Self-regulated learning is an important component of learning for college students. Students can learn how to become self-regulated learners, and faculty can foster self-regulated learning in their classrooms.

Understanding Self-Regulated Learning

Paul R. Pintrich

This volume of *New Directions for Teaching and Learning* focuses on self-regulated learning for college students. The term *self-regulated learning* refers to a fairly new construct in research on college student learning, but it has very important implications for both students and faculty. The chapters in this volume provide an overview of current research on self-regulated learning as it applies to postsecondary education. My goal in this chapter is to introduce and define the construct of self-regulated learning. In addition, I discuss why self-regulated learning is important to college students and faculty and what can be done to improve self-regulated learning. In this way, I foreshadow many of the issues addressed in the following chapters, thereby providing an organizational framework for the reader.

What Is Self-Regulated Learning?

The term *self-regulated learning* may sound somewhat foreign to many readers' ears, but most faculty members recognize a self-regulated learner when they encounter one in a class. The following examples describe both students who are good self-regulating learners and students who have difficulties regulating their own learning. I think that after looking at these examples most readers will recall their own experiences with the two types of learners.

Tom, Who Keeps Up with Assignments. Tom is a first-year student at a community college. He also works part-time to help pay for his tuition. He is very organized and uses a schedule book to keep track of his work and course schedule. He may miss class occasionally because he was working late the night before, but he always gets the notes from other students and talks to the faculty member about what he missed in class. He keeps track of his course assignments in his notebooks and always turns in his work on time. His grades

will be good enough to allow him to transfer to a four-year university when he finishes his two-year program.

Lynda, Whose Attention Wanders. Lynda is a junior psychology major at a major research university. She loves to read about psychology and fantasize about what it will be like when she is a psychologist working with children with emotional problems. Often, when she is reading psychology, and even more when studying subjects she is less interested in, she reads the words in the text but does not seem to monitor her understanding. Sometimes, she gets to the end of the chapter and does not even realize that she was daydreaming while she was reading. Other times, she does realize that she was not paying much attention to what she was reading, but she has so much other work to do that she does not go back and reread the text. She figures she will review the material before the test but often does not find the time. She gets average grades, which leaves her a little puzzled since she does spend two to three hours a night reading and studying for her classes.

Michael, Who Doubts His Ability. Michael is a freshman at a large comprehensive university. He is thinking about becoming a medical doctor and is taking a number of courses for a premed major, such as biology, chemistry, and calculus. He did very well in high school, especially in his science courses, although he often got very nervous before tests. In college, he is confronted with many other good students in his premed classes. He often feels as though he cannot do the work at the same level as they do. Doubts about his ability to do well lead him to study more, but his problem with anxiety during tests gets even worse. He spends many hours trying to memorize the course material, but on exams, it seems that his mind will go blank. He then starts to worry about flunking out of premed and disappointing his parents. His performance on tests is generally poor, although he does very well on his homework assignments and labs.

Dianne, Who Plans Ahead. Dianne is a senior at a small liberal arts college. She is usually one of the most involved students in class. She pays attention and is not afraid to ask questions when she does not understand something, even if the questions might seem rather basic. She reads course material carefully, making notes, charts, and diagrams of what she is reading. She often makes notes to herself while reading to ask the teacher about something in the textbook that does not coincide with what the teacher lectured on the previous day. Before a test, she figures out what kind of test it will be (multiple-choice or essay) and adjusts her studying to fit the test. For multiple-choice tests, she concentrates on knowing the terms and concepts. She integrates her lecture notes and readings to make sure she knows all the important concepts. For essay tests, she does not spend as much time memorizing terms and concepts. She makes outlines, focusing on how the material fits together and what are the "big" theories or themes in the course material. She tries to predict what types of essay questions will be on the test and makes up a short outline of how she might answer each question. Needless to say, she does very well in all her classes.

