TEACHING MATHEMATICS USING SELF-REGULATED LEARNING

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Effective students maintain various learning characteristics to support the acquisition of new skills and knowledge. Interest, curiosity, taking actions independently, compelling self-activation, independent work, determination in facing difficulties, and sustaining self-motivation have all been recognized in recent literature. Furthermore, Zimmerman (1989) and Perry and Vande Kamp (2000) defined self-regulated learning as a factor that encourages students to handle their personal learning environment and to take responsibility for their learning. SRL is defined as a multifaceted process that includes personal (mental and affective), contextual, and behavioral facets.

Self-regulation is an innovative learning process that includes behavioral development that influences students' learning. The process of learning is designed and modified based on the students' goals. This will help to make some changes in the learning environment to sustain students' needs. Self-regulated learning can be characterized by metacognition, strategy implementation (planning, monitoring, and assessing personal growth), and motivation to succeed. Self-regulated learners, in particular, are aware of their academic abilities, and they know how to utilize adopted strategies in dealing with the everyday challenges of academic tasks. Problem-solving must be a hands-on and mind-on activity. The mathematical activities must be problem-solving in nature in order to foster an active learning atmosphere among students.

Self-regulated learning is defined as proactive processes used by students to gain skills and knowledge, such as setting objectives, selecting strategies, and self-monitoring.

Teachers who utilize self-regulated learning methods support students in being more responsible for their learning in school.

To promote the implementation of productive learning strategies and to establish self-efficacy in the area of math, students must be taught self-regulatory skills. According to Zimmerman's (2002) cyclical model of self-regulation, a learner progresses through three stages of learning while communicating feedback. The learner progresses from prior planning, which includes goal setting and strategy development, to a performance that involves self-instruction and self-monitoring, and self-awareness, which includes self-reaction and adaption. Furthermore, self-regulated learning consists of three components: cognitive, metacognitive, and motivational. The cognitive component is concerned with the techniques that students employ in order to complete a task, which includes rehearsal, clarification, and organization. Students' beliefs about their attributes are incorporated into the motivational component, which incorporates self-efficacy and task value. The metacognitive component entails goal setting and tracking students' development through self-reflection.

When students become highly skilled in their own learning, it means that they are engaged in self-regulated learning. Self-regulated learners actively participate in optimizing their learning opportunities and attributes. They can critically analyze and change how their personal opinions, perspectives, behaviors, and working environments influence learning achievement. Creating the capability to self-regulate, particularly the capacity to track and control one's own cognition, is central to socio-cultural learning theories that have impacted the mathematics curriculum.

Expert problem solvers use a fully self-regulated method to effectively construct the meaning of problem situations: evaluating, planning, discovering, and reflecting. Misguided problem solvers, on the other hand, are much more disorganized, spending little time planning, assessing, and employing "hit and miss" approaches to problem-solving. An academic process in which students supervise aspects of their cognition,

motivation, and behavioral responses to internal and external environments relies on SRL. Students who can control their own learning can use metacognition, motivation, self-reflection, and self-efficacy to transform and regulate their behavior to achieve the desired learning outcome.

The academic achievement of students is influenced by both cognitive and noncognitive factors. Non-cognitive factors such as developing learning goals, self-worth, and self-regulation strengthen quality learning. To advance in achievement, students' self-regulation abilities must be enhanced. Students who are successful in school use their self-regulated skills more compared to others who are not. Self-regulated students relate to and evaluate their own academic achievement. Students who take charge of their own learning in this manner can evaluate each phase of their learning and thus achieve success.

References:

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