**The Historical Research on Self-regulated Learning (SRL)**

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| **Time Span** | **Key words** | **Events** |
| During the 1960s and 1970s | The initial interest in the role of self-regulatory processes | * A group of studies focused on metacognitive and cognitive issues. For example, students were frequently taught to use a strategy to enhance learning, such as multi-step solution for mathematical division problems. These cognitive strategies usually led to higher levels of learning, even with students in special education classes.
* A second group of studies focused on students' use of behavioral or *cognitive-behavioral* processes to cope with clinical problems, such as hyperactivity and anxiety. These self-control problems often extended to students’ academic functioning, such as procrastination in writing (Beneke & Harris, 1972) and impulsivity during problem solving (Meichenbaum & Goodman, 1971). These studies led to interventions involving the use of self- instruction (Meichenbaum, 1977), self-rewards, and self-punishment (Jackson & Van Zoost, 1972) to improve students’ academic functioning.
* From a cognitive-behavioral theoretical perspective (Thorsen & Mahoney, 1974), self-­regulation was viewed as overt responses that can affect one’s antecedents, consequences, and covert reactions.
* A third group of studies focused on Delay of gratification. Mischel and his colleagues theorized that with increases in development, children can overcome immediate tangible forms of rewards (e.g., a cookie) to await larger goals after delays in time (e.g., more cookies after 30 minutes). Increases in delay of gratification were related significantly to children’s higher aspirations for achievement and to greater acceptance of social responsibility (Mischel, 1961; Mischel & Metzner, 1962). There is evidence that students increased their subsequent delay of gratification after observing adult models who delayed their gratification (Bandura & Mischel, 1965).
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| In 1978 | Sociocultural Theory on the development of SRL | * Vygotsky (1978) suggested that children's self-regulatory activities grow from social interactions between adults or more mature peers and learners in four stages. He observed that adults provide support within children's zone of proximal development on tasks they cannot perform by themselves. The adults and children collaborate to complete tasks, and social dialogue between them helps develop children's self-directive speech, which is believed to be the source of self-regulatory control.
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| In the 1970s | The conceptual foundation of SRL microanalytic methodology | * Three influences were linked closely to the conceptual foundation of SRL. The proliferation of cognitive-behavioral therapy, the emergence of social cognitive theory and the use of think aloud assessment protocols to evaluate human cognition and belief patterns ( Bandura,1977; Beck, 1963; Ericsson& Simon, 1980; Meichenbaum, 1974). The three influences vary in scope, objectives, and applications.
* They all place primary importance on the premise that human thought and belief play a central role in human behavior.
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| During the 1980s and 1990s | Inclusive definition formation of SRL from Zimmerman and surge of frameworks and research methodologies | * An inclusive definition of SRL comes from Zimmerman (1989), who defines students who engage in SRL as metacognitively, motivationally, and behaviorally active participants in their learning. The definition reflects three dimensions of SRL: the metacognitive component is related to planning, setting goals, monitoring, and evaluating (understanding how to self-regulate); motivational beliefs involve taking responsibility for one’s successes and failures, which results in increased effort and persistence; and cognitive element refers to possessing the skills necessary to make appropriate modifications in self-regulation.
* Two milestones in establishing an integrated view of self-regulation were: first, the presentation of a symposium on this topic at American Educational Research Association annual meeting in 1986 that was subsequently published in a special issue of *Contemporary Educutionul Psychology* (Zimmerman, 1986b), and second, a symposium at the American Psychological Association meeting in Boston in 1990 that was published in a special issue of the *Educational Psychologist* (Zimmerman, 1990).
* Researchers formulated definitions, frameworks, identified key self-regulatory processes, investigated the relationships between SRL and achievement outcome, and developed research methodologies.
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| In 1983 | The first training to promote self-regulation | * The cognitive strategies in learning were attributed frequently to deficiencies in metacognition, such as students’ inability to appreciate the utility of the strategy.To prompt students to monitor and evaluate the utility or a strategy more effectively, Ann Brown and her colleagues (Brown, Bransford, Ferraraik, & Campione, 1983) recommended that strategy training should be expanded to include self-verbalizations to remind students to use a particular strategy.
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| In 1986 | Structure of self-regulatory system | * According to Bandura (1986), self-regulation involves three processes: self-observations, self-judgements, and self-reactions.
* Bandura’s (1986) Social Cognitive Theory which emphasizes meta-cognition and self-efficacy as fundamental to the development of SRL.