Characteristics of Self-Regulated Learning. These four students all represent different aspects of successful and unsuccessful self-regulation of learning. It seems clear that Dianne and Tom are the successful self-regulated learners, while Lynda and Michael have some difficulties in regulating their learning. These four students also represent how students may regulate three different dimensions of their learning: their observable *behavior,* their *motivation and affect,* and their *cognition.*

There are three characteristics, or components, of self-regulated learning that function in relation to these three dimensions. First, self-regulated learners attempt to *control* their behavior, motivation and affect, and cognition. A good analogy is a thermostat that regulates room temperature by monitoring the current temperature and then turning on or off the heating/cooling unit to bring the actual temperature in line with the preset desired temperature. In the same way, students can monitor their own behavior, motivation, and cognition, and then regulate and adjust these characteristics to fit the demands of the situation. The second important component of self-regulated learning, also suggested by the thermostat analogy, is that there is some *goal* the student is attempting to accomplish, analogous to a preset desired temperature. This goal provides the standard by which the student can monitor and judge her own performance and then make the appropriate adjustments. The third important characteristic of self-regulated learning is that *the individual student*—not someone else like a parent or teacher—must be in control of his actions, hence the "self" prefix in the term self-regulated learning. For example, students might change their behavior in a classroom, but this would not be considered self-regulation if it is only in response to a requirement by the teacher, and if once the requirement is removed, they no longer engage in the behavior. In short, self-regulated learning involves the active, goal-directed, self-control of behavior, motivation, and cognition for academic tasks by an individual student.

Further Examples of Self-Regulated Learning. Applying this definition of self-regulated learning to the four students I have just described, we can see how they vary in their self-regulation. Tom, the community college student, is regulating his behavior by keeping a schedule of his commitments and keeping track of his school assignments. His goal is to do well enough at the community college so he can transfer to a four-year school, and his organization and management of his time and work schedules seems to be facilitating this goal. In contrast, if Tom were engaging in this behavior as a requirement for his courses or from his advisor, he would not be self-regulating his own behavior. His behavior would be regulated but by others, not by him.

Lynda is having difficulties monitoring and regulating her cognition. In particular, when she daydreams without realizing that she is not paying attention to her reading, she is having difficulty monitoring her cognition. She does not seem to be aware of these lapses in her attention and cognition. Moreover, because she does not seem to be aware of her problem, she does not take the next step of regulating her cognition, of going back and rereading the text she missed while she was daydreaming. All students sometimes daydream and lose

attention when reading text material. The important difference between a self-regulated learner and other students is that a self-regulated learner will become aware of her loss of attention and comprehension and go back and repair her deficiency by rereading the material. In addition, there may be occasions when students actually do pay attention during their reading but still do not understand the material very well. A self-regulated learner will test her comprehension by asking herself questions about what she just read, and then, if her comprehension is not adequate, will take steps, such as rereading, to improve that comprehension. Barry Zimmerman and Andrew Paulsen discuss different aspects of self-monitoring of behavior and cognition later in this volume.

It might also be noted that in Lynda's case, her goal of being a psychologist might be interfering with her learning because it seems to be the starting point for her daydreams. Accordingly, Lynda may have to change her goals when she is studying, to make them short-term and proximal and appropriate to the task (for example, "My goal tonight is to read a chapter in my textbook and understand it"), rather than focusing only on her more distal and global goals such as becoming a psychologist. When individuals regulate their goals to fit a specific task, it is a type of self-regulation of both cognition and motivation. In Chapter Two, Zimmerman and Paulsen point out how self-monitoring of learning can depend on the types of goals students have when they approach academic tasks.

Michael is a classic case of a student who is having difficulty regulating his motivation and affect for schoolwork. Although he seems to have the general knowledge and skills to succeed in college given his high school performance, he seems to doubt his ability to succeed in college. Such self-doubt about competence is referred to as a lack of *self-efficacy.* Students who are high in self-efficacy are confident in their skills and abilities to do well in school, and usually they actually do well and engage in appropriate use of cognitive learning strategies (Pintrich and De Groot, 1990). In addition, Michael's lack of self-efficacy is coupled with debilitating affect in the form of high test anxiety, a normal occurrence when self-efficacy is low (Bandura, 1986). Finally, Michael's high level of anxiety seems to lead him to use simple memorization cognitive strategies, rather than other, deeper processing strategies for learning. Nevertheless, there are ways in which the negative affect of test anxiety can be regulated and controlled by the learner (Bandura, 1986), as well as ways for students to regulate their self-efficacy (Schunk, 1994). One of the ways in which people can regulate self-efficacy is to make comparisons, not to other students but to their own performance, and to focus on mastery of the material rather than on competing with others. If Michael can concentrate on his own learning of the material and begin to see how his own effort can make a difference in his performance, his efficacy will improve, and he also may become less anxious about tests. There are other self-regulatory techniques a student can use to help manage test anxiety (see Covington, 1992). In Chapter Three, Teresa Garcia describes different ways college students may regulate their motivation, including their efficacy and anxiety, in the classroom and as they prepare for exams.

