Self-Regulated learning

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Published: 1 May 2023

Overview

The Concept of Self-Regulated Learning (SRL)

he concept of self-regulated learning (SRL) emphasises the role of the self in establishing learning goals and strategies, and how the learner's perception of the self and task affects the quality of learning that transpires (Paris & Winograd, 1999). Paris and Paris (2001) describe SRL as "autonomy and control by the individual who monitors, directs, and regulates actions towards goals of information acquisition, expanding expertise and self-improvement". Zimmerman (1990) defines self-regulated students as "metacognitively, motivationally, and behaviourally active participants in their own learning". Metacognitively, self-regulated learners are individuals who plan, organise, self-instruct, self-monitor and self-evaluate at various stages during the learning process. Motivationally, self-regulated learners view themselves as autonomous, competent and confident in their ability to perform. Behaviourally, self-regulated learners are capable of selecting, structuring and creating environments that optimise learning.

Models of Self-Regulated Learning

There exist many models of SRL in the literature. Two of the most well-established and widely cited models in the field are those of Barry Zimmerman and Paul Pintrich (Panadero, 2017). Zimmerman envisioned SRL processes in three phases: forethought, performance and self-reflection (see Figure 1).

(i) In the forethought phase, students analyse the task, engage in the setting of goals, and plan how to attain the goals. A number of motivational beliefs energises the process and influences the use of learning strategies.
(ii) In the performance phase, students are involved in the actual execution of the task. They monitor their progress and use self-control strategies to maintain cognitive engagement and motivation to task completion.
(iii) In the self-reflection phase, students assess their performance on the task and make attributions about their success or failures. These attributions generate self-reactions that can positively or negatively influence how the students approach the task in subsequent performances. A good example of this phase is when a student engages in formative self-assessment and identifies areas for improvement.

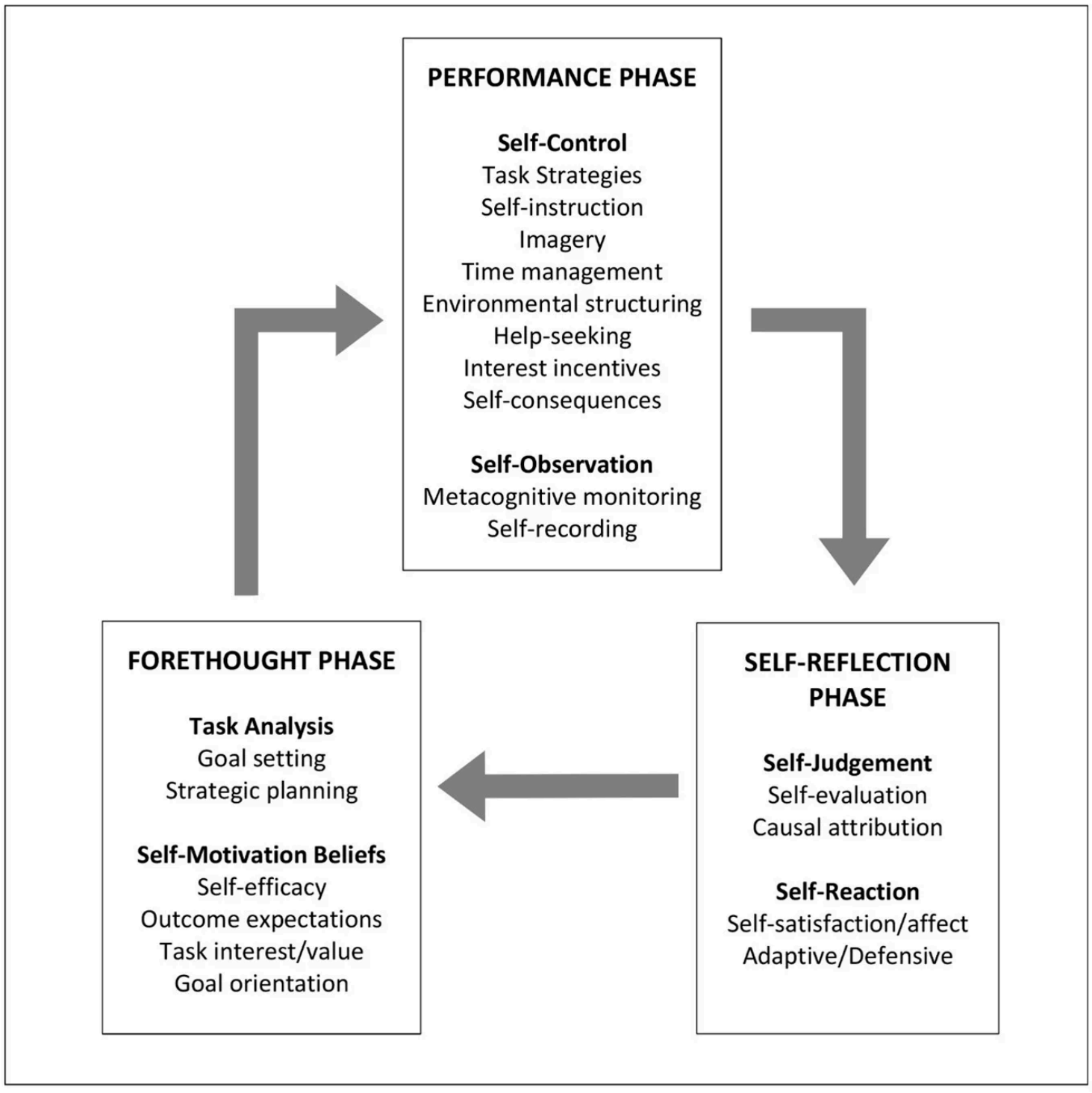


Figure 1: Zimmerman's Cyclical Phases of SRL (Zimmerman and Moylan, 2009).

