courses, from several in STEM fields to developmental writing, that explicitly feature self-regulated learning outcomes in parallel to knowledge and skill outcomes. In a couple of these courses, students build a sizable portfolio of their self-regulatory reflections and wrappers over the term. Other courses have been the subjects of rigorous research on the impact of self-regulated learning activities and assignments on student achievement. The findings document that many and often most students make impressive leaps in learning the subject matter, problem solving, and writing skills when they are practicing self-regulated learning in tandem. In addition, a few studies show that struggling students benefit the most from learning self-

regulation (Ottenhoff, 2011). So why shouldn't we weave it into our regular content-related outcomes?

This book is best seen not just as a catalog of exercises and activities to use here and there for spicing up your course. Rather, it is a guide to structuring a course that teaches not only disciplinary knowledge and skills but also proven strategies to learn and retain them, both for your course and long beyond it. Every instructor and every course has the time to provide self-regulated learning opportunities because they need not entail much time in or out of class, for us or our students. Rather than take away from the content, they help students learn it.