Finally, Dianne exemplifies an effective self-regulated learner, especially in terms of controlling her cognition. She monitors her comprehension of class lecture material and is not afraid to ask questions to improve her understanding. When reading, she uses various elaboration cognitive strategies such as outlining and taking notes, which should help her process the material in a deep and meaningful manner. She changes the way she studies in order to adapt to the test demands. She concentrates on memorizing terms and concepts when she has a multiple-choice exam. For essay tests, she uses cognitive learning strategies such as outlining and integration of course material, which should result in deeper processing of the material, better retention, and better performance than if she just concentrates on memorizing terms. In addition, given that she is not afraid to ask "dumb" questions, she is probably focused on mastery of the material, not just grades. A mastery goal orientation has been positively related to self-regulated learning in a number of studies (see Ames, 1992, for a review), in contrast to a performance goal orientation, which is focused on grades and besting others. Anastasia Hagen and Claire Ellen Weinstein discuss in Chapter Four the implications of these two goal orientations in college classrooms and the effect they can have on self-regulated learning.

In summary, self-regulated learning involves the regulation of three general aspects of academic learning. First, self-regulation of behavior involves the *active control of the various resources* students have available to them, such as their time, their study environment (for example, the place in which they study), and their use of others such as peers and faculty members to help them (Garcia and Pintrich, 1994; Pintrich, Smith, Garcia, and McKeachie, 1993). Second, self-regulation of motivation and affect involves *controlling and changing motivational beliefs* such as efficacy and goal orientation, so that students can adapt to the demands of a course. In addition, students can learn how to control their emotions and affect (such as anxiety) in ways that improve their learning. Third and finally, self-regulation of cognition involves the *control of various cognitive strategies for learning,* such as the use of deep processing strategies that result in better learning and performance than students showed previously (Garcia and Pintrich, 1994; Pintrich, Smith, Garcia, and McKeachie, 1993).

Importance of Self-Regulated Learning for College Students and Faculty

Given this definition and description of self-regulated learning, why is it of import for college students and faculty? Besides the obvious advantage for both students and faculty that self-regulating learners will be better students and learn more, the idea of self-regulated learning offers an optimistic perspective on college learning and teaching. This perspective includes several assumptions about learning and teaching that have important implications for students and faculty.

Students Can Learn to Be Self-Regulated. Self-regulated learning is a way of approaching academic tasks that students learn through experience and

self-reflection. It is not a characteristic that is genetically based or formed early in life so that students are "stuck" with it for the rest of their lives. Models of self-regulated learning argue against the notion of intelligence as a characteristic that varies among students and is unchangeable after a certain point in life. There may be students who are more or less self-regulating over time and across different classes, but all students can learn how to be self-regulating, regardless of age, gender, ethnic background, actual ability level, prior knowledge, or motivation. This is a much more optimistic view of learning and our students than we once had, implying that all students can learn how to become self-regulated learners and that faculty can explicitly help them achieve this goal. In Chapter Five, LaVergne Trawick and Lyn Corno discuss a specific intervention to help "at-risk" students become more self-regulating.

Self-Regulated Learning Is Controllable. Related to the first assumption, this view proposes that self-regulated learning is a way to approach academic tasks that the individual student can control. Self-regulated learning is not a personality "style" or trait that the individual has no control over, as suggested, for example, by the Myers-Briggs typology (which, for example, might classify someone as inherently an introvert or extrovert). Students can control their behavior, motivation and affect, and cognition in order to improve their academic learning and performance. Although students may believe that they can "only learn one way" or that they "are too hyper a person" to learn how to become self-regulating, there is an abundance of empirical research that shows that students can learn how to control their own learning and become self-regulated learners (see Schunk and Zimmerman, 1994; Zimmerman and Schunk, 1989). It is not always easy, but students should accept responsibility for their own learning and realize that they have the potential to control their own learning. At the same time, faculty can help students learn how to control their own learning by providing opportunities for student choice and control of academic tasks.

