

A Review of Classical Self-Regulated Learning Theories

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Abstract

Self-regulated learning is not only a specific behavioral strategy in the learning process of learners, but also equally an excellent learning quality of individual learners. This paper will introduce and analyze the theory of classical self-regulated learning, which can effectively help us understand the essence of self-regulated learning more deeply and deepen some knowledge about self-regulated learning. And the essence and scope of self-regulated learning will be elaborated from the information processing theory, social construction theory, social cognitive theory and volitional theory of self-regulated learning.

Keywords: self-regulated learning, classical self-regulated learning theory

1. Introduction

Zimmerman first put forward the concept of self-regulated learning, he believes that an individual with self-regulated learning ability can actively and proactively acquire the knowledge and skills they want on their own, this kind of learners do not rely on teachers, parents, and in order to achieve their own learning goals, the learners are also able to effectively choose the learning strategies suitable for themselves based on self-efficacy. At present, the concepts and key points of self-regulated learning in China are centered on Zimmerman's viewpoints, which are elaborated from the perspectives of the setting of learning goals and the cultivation of self-efficacy by learners. Self-regulated learning is not an independent

research field, and the viewpoints and concepts it involves are reflected in classical self-regulated learning theory. Therefore, studying self-regulated learning from the classical self-regulated learning theory can effectively help us understand more deeply the essence of self-regulated learning and the practice guided by self-regulated learning, and deepen some understanding of self-regulated learning.

2. Background of the Emergence of Classical Self-Regulated Learning Theory

The classical theory of self-regulated learning was proposed mainly from the reflection of three educational reforms in the U.S. (ZHANG Xudong & ZHOU Guotao, 2001), the first reflection, which mainly believed that the

psychological aspects of students' ability is the determining factor of their academic achievement; the second reflection, which focused on the adverse effects of poor family environment on students; the third reflection, which focused on the influence of teachers and parents on learners, while ignoring the learners' ability to self-regulate their learning. In the three reflections on educational reform, the theory of self-regulated learning was proposed, and through the study of the theory of self-regulated learning, researchers have begun to explain why scholars can still achieve good results in spite of difficult environments and weak mental abilities, and why, on the contrary, scholars who are better in terms of both their environments and their mental abilities sometimes fail to achieve good results.

There are four different theoretical perspectives on classical self-regulated learning theory, including social cognitive theory, information processing, volitional theory, and social construct theory. While these perspectives differ in some respects, all four theories attempt to explain what self-regulatory factors motivate students to engage in during learning (what are the key processes in self-regulated learning that allow students to maintain their learning goals; how does the environment in which a student is placed affect the student's ability to self-regulate their learning; and how does a learner acquire the self-regulated learning competencies).

3. Introduction to Classical Self-Regulation Learning Theory

3.1 Social Cognitive Theories on Self-Regulated Learning

Zimmerman proposed a three-dimensional structural model of learning based on Bandura's social learning theory, and Zimmerman believed that self-regulated learning is determined by the interaction of the individual, behavior and environment (Zimmerman B J., 1989). The individual's factors in the model include goal setting, self-efficacy, and knowledge reserve. Environmental factors include the construction of the physical environment, the role of role models and social resources such as helpfulness, the use of pictures and models, and other materials. Behavioral factors include self-observation of written records, a series of judgments about oneself in relation to goals and objectives, positive self-rewards and punishments, and positive self-responses.

Self-regulated learners not only actively monitor and coordinate their own learning process. That is, in the process of self-regulated learning, the learner constantly monitors and coordinates his or her cognitive affective states, observes and utilizes a variety of learning strategies to make effective adjustments to his or her learning, and utilizes and creates physical and social resources in the learning environment (Sultan, Ping Fang & Juan Song, 2011). Individuals debug some of their behaviors through metacognitive and cognitive strategies, behaviors can provide a kind of feedback to the learners themselves, interactions between behaviors and the environment are carried out through the use of strategies, behaviors and the environment do not have a certain feedback relationship, and the environment can't exert a strategic influence on the individual, but it can provide the learner with some feedback related information. According to this model, the process of self-regulated learning can be distinguished into three interacting behavioral processes: self-observation, self-reaction, and self-judgment. When a student can observe a certain aspect of a behavior autonomously, then make a self-judgment according to the criteria, and react positively or negatively, he is engaged in self-regulated learning.

