

# Elementary Research Guide (Grades Pre-K – 5)

## College and Career Competency: *Self-Regulation*

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### Definition:

Self-regulation refers to proactively applying self-directive processes, cognitive behaviors, and emotions to attain goals, learn skills, and manage emotional reactions (Abar & Loken, 2010; Southam-Gerow & Kendall, 2002; Zimmerman, 2008). Self-regulated students are “metacognitively, motivationally, and behaviorally active participants in their own learning process” (Zimmerman, 1986, as cited in Zimmerman, 2008, p. 167). The self-regulation process can be defined as making a plan, monitoring that plan, making changes to stay on track, and reflecting on what worked and what could be improved the next time (Gaumer Erickson & Noonan, 2016).

### Essential Components for Students:

1. Plan for and articulate what you want to accomplish.
2. Immediately monitor progress and interference regarding your plan.
3. Adjust as needed when things are not going as planned.
4. Reflect on what worked and what you can do better next time.

### Competency Sequence for Students:

These targets describe how students demonstrate competency knowledge at each grade cluster (Noonan & Gaumer Erickson, 2018). By the end of each grade cluster, each student:

	Self-Regulation
<b>Pre-K</b>	<ul style="list-style-type: none"> <li>• Demonstrates the ability to create a simple plan and immediately reflect on the implemented plan.</li> <li>• Describes and chooses simple strategies for self-calming.</li> <li>• Plans and practices ignoring some distractions during a task, resulting in increased focus.</li> </ul>
<b>K-2</b>	<ul style="list-style-type: none"> <li>• Demonstrates the ability to create a plan to accomplish a task or set of tasks.</li> <li>• Follows multi-step, teacher-created plans.</li> <li>• Identifies ways to get back on track when distracted.</li> <li>• Develops a plan (with teacher guidance) to self-regulate for common challenging situations and emotional reactions.</li> <li>• Predicts how various actions/decisions would affect outcomes.</li> </ul>
<b>3-5</b>	<ul style="list-style-type: none"> <li>• Describes self-regulation components (i.e., plan, monitor, adjust as needed, and reflect).</li> <li>• Explains self-regulation strengths and areas for improvement related to specific situations (e.g., assignments, technology, social interactions).</li> <li>• Demonstrates the ability to make increasingly detailed plans to accomplish tasks.</li> <li>• Identifies potential barriers to plan completion using if/then statements.</li> <li>• Monitors progress of efforts over time.</li> <li>• Reflects on success of effort.</li> </ul>