Self-Regulated Learning Is Appropriate to the College Context. In contrast to students in K-12 education, most college student have a great deal of control over their own time management and schoolwork schedules as well as over how they actually go about studying and learning. At the same time, many college students have difficulty managing this freedom in terms of the quantity of time they devote to learning as well as the quality of cognitive effort they put into learning. If students can learn to control their study time and learning, they will better adapt to the academic demands of the college classroom and will better balance those demands with the social demands of college life (Zimmerman, Greenberg, and Weinstein, 1994). In this manner, research on self-regulated learning may be more relevant to college students than to K-12 students. In addition, in contrast to traditional psychological research, which is often based in the laboratory and focused on nonacademic tasks, much of the research on college students and their self-regulation of learning has been done in ecologically valid classroom studies and has focused on actual tasks taken from real college courses (for example, studying for

midterm exams in chemistry, biology, or calculus; writing an essay for an English class; or writing a paper for a psychology course). The ecological validity of the self-regulation research makes it much easier to apply to the classroom than some traditional psychological research. In Chapter Six, Stuart Karabenick and Jan Collins-Eaglin provide an excellent description of how faculty from a number of different disciplines have used ideas about self-regulated learning in their classrooms.

Self-Regulated Learning Is Teachable. Just as students can learn to become self-regulated learners, teachers can teach in ways that help students become self-regulating learners. There are any number of specific strategies for doing this. In Chapter Seven, Brian Coppola describes the many instructional strategies he uses in his chemistry classes at the University of Michigan. The most important idea to keep in mind is that strategies for self-regulated learning can be taught in any type of classroom context. They can be taught in separate courses or programs, like the one described by Trawick and Corno in this volume, or in general study and learning skills programs (see Weinstein, 1994), and they can also be taught in mathematics, science, social sciences, and humanities courses.

How Can Self-Regulated Learning for College Students Be Improved?

Each of the following chapters has specific suggestions for both students and faculty members about facilitating self-regulated learning. Here, I highlight five general principles for encouraging self-regulated learning, which apply to both students and faculty.

Students need to have greater awareness of their own behavior, motivation, and cognition. For students to become self-regulated learners, it is essential that they become aware of their behavior, motivation, and cognition by reflecting on these aspects of their learning. Self-reflection is not an easy task for most individuals. As Zimmerman and Paulsen point out in their chapter, students need feedback about their learning, in order to become aware of their strengths and weaknesses, before they can attempt to change their learning. Zimmerman and Paulsen make a number of suggestions for different "tools" students might use to get this feedback. Standardized assessment instruments such as the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia, and McKeachie, 1993) or the Learning and Study Strategies Inventory (Weinstein, Schulte, and Palmer, 1987) also can provide students with feedback about their motivational beliefs and learning strategies. Karabenick and Collins-Eaglin describe how faculty in many disciplines have used these instruments and others to investigate their students' motivation and self-regulated learning as well as to provide feedback to students. Finally, many of the instructional strategies that Coppola discusses are explicitly designed to provide feedback to students about their cognition and learning.

Students need to have positive motivational beliefs. Self-regulated learning

can be a very difficult and time-consuming process. It certainly takes more time and cognitive effort than simply reading and memorizing course material. Students are not likely to engage in self-regulated learning if they are focused on just completing their work to "get it done" or to get the highest grade. This type of performance orientation is not conducive to self-regulated learning, as Hagen and Weinstein point out. They show that it is much more facilitative for self-regulated learning when students have a mastery orientation and focus on learning and understanding the material. This does not mean that students should not care about their grades, it just means that grades should not be their sole schoolwork goal (see Pintrich and Garcia, 1991). Hagen and Weinstein and also Coppola suggest various strategies faculty might use in their courses to lessen the emphasis on grades and grading curves and increase students' mastery goal orientations.