Self-observation in the social cognitive view is similar to self-monitoring. Self-judgment is the process by which a learner compares his current level of achievement with the goals he has set for himself. Goals can be divided into two kinds: absolute standard, a fixed standard, for example, a student whose goal is set to get 85 points in the final exam of English, then he can refer to this standard to measure his progress; normative standard, it is a kind of achievement based on the results obtained by others. When absolute standards are absent or vague, students prefer social comparisons. In fact, absolute and normative standards are often used together. For example, when this student's English final exam is an 85, he will compare himself to his peers as a way of asserting his place in the class. The same score of 85, but each is judged by a different standard, resulting in a self-reaction in which one student may be overjoyed while the other is greatly disappointed. Zimmerman and Schenker they believe that the development and progress of academic ability initially stems from the social environment and only gradually begins to shift to the ego side. In the beginning,

beginners acquire learning strategies quickly from instruction, social modeling, and task structure. The main characteristics of learning strategies are generalized from observation of role models. Then, they need constant practice to fully integrate the skills into their behavioral

system. If the role model can provide feedback, guidance, and social reinforcement during practice, it will improve their motor precision. When the learner's behavior is close to the role model's behavior, they have reached the imitation level of the skill.

Table 1. Social and Self-Impacts of Self-Regulated Learning

		Social impact	Self-influence
Level of development	Observation level	Verbal description, demonstration	
	level of imitation	Social guidance, feedback	
	Level of self-control		Internal standards, self-enforcement
	Level of self-regulation		Self-regulatory processes, self-efficacy

The four levels of development of self-regulation levels range from acquiring knowledge of learning skills or observation, to using those skills or imitation, to internalizing those skills or self-control, and finally to using those skills appropriately (self-regulation). At the observation level and the imitation level, learning skills are mainly influenced by social and other factors. At the level of self-control and self-regulation, the influences shift to the self.

3.2 Information Processing Theory on Self-Regulated Learning

Psychological researchers, represented by psychologist Winnet, used cognitive psychology to explain the relevant aspects of self-regulated learning and proposed a processing theory of self-regulated learning. He believes that self-regulated learning is a process of circular feedback loops in which information is continuously processed. Winnet considered metacognitive supervision and manipulation as the most important core qualities of self-regulated learning, and he received two inputs, the first of which was the elaboration of learning outcomes, which can be either intermediate or final. The second is an evaluation of the criteria for producing the outcome. An input is then generated, which is the difference between the learning outcome and the criteria for the learning outcome. Metacognitive monitoring follows the principle of "if-then" generation. That is, when the difference is of a particular type, a particular learning strategy is activated, and a corresponding cognitive operation is performed.

According to Winner, learning allows individuals to gradually improve and enhance their reactivity and information processing abilities. As the individual's control system for information processing develops with experience, the "if-then" response model is further consolidated, and this information-processing system is the basis for self-regulation.

3.3 A Volitional Theory of Self-Regulated Learning

Table 2. Types of wills and control strategies

Type of will	Implicit self-control processes	Epiphenomenal self-control processes
Control strategy	1. Cognitive control	1. Control of the task context
	(1) Control	(1) Mission control
	(2) Coding control	(2) Situational control
	(3) Information processing control	
	2. Emotional control	2. Control by others in the task situation
		(1) Peer control
		(2) Teacher control
	3. Motor control	
	(1) Enhancement of triggers	
	(2) Attribute	

(3) Teaching and mentoring

German psychologist Kohl and American psychologist Kono, among others, put forward the volitional theory of self-regulated learning. They believe that when learners develop a desire to learn actively, they can accumulate many strategies of volitional control. The volitional strategies of self-regulated learning include six kinds of control strategies about behavior: selection of attention, manipulation of encoding, manipulation of emotion, manipulation of motivation, manipulation of environment, and manipulation of information processing. Based on these six control strategies, the six control strategies are roughly divided into two parts: implicit self-control and explicit self-control. Among them, implicit self-control is the key to self-regulated learning, but changes in learning tasks and learning environments will gradually increase students' volitional manipulation, and attention to training and improving learners' volitional control over all aspects of implicit and explicit is a focus (ZHANG Lin & ZHOU Guotao, 2003).