## Research:

- In a meta-analysis of 61 studies, Dent and Koenka (2016) found that for each grade level (kindergarten through grade 12), academic performance is significantly correlated with self-regulation. As noted by the researchers:
  - “Planning allows students to chart a course for academic tasks while self-monitoring and self-control allow them to maintain it. When self-monitoring alerts students to a discrepancy between task performance and a learning or achievement goal, self-control enables them to resolve it. This flexible approach is associated with, and may be necessary for, better performance on both complex and less structured academic tasks” (p. 459).
- In research on self-regulation for preschoolers, Goodwin and Miller (2013) reported that 3- and 4-year-olds learned to self-regulate and manage their behavior when their preschool program encouraged them to select and plan their own activities.
- The Self-Determined Learning Model of Instruction (SDLMI) teaches students to self-direct their own learning. While originally developed for adolescents, Wehmeyer and Palmer (2003) note that there are benefits of beginning the process of self-regulated learning in early grades. Students as young as five with and without disabilities were able to effectively use the SDLMI to set goals, take action, and adjust goals as they move toward self-regulation. A free 48-page guide is available from [https://beach.ku.edu/sites/default/files/SDLMI-Teachers-Guide\\_4-2017.pdf](https://beach.ku.edu/sites/default/files/SDLMI-Teachers-Guide_4-2017.pdf).
- Researchers in Canada (Piché, Fitzpatrick, & Pagani, 2015) studied how self-regulation skills and behaviors developed in kindergarten could impact students four years later. They found that kindergarten self-regulation related to classroom engagement and participation in sports by fourth grade. The researchers concluded that it is important to intervene early to build self-regulation skills.
- Several studies have shown that teachers can successfully adapt activities and assignments to help students develop self-regulatory skills.
  - In a study involving fourth grade math instruction in Germany, students who were trained in self-regulated learning by the teacher showed significant increases in both homework effectiveness and math achievement (Zimmerman, 2008).
  - Embedding student self-graphing into classroom tasks has been shown to increase students’ ability to self-regulate their learning (Hirsch, Ennis, Parks, & McDaniel, 2013).
- In a meta-analysis of 48 elementary self-regulation programs, researchers found that training elementary school students in self-regulation has a positive effect on learning outcomes, cognitive and metacognitive strategy use, and motivation (Dignath, Buettner, & Langfeldt, 2008). Across grades one through six, the highest effects were in mathematics and reading/writing achievement.
- In research involving 81 fifth graders, Kitsantas, Steen, and Huie (2017) found that self-regulatory strategies contribute to elementary student achievement. “The only variable that consistently predicted GPA across all subject areas was self-regulated strategies” (Kitsantas et al., 2017, p. 76). They note that students can develop self-regulation through counselling interventions of 6-8 students, where students discuss goals and behaviors that would contribute to those goals.
- Muis, Psaradellis, Chevrier, Di Leo, and Lajoie (2016) examined the impact of using a self-regulatory process on students aged 11. In the study, 78 elementary students were assigned to one of two conditions – learning by preparing to teach (experimental group) or learning for learning (control group). They found that in the experimental group, students applied self-regulatory processes as they solved the problem in part because they were required to then teach others. More specifically, the experimental group applied task definition (identifying the

conditions around solving the problem), hypothesizing what would happen during each step of the problem-solving process, and determining how to coordinate information sources and making inferences as they worked on the problem. The students in the experimental group had better outcomes (i.e., a more detailed and better-organized concept map) than students in the control group. The students who were charged with teaching others applied self-regulation strategies to a higher degree than those who were solving the problem to complete a task.

- Children, youth, and adults who demonstrate effective emotional regulation strategies have improved relationships, increased academic achievement, and decreased risk for anxiety and depression (Aldao, Nolen-Hoeksema, & Schweizer, 2010). These strategies, which are often considered coping tactics, include reappraisals (i.e., generating positive interpretations of stressful situations), problem solving (i.e., consciously attempting to change the situation), and mindfulness (i.e., acceptance of emotions without judgement).
- In a study of children aged 8-12 with Fetal Alcohol Spectrum Disorder (FASD), 12 weekly 1 ½ hour sessions of the *Alert Program for Self-Regulation* were found to increase gray matter in the brain (specifically the left middle frontal gyrus, right frontal pole, and right anterior cingulate). Neither the control group of children with Fetal Alcohol Spectrum Disorder nor the control group of children without FASD showed changes in their brain scans (Soh, Skocic, Nash, Stevens, Turner, & Rovet, 2015).

## Assessments:

The *Self-Regulation Formative Questionnaire* (Gaumer Erickson, Soukup, Noonan, & McGurn, 2015) is a 22-item instrument that measures students' proficiency in four essential components of self-regulation: making a plan, monitoring the plan, adjusting as needed, and reflecting on effort/progress. The questionnaire was tested for reliability using Cronbach's coefficient alpha<sup>1</sup> with 5,543 high school and middle school students during the 2016-2017 and 2017-2018 school years. The overall self-regulation questionnaire was found to be highly reliable (22 items;  $\alpha = .896$ ). The *Self-Regulation Formative Questionnaire* results can be used by both teachers and students to assess relative strengths and areas for improvement. Students are asked to rate themselves on each item using a five-point Likert-type scale (1=not very like me and 5=very like me). The results are automatically graphed for students once they complete the questionnaire, enabling them to immediately reflect on their self-assessment. Results are also available to the teacher for individual students and in aggregate. Although the questionnaire is written at a sixth-grade reading level per the Flesch-Kincaid readability score (Kincaid, Fishburne, Rogers, & Chissom, 1975), it can be adapted for grades 1-5 as necessary. The following example items represent each of the four essential components:

- I plan out projects that I want to complete. (Plan)
- I keep track of how my projects are going. (Monitor)
- As soon as I see things aren't going right, I want to do something about it. (Adjust)
- I think about how well I've done in the past when I set new goals. (Reflect)

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<sup>1</sup> Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297–334.