* Extensive research on Bandura’s three self-regulatory processes has been conducted by Schunk and his colleagues in diverse areas of academic functioning, such as math problem solving, writing, and reading (e.g. Schunk, 1984; Schunk & Gunn, 1986; Schunk & Rice, 1986)
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| In 1989 | The first one to develop 3 models | * Zimmerman has developed three different SRL models, being the first one published in 1989 representing what was the first attempt to explain the interactions that influence SRL.
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| In 1990 | Self-verbalization training was provided to enhance children’s self-regulation  | * The developmental issues were pursued in part because self-regulation is not evident in infants but becomes increasingly apparent with age. Vygotsky provided a multi-stage developmental account of children’s growth in self-regulation (Diaz, Neil，&，Amaya-Williams, 1990).
* Vygotsky hypothesized that language is a key tool that children develop to control their thoughts and actions. According to this socio-cultural perspective, children internalize public speech from social caregivers, such as parents and teachers, and it eventually becomes private or inner speech that can serve a self-directive function.
* Self-verbalization training was provided as a scaffold within children’s zone of proximal development (ZPD), which refers to the highest level of personal functioning that can be accomplished with regulatory support from others. When a learner moves to a higher developmental stage, scaffolded support is gradually withdrawn (e.g, Gallimore & Tharp, 1990). According to this socio-cultural perspective, children’s self-regulatory development stems directly from their internalization of language that controls academic functioning.
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| In 1992 | Self-Determination Theory to support the development of SRL | * In the context of the theory of self-determination, Deci, Ryan and other colleagues discussed the process whereby extrinsic controls, rewards, and structures become internalized and integrated into the self-regulation system. This self-determination view is relevant to our perspective because it describes a multistage process of increasing self-regulation and involves external factors that initially are not part of children's self-regulatory processes but are motivational and help produce desirable social functioning.
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| In 1993(1) | Social Guidance and Feedback to support the development of SRL | * Research by Schunk and Swartz (1993) illustrates how students can be guided from the imitative learning level to a self-controlled level of self-regulatory competence through social guidance and feedback. The context was instruction on paragraph writing with elementary-school children. Students received writing instruction from an adult model, who demonstrated application of a five-step writing strategy (e.g., choose a topic to write about, pick the main idea). Once children observed the model they received guided practice applying it to paragraphs (e.g., descriptive, narrative, informative). Eventually the guided practice shifted to independent practice where students worked on their own. Thus, the adult support initially present was gradually lessened as students gained imitative competence. Researchers expected that students who had attained a self-controlled level of competence would fare better if they were given a process (learning) goal rather than a product (performance) goal to guide their self-directed practice.
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| In 1993(2) | Pintrich : grounding the Field and emphasizing the role of motivation in SRL | * Pintrich’s work continues to be important in the field as he made a major contribution toward clarifying the SRL conceptual framework (e.g., Pintrich and de Groot, 1990), he conducted crucial empirical work on the relationship of SRL and motivation (Pintrich et al., 1993a), and his questionnaire -MSLQ- (Pintrich et al., 1993b) continues to be widely used (Schunk, 2005; Moos and Ringdal, 2012).
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| In 1998 | The fourth dimension added to SRL | * Alexander, Graham, and Harris (1998) state that self-regulation involves the learners’ regulation of cognition and also management of affective states and the social environment, which added the fourth dimension of SRL: the social-affective element.
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| During the 1990s | A number of self-report instruments emerged | * Based on the above mentioned constructs, a number of self-report instruments, such as questionnaires or interviews, were developed to measure SRL during the 1990s. Commonly-used examplesc are the Learning and Study Strategies Inventory (LASSI; Weinstein, Schulte, & Palmer,1987), the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991, 1993), and the Inventory for Recording Learning Strategies in Academic Studies (LIST; Wild & Schiefele, 1994).
* The initial attempts of these interview and questionnaire measures of students’ self-regulatory strategies demonstrated significant predictions of students’ performance (Zimmerman & Martinez-Pons, 1988)
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| Since the 1990s until today | The dominant model of the period of operation | * The dominant model has addressed the operation of SRL processes and the reciprocal relationship between SRL and achievement.
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| In 2000(1) | A consensus fundamental to an understanding about how formative assessments facilitate the acquisition of SRL strategies  | * Pintrich ([2000](https://link-springer-com.libezproxy2.syr.edu/article/10.1007/s10648-011-9191-6#ref-CR138)) establishes a consensus fundamental to an understanding about how formative assessments facilitate the acquisition of SRL strategies.: (a) “learners as active constructive participants in the learning process” (p. 452); (b) “learners can potentially monitor, control, and regulate certain aspects of their own cognition, motivation, and behavior as well as some features of their environment” (p. 454); (c) “there is some type of criterion or standard (also called goals or reference value) against which comparisons are made in order to assess whether the process should continue as is or if some type of change is necessary,” (p. 452); and (d) self-regulatory activities mediate a three-way dynamic between personal and contextual characteristics and performance (p. 453).