Pintrich proposed a social-cognitive model of SRL comprised of four phases: (1) Forethought, planning and activation; (2) Monitoring; (3) Control; and (4) Reaction and Reflection. Each of the phases comprises four different areas for regulation: cognition, motivation/affect, behaviour and context. A number of SRL processes are involved in the different combination of phases and areas (see Table 1).

Areas for Regulation				
Phases	**Cognition**	**Motivation/Affect**	**Behaviour**	**Context**
1. Forethought, planning, and activation	Target goal setting Prior content knowledge activation Metacognitive knowledge activation	Goal orientation adoption Efficacy judgments Ease of learning judgements Perceptions of task difficulty Task value activation Interest activation	Time and effort planning Planning for self-observations of behaviour	Perceptions of task Perceptions of context
2. Monitoring	Metacognitive awareness and monitoring of cognition	Awareness and monitoring of motivation and affect	Awareness and monitoring of effort, time use, need for help Self-observation of behaviour	Monitoring changing task and context conditions
3. Control	Selection and adaptation of cognitive strategies for learning, thinking	Selection and adaptation of strategies for managing motivation and affect	Increase/decrease effort Persist, give up Help-seeking behaviour	Change or renegotiate task Change or leave context
4. Reaction and reflection	Cognitive judgments Attributions	Affective reactions Attributions	Choice behaviour	Evaluation of task Evaluation of context

Table 1: Pintrich's Phases and Areas for Self-Regulated Learning (Pintrich, 2000).

The Singapore Context

In the Ministry of Education's (MOE) 21st Century Competencies Framework, one of the desired outcomes that MOE envisions for every student is to be self-directed. The aim is to nurture independent students with a sense of ownership of their learning so that they will thrive in the learning environment, persevere in the learning journey, and be able to manage and plan their learning (MOE, 2018a). In 2018, MOE announced the "Learn For Life" movement, emphasising self-directed lifelong learning as an essential skill that students need to possess (MOE, 2018b). While coined differently, self-regulated learning parallels the notion of self-directed learning and the two terms have often been used interchangeably (Saks & Leijen, 2014). To empower students to learn for life and be future-ready, the building of self-regulated learning capabilities becomes an important process and goal in Singapore classrooms (Chye, 2020).

In Practice: Development of SRL

Dimensions of SRL Development

SRL instruction typically targets the development of four major dimensions of SRL: (i) knowledge, (ii) proficiency in the use of learning strategies, (iii) motivation and (iv) learner identities (see Table 2).

Dimensions of SRL Development			
SRL Knowledge • Knowledge of self • Academic task knowledge • Learning strategies • Content knowledge • Learning context	**Proficiency** • Proficiency in use of learning strategies	**Motivation** • Emotions • Personal interest • Value placed on academic task • Positive mindset	**Learner Identity** • Positive learner identity • Self-efficacy beliefs

Table 2: Dimensions of SRL Development

The goal of instructional support for SRL is to facilitate and integrate the various dimensions of SRL development, and this can be achieved through implicit or explicit supports for SRL development.

Teaching for SRL: Implicit Supports for SRL Development

The first direction taken by educators is to provide implicit supports, whereby classroom environments and instruction are structured to enable opportunities for SRL development to take place (Paris, 2004; Randi, 2004). Teachers model SRL processes and create environments that are conducive for SRL to occur. In the design of self-regulated learning environments, some guiding principles include clear learning goals and success criteria, allowing students to set learning goals, giving students choice in the learning process, prioritising learning for the sake of learning, opportunities for self-reflection and self-monitoring, opportunities to test ideas and learn from mistakes, and iterative cycles of feedback and improvement. This can be supported by teaching practices such as outlining learning goals and milestones, well-crafted driving questions, open-ended activities, reflection prompts, launcher activities, whiteboarding, reflective journaling, peer evaluation and formative assessments. Assessment for Learning (AfL) strategies such as ongoing developmental feedback, self-assessment and peer-assessment can be used to create opportunities for students to evaluate and improve their own learning (English & Kitsantas, 2013; Leong, 2016). Strategies such as inquiry-based learning and the use of digital portfolios can also be utilised to support SRL