3.4 Social Construct Theory on Self-Regulated Learning

The social constructionist view of learning, represented by Vygotsky, focuses on the study of the cultural psychology of the society of the times, which has led to a gradual shift from the natural aspect of psychology to the social aspect of psychology. Learning needs to take place in real situations, which is the social nature of learning, and this view has had a significant

impact on the understanding of self-regulated learning. Self-regulated learning develops when social and individual contexts interact, and self-regulated learning is not really an attribute of the individual, but a relationship. Self-regulated learning is viewed as a social process. Bintrich sees self-regulated learning as a process of self-construction in which learners set achievement goals for learning and monitor, regulate, and control their own perceptions of learning, their own behaviors, and their own motivation to learn according to their own achievement goals and the context of the environment. Event is jointly conditioned by the prevailing time and situation.

Children's self-talk was an additional focus of Vygotsky's attention. Self-talk is a symbolic vehicle for self-orientation and self-direction that grows with age and undergoes a continuous development from children's self-talk to internal language and then to social language (Zimmerman B J & Pons M M., 1986). The level of development of speech has a decisive influence on an individual's ability to self-regulate his or her own behavior. As the level of internalization of language gradually increases, people are able to consciously plan, direct and monitor their behavior. The essence of self-regulated learning is the process of verbal self-direction, in which individuals use internal language to actively regulate their own learning process. Self-regulated learning is acquired as a result of the internalization of external speech into self-directed speech. It depends on the individual's social interaction with other adults.

4. A Dimensional Analysis of Classical Self-Regulated Learning

Table 3. Dimensions of self-regulated learning

Study topics	Learning dimension	Learner conditions	Self-regulation properties	Subprocesses of self-regulation
For what reason?	Locomotive	Opt-in	Self-motivation	Self-efficacy and self-set goals
How was it?	Methodologies	Selection method	Planned, automated	Strategy application and habituation
When?	Timing	Selection timeframe	Timely and effective	Time management, self-observation,
What?	Gestion	Selection of Resulting Behavior	operation of self-awareness	judgment and response
Somewhere	Physical	Select	Full utilization of resources and sensitivity to the physical	Construction of the

	environment	environment	environment	environment
With whom	Societies	Societies	Full utilization of resources and sensitivity to the physical environment	Selective help

The question “why” is thought of in terms of the dimension of motivation to learn. If one is to regulate one’s own motivation, the student must voluntarily choose to participate in the task. Students cannot self-regulate their motivation if they are forced to participate. Numerous studies have demonstrated that the motivation of self-regulated learners tends to be intrinsic, based essentially on interest, and on the sense of accomplishment that comes from learning itself.

The “how” question is the dimension that focuses on the methods of self-regulated learning. Students can choose their own learning methods and strategies during their independent learning time. For example, to memorize words, learners can choose the way of repeated recitation or the way of harmonic association. Learners can selectively use learning methods and learning strategies that suit them according to different learning tasks. Realize the goal of learning.

The “when” question focuses on the temporal dimension of self-regulated learning. Numerous studies have shown that students who are self-regulated use their study time efficiently and systematically. Students’ autonomy in learning increases with age. For example, elementary school students have their time in school organized by their teachers, but college students can independently organize their time on their own.

The question of “what” reflects the behavioral manifestations of self-regulated learning. Learners must be able to provide accurate feedback on the form of their responses in order to effectively regulate their behavior and performance. This requires students to be able to effectively self-observe, judge and reflect. They should be able to effectively detect gaps between their performance and their goals, and when gaps are identified, they should carefully analyze the causes and make self-regulation.

The question “with whom” reflects the way in which students regulate their social environment. Self-regulated learners are able to

recognize that others can help them in their learning. Even though they have a high degree of independence, they understand that they are limited in their abilities and will ask for help when they need it. Researchers of self-regulated learning see academic help-seeking as an expression of the pursuit of autonomy and independence and as an adaptive strategy. Especially when viewed from the process of problem-solving difficulties to problem mastery.