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| In 2000(2) | Zimmerman’s SRL model | * Zimmerman’s (2000) SRL model is organized in three phases: forethought, performance and self-reflection (see Figure 3). In the forethought phase, the students analyze the task, set goals, plan how to reach them and a number of motivational beliefs energies the process and influence the activation of learning strategies. In the performance phase, the students actually execute the task, while they monitor how they are progressing, and use a number of self-control strategies to keep themselves cognitively engaged and motivated to finish the task. Finally, in the self-reflection phase, students assess how they have performed the task, making attributions about their success or failure. These attributions generate self-reactions that can positively or negatively influence how the students approach the task in later performances.
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| In 2001 | A theoretical review was published  | * A theoretical review (Puustinen and Pulkkinen, 2001) included the most relevant models at that time–those articulated by Boekaerts, Borkowski, Pintrich, Winne, and Zimmerman.
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| In 2002 | The Metacognitive Experiences Questionnaire(MEQ) | * Efklides (2002) created MEQ , which explores judgments and feelings about cognitive processing. In that paper, the relationship between metacognitive experiences and performance was explored, as well as the effect of task difficulty on metacognitive experiences.
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| In 2007 | Teachers’ strategy training using the Self-regulated Strategy Development (SRSD) model | * Teach self-regulated learning processes for writing has been undertaken by Harris, Graham, and their colleagues. Their intervention, named the Self-regulated Strategy Development (SRSD) model, was designed to teach various genres of writing skill to learning disabled students who ranged in educational level from elementary to high school.
* This instructional approach sought to instill self-regulatory processes, such as goal setting, self-monitoring, self-evaluation, self-instruction, self-reinforcement, by using instructional processes such as modeling and fading of cognitive scaffoldings.
* More than 40 experimental and quasi-experimental studies have been conducted using this model, and a meta-analysis revealed that the effect size of SRSD training was large (Graham and Perin, 2007).
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| In 2010 | A teacher’s manual for teaching SRL published | * Anastasia Kitsantas and Nada Dabbagh (2010) published a teacher’s manual for teaching self-regulation via supportive computer learning technologies, such as Skype, Weblogs, Wikis, Facebook, and blackboard. Six self-regulatory processes were taught: goal setting, task strategies, self-monitoring and self-evaluation, time management, and help seeking.
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| In 2011(1) | A new handbook about SRL | * A new handbook (Zimmerman and Schunk, 2011) that presents a variety of established methods to evaluate SRL
* The recent handbook has no sections dedicated to presenting new models, being focused on specific aspects of SRL (e.g., basic domains, instructional issues, methodological issues), which shows that the field has evolved and reached a more mature phase.
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| In 2011(2) | The Metacognitive and Affective Model of Self-Regulated Learning (MASRL) | * Efklides (2011) presented the MASRL in 2011, which extended her ideas previously published in two theoretical articles (Efklides, 2006, 2008). The model is grounded in classic socio-cognitive theory (Bandura, 1986), as stated by the author herself. Efklides has been influenced by the existing SRL models, along with metacognitive models such as those created by Dunlosky and Metcalfe (2008), Ariel et al. (2009), and Koriat and Nussinson (2009). The distinction of Efklides with the metacognitive models mentioned is that hers is theoretically grounded on previous SRL models (e.g., Zimmerman’s Winne and Hadwin’s, and Pintrich’s).
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| In 2013 | New studies from cognitive modeling research | * Zimmerman (2013) reviewed his career and the development of his work, framing it into the socio-cognitive theory (i.e., individuals acquire knowledge by observing others and social interaction). Zimmerman’s work started from cognitive modeling research in collaboration with Albert Bandura and Ted L. Rosenthal. Later Zimmerman began to explore how individual learners acquire those cognitive models and become experts in different tasks.
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| In 2015 | Winne and Hadwin’s model widely used in research  | * Winne and Hadwin’s model of SRL has a strong metacognitive perspective that recognizes self-regulated students as active and managing their own learning via monitoring and the use of, mainly, (meta)cognitive strategies (Winne, 1995, 1996, 1997; Winne and Hadwin, 1998) while asserting the goal driven nature of SRL and the effects of self-regulatory actions on motivation (Winne and Hadwin, 2008). It has been a widely used model, especially in research implementing computer supported learning settings (Panadero et al., 2015b).
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