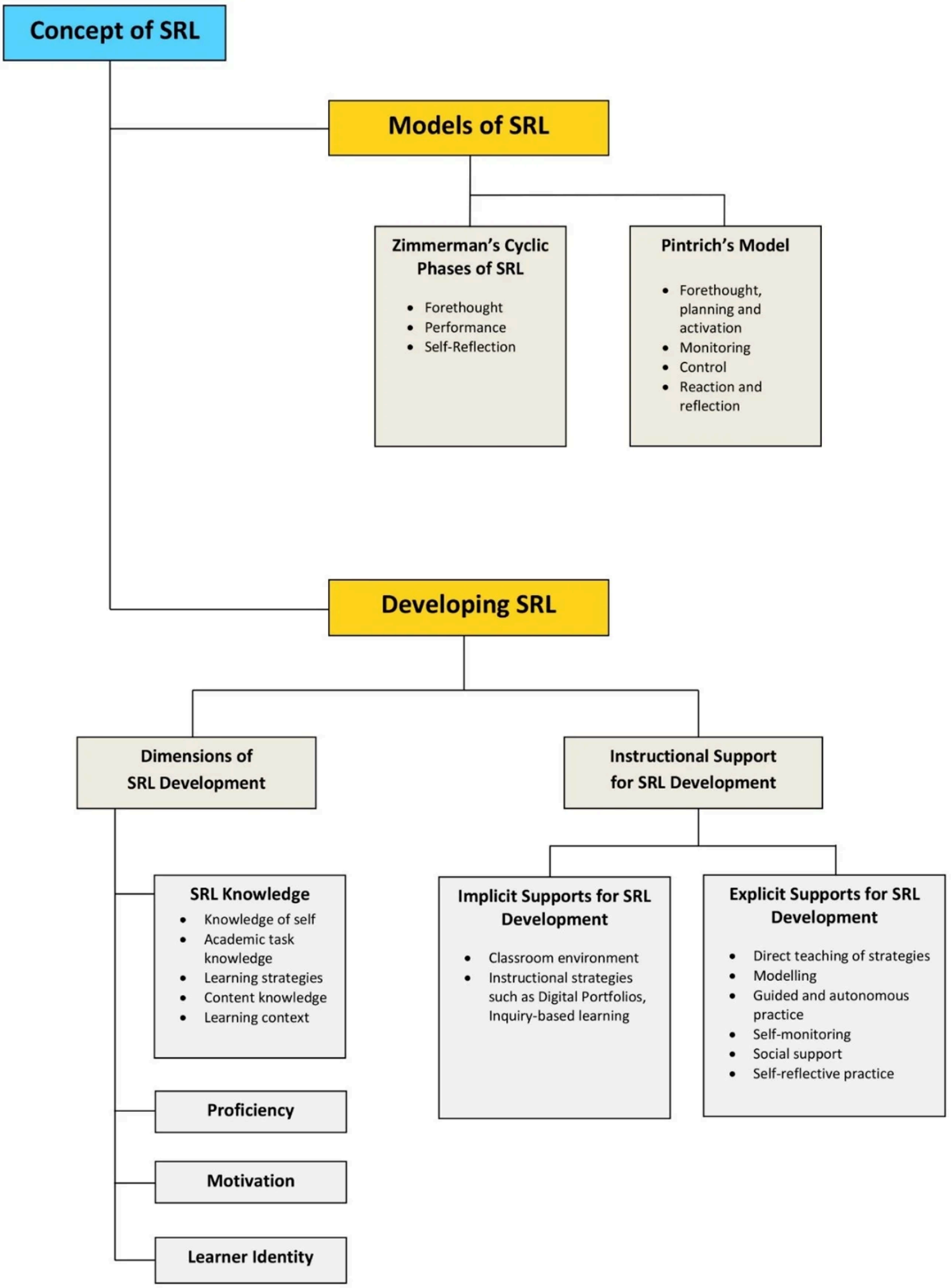
characteristics: the direct teaching of strategies, modelling, guided and autonomous practice, self-monitoring, social support and self-reflection (see Table 3) (Montalvo & González-Torres, 2004).

Common characteristics of SRL instruction models	
Direct teaching of strategies	Teachers explain to students strategies on how to regulate learning; how, when and why they are used, and their benefits. Examples include goal setting, self-evaluation, resource and time management, controlling environmental factors, think-aloud methods, note-taking skills, managing emotions.
Modelling	Students observe the teacher or other expert models to assimilate SRL skills
Guided and autonomous practice	This involves guided practice of SRL strategies with scaffolded instruction, followed by independent practice with appropriate feedback from the teacher.
Self-monitoring / Self-observation	The student learns how to oversee the application of SRL strategies, their effectiveness, and how to change or modify them when they are ineffective.
Social support	Social support from teachers and classmates is provided to encourage students to learn SRL strategies. This support is eliminated over time as the student becomes more competent.
Self-reflective practice	Students independently practice the acquired skills and strategies and reflect on the learning process they have followed. They assess the performance attained and strategy effectiveness, and if needed, modify the strategy used and carry out adjustments to their learning environment.

Table 3: Common characteristics of SRL instruction models (Montalvo and González Torres, 2004)

Takeaways

By developing SRL skills, students can build a foundation for lifelong learning, extend learning beyond the classroom and be ready for the 21st century workplace. The main points of the article are summarized in the concept map below:



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