The question of “where” reflects the way in which students regulate their physical environment. Different students have different learning styles and, therefore, they have different requirements for the physical environment, such as sitting position, light, temperature, etc. Learners who have the ability to self-regulate their learning are able to be aware of the environmental features and environmental conditions that allow them to concentrate. And choose the environmental characteristics and environmental conditions that suit them.

According to Zimmerman and Bandura, the most significant feature of self-regulated learning is the variety of choices that learners have. The possibilities for self-regulated learning increase with the number of choices available to the learner. In actual learning situations, complete self-control and other-control are relatively rare, and most learning falls somewhere in between (Jonggeng Xu, 2004).

5. A Review of Classical Self-Regulated Learning Theories

5.1 Comparing the Differences Between Classical Self-Regulation Learning Theories

Educational psychology researchers have conducted in-depth discussions and studies on self-regulated learning based on different psychological theories, and the focus of the studies has further shifted from the early focus on cognition only to the interrelationships that simultaneously emphasize the learner’s motivational, affective, and volitional control behaviors.

Table 4. Comparison of perspectives of classical self-regulated learning theories

Doctrinal	Locomotive	Self-awareness	Key processes	Social and physical activities	Acquired performance
social cognitive theory	Emphasis on self-efficacy, outcome expectations and goals	Self-recording self-observation	self-response self-judgment self-observation	Personal experience and role modeling, mastery of experience	Rising levels of social learning development along four levels
information processing theory	De-emphasizing motivation	Cognitive self-observation	Transformation of strategies and information	Environmental information is converted	Increased capacity of the system to convert information
voluntarism	The will to ground one's own observations and values	Control behavior, not state	Strategies for regulating cognition, motivation, and emotion	Strategies for controlling the will to disturb the environment	Ability to learn strategies for applying volitional control
social constructionism	Emphasizing the impact of the social context	Perceptions related to learning in the zone of latest development	Internal and egocentric speech	The mediating role of adult dialogue in children's internalization processes	Children's access to internal speech across a range of developmental levels

5.2 Influences on Classical Self-Regulated Learning

5.2.1 Personal Factors

In the process of classical self-regulated learning, personal factors are the dominant factors, and the personal factors include the individual's goal orientation ability, the individual's self-efficacy, the individual's metacognitive strategies, and the individual's emotional-emotional state and so on. Among these, goal orientation and self-efficacy are the most important and cannot be ignored. Goal orientation is composed of the individual's learning task orientation and the individual's own performance orientation. Individual's task orientation means that individuals regard their learning as important because they are interested in learning itself, and they focus on the self-satisfaction after knowledge acquisition. The other is the individual's self-expression orientation, which refers to the individual's view of learning as a means and tool by which they can express themselves as a way to gain positive

and meaningful evaluations from others. An individual's self-efficacy speaks to the individual's assessment of his or her ability to successfully complete a particular learning task. Changes in an individual student's self-efficacy can be considered an important psychological aspect of self-regulated learning, which is influenced by self-regulated learning strategies and self-monitoring.

Metacognition has two important meanings: the first meaning refers to the ideas that a learning individual has about cognitive activity and the factors that influence it. The second sense refers to the self-coordination that the individual does with the current cognitive activity. When we, as individuals, engage in self-regulated learning, we activate material from previously learned knowledge or metacognitive knowledge related to the self, based on previously set task goals. Then, the process of learning is supervised and monitored as the learner learns, with detailed knowledge and mastery of each step of the learning process. The monitoring of individual

metacognition is the most important process of metacognition, which has a higher guiding value for students' learning (Wang Ling & Guo Dejun, 2000), and at the same time, it can explain the individual's learning goals and the contradictions in the learning process. For example, when a student reads a piece of reading in English with the aim of mastery and comprehension rather than completing the assignment for the sake of completion, his understanding and mastery of this piece of reading in English can influence whether or not he changes his previously set learning strategies.