Besides a mastery goal orientation, another positive motivational belief that facilitates self-regulated learning is positive self-efficacy for learning. As we saw in the case of Michael, learning was hampered by his low efficacy beliefs and high anxiety. Positive self-efficacy beliefs are not to be confused with general and global self-esteem or self-worth beliefs (for example, the thought that one is "a good person" relates to self-esteem not self-efficacy). Self-efficacy beliefs are very task- and domain-specific and include students' judgments of their capabilities to do a task ("I know I can do these chemistry problems"). Faculty rightfully insist it is not their role to improve students' global self-esteem and make them feel good about themselves in general. However, faculty can and should strive to make the students believe they can master the content knowledge and reasoning strategies that are used in their discipline. It is clear from an abundance of research on self-efficacy (see Bandura, 1986; Schunk, 1994) that students will have difficulty learning the course material if they do not have appropriate self-efficacy beliefs. The key word is "appropriate." Self-efficacy beliefs should be neither overly negative nor overly optimistic. Students should have fairly accurate, and positive, beliefs that they can learn and master course material. Both Garcia and Coppola provide suggestions for facilitating students' motivation and self-efficacy beliefs.

Faculty can be models of self-regulated learning. Zimmerman and Paulsen, Hagen and Weinstein, Trawick and Corno, and Coppola all stress the importance of faculty's modeling various learning and thinking strategies for students. One of the most difficult tasks for many of us who are faculty members is to make explicit the knowledge and ways of thinking that constitute our disciplines. Once we become experts in our fields, much of our disciplinary knowledge and thinking becomes automatized and is second nature for us. Students, as relative novices in a discipline, are not familiar with this knowledge and do not necessarily know how to think in the discipline. Yet we often lecture and discuss our fields as if the students were peers or colleagues and familiar with the knowledge and strategies of our disciplines. As Coppola points out about teaching chemistry, students can join this conversation at our level only with a great deal of help. By modeling our thoughts about disciplinary content knowledge, our own strategies for learning, and how we think

and reason, we can help students become aware of what is required in our courses and help them become self-regulating learners.

Students need to practice self-regulatory learning strategies. Becoming a self-regulating learner is not a task to be accomplished overnight, in a week, or even during a whole semester. Students need time and opportunity to develop their self-regulatory strategies. Explicit courses, such as those discussed by Trawick and Corno, can help students get started, but students need to continue to practice and use the strategies over time after the formal course is completed. The opportunities and time can come from the student's own efforts to practice self-regulation as well as through tasks and situations that faculty organize in their classrooms. Moreover, in the classroom setting, faculty members can guide students through the tasks, deliver corrective feedback that helps a student see where he has gone wrong, and provide hints about how the student can get back on the proper path. Such guided instruction can be very helpful as students try to become self-regulated learners.

Classroom tasks can be and should be opportunities for student self-regulation. As pointed out earlier, models of self-regulated learning may be most relevant to college students and classrooms because there is inherently more freedom for college students than there is for most K-12 students: Nevertheless, the tasks that college students confront should be structured in ways that provide them with opportunities for self-regulation. As Zimmerman (1994) points out, students must have some choice and control over their learning if self-regulated learning is to occur. In this volume, Hagen and Weinstein note the importance of choice and control in fostering a mastery orientation in students. The provision of choice and control does not mean that faculty give up their decision-making power in terms of the course content or even in terms of the structure of exams, papers, labs, or course assignments. Instead, there are strategies that allow students some decision making and some control over their work while maintaining integrity of the curriculum content. Exam or paper assignments with a choice of essay questions or topics within a prescribed list allow students some control without resulting in randomly selected topics. Coppola offers other instructional strategies that allow students choice and control over their learning.

These five general principles do not exhaust all the things that students and faculty can do to improve self-regulated learning in the college classroom. However, they do provide an overarching view of the different instructional strategies and recommendations the reader will confront in the chapters in this volume. It seems clear from research on self-regulated learning, including the chapters in this volume, that the construct has important implications for college students and faculty. Models of self-regulated learning provide a very useful description of what good learners do in college courses. There is still much to be learned about what self-regulated learners do, about how students learn to become self-regulated learners, and about how faculty can help students develop into self-regulated learners, but the research presented here provides a good beginning. It is intended to spark more research and development about an important area of college teaching and learning.

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PAUL R. PINTRICH is associate professor in the Combined Program in Education and Psychology at the University of Michigan, Ann Arbor.