5.2.2 Environmental Factors

The influence of the environment on classical self-regulated learning is mainly due to the individual student's ability to imitate aspects, social assistance, the setting of the learner's learning tasks, and so on. Imitation refers to the learner's ability to improve his/her learning strategies by carefully observing the effective learning strategies of other learners. Social assistance refers to asking for help in learning from people around them, such as teachers, peers, parents, and so on. In addition, a good and quiet learning environment also has a significant impact on individual learners' self-regulated learning.

5.2.3 Behavioral Factors

Behavioral factors include observing, responding to, and evaluating the learning behaviors of other learners. Improvement and enhancement of one's own learning methods or strategies by observing other learners' learning methods or strategies. Evaluation refers to learners' assessment and evaluation of their own learning performance, learning goals, and learning strategies. Reaction refers to improvement and development in terms of reinforcement, etc., based on judging one's own learning evaluation.

5.3 Contributions of Classical Self-Regulated Learning Theory

5.3.1 Contributions of Classical Self-Regulated Learning Theory to the Self-Regulated Learning Process

The theory of classical self-regulated learning has an important and non-negligible role in self-regulated learning. Studying self-regulated learning from the theory of classical self-regulated learning can effectively help us understand and grasp the essence of

self-regulated learning and the learning practices guided by self-regulated learning more deeply and clarify certain misconceptions about self-regulated learning.

5.3.2 The Contribution of Classical Self-Regulated Learning in Teaching and Learning

Nowadays, people gradually realize that the more important purpose of teaching is not to let students master and skills, but to teach students how to master and learn new knowledge and skills, and preferably also to master innovative thinking to solve the knowledge and ability, foreign research on self-regulated learning has begun to take shape, and China's psychological research institutions as well as the relevant experts have also begun to pay attention to the study of self-regulated learning, and the research on Research on self-regulated learning is constantly appearing in journals and books. Teaching a man to fish is not as good as teaching him to fish. The deepening research on self-regulated learning models and theories has a great impact on the teaching activities of teachers, and we should not just pass on knowledge in the classroom but should leave opportunities for students to study and discuss in small groups and should also pay attention to the cultivation of students' self-learning ability and creativity in normal times.

5.4 Suggestions and Strategies to Improve Self-Regulated Learning

5.4.1 Developing a Holistic View

Improving the ability of self-regulated learning is a systematic project, from the perspective of the seven psychological dimensions of self-regulated learning, to establish a systematic and holistic view, and to take a comprehensive perspective on the self-regulated learning of college students is conducive to improving the ability of students' self-regulated learning.

5.4.2 Focus on Managing Motivation

Self-regulation of learning is based on the management of motivation. For example, some students study hard and achieve good academic results to meet their parents' expectations, while others hope that studying hard will increase their knowledge base and plan for their future. Different learning goals have different effects on academic performance, so we should set up systematic and coordinated learning goals to guide students' intrinsic interest and motivation

in learning. This plays an important and indispensable role in improving the ability of self-regulation of learning.

5.4.3 Improving Self-Efficacy

Improving self-efficacy plays an indispensable role in the enhancement of self-regulated learning ability. We should adopt more reward mechanisms in the process of teaching and provide a reliable platform for students' success in order to improve students' self-efficacy and ultimately their ability to self-regulate learning.

6. Future Research Trends in Self-Regulated Learning

6.1 Systematize the Content of Self-Regulated Learning

The research on self-regulated learning is still only limited to the study of a certain theory and aspect. We need to systematically integrate and construct these theories and researches on self-regulated learning.

6.2 Expanding the Scope of Research on Self-Regulated Learning

Although the research object of self-regulated learning covers primary and secondary school students as well as college students, its study is not comprehensive enough; we should not only expand the scope of students, but also diversify and improve the research object of self-regulation.

6.3 Diversification of Research Instruments and Fields of Study

Self-regulated learning is often studied using quantitative research methods, and research in this area has mainly used questionnaires, and we want to keep expanding our research methods to include interviews and behavioral observations. We also want to expand the investigation of self-regulated learning in areas other than the specific disciplines that are the field of study, so that the process of self-regulated learning will continue to move forward.

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