Cronbach, L. J. (1988). Internal consistency of tests: Analyses old and new. *Psychometrika*, 53, 63–70.

Teachers can access the questionnaire by setting up an account through <http://researchcollaborationsurveys.org> and following the instructions to launch a survey. Students (and teachers) can use individual questionnaire results to identify self-regulation components or behaviors that students can focus on cultivating or strengthening.

- The Preschool Self-Regulation Assessment (PSRA) evaluates young children's (3-4 years old) self-regulation in a variety of active tasks. The PSRA is available at the NYU Neuroscience and Education Lab (<https://steinhardt.nyu.edu/ihdsc/csrp/psra>). Both the Head Start program and the Chicago School Readiness Project employ the survey in order to assess children's strengths, as well as the improvements shown over time. Some tasks involve following directions, impulse control, and executive function (Smith-Donald, Raver, Hayes, & Richardson, 2007).
- In addition to general self-regulation assessments, there are also assessment techniques designed for specific contexts (Boekaerts & Corno, 2005). For example, the think aloud strategy - where students verbalize thoughts, feelings, steps, and strategies as they consider a situation - is a frequently used strategy for helping students develop self-regulation. Teachers can use strategies such as having students use the think aloud process to solve a problem, writing what students say, and then analyzing the results to pinpoint students' needs and provide appropriate instruction (TeacherVision, n.d.). Additional information on this strategy can be found at <https://www.teachervision.com/think-aloud-strategy>.

### Instructional Practices:

- In a meta-analysis of 48 elementary self-regulation programs, Dignath et al. (2008) found that across grades one through six, the most effective self-regulation training programs focused on metacognitive strategies (especially planning) combined with cognitive strategies (especially elaboration and problem solving), as well as feedback. Additionally, the researchers found higher effects on academic achievement and motivation when students applied the self-regulation process individually rather than through cooperative learning.
- Emotional self-regulation is the process of determining emotions or emotional triggers and then enacting strategies to control the emotional response (Gross & Feldman-Barrett, 2011). Aldao et al. (2010) identified several effective strategies that students can learn, such as reappraisals (i.e., generating positive interpretations of stressful situations), problem solving (i.e., consciously attempting to change the situation), and mindfulness (i.e., acceptance of emotions without judgement).
- Self-regulation can be taught using children's literature (Cooper, 2007). Books like Maurice Sendak's (1963) *Where the Wild Things Are* can promote psychosocial development by providing character examples that demonstrate the importance of self-regulation at a time when children are beginning to strive for autonomy, control, and independence.
- The Zones of Regulation (<http://www.zonesofregulation.com/index.html>) curriculum (Kuypers, 2011) uses colors to teach emotional self-regulation to students in Pre-K through high school. Resources may be procured via the website, with free app downloads available, as well as books and posters available for sale.
- The Alert Program (TherapyWorks, n.d.) is a research-based program, available at <https://www.alertprogram.com/>, that helps students develop self-regulation in three stages. Students begin by identifying their alert or energy levels as high, medium, and low. Once the alert levels are identified, adults introduce students to sensorimotor strategies that impact the alert levels. In the final stage, students are able to identify their alert levels and choose strategies to cope with the alert levels independently.

- Providing children free choice opportunities (where they are encouraged to choose, plan, and try to accomplish what they want to do or learn) during their younger years helps develop self-regulation (Goodwin & Miller, 2013).
- An NPR story (Spiegel, 2008) discusses the ways that providing children opportunities for improvised play can help build their self-regulation skills (<https://www.npr.org/templates/story/story.php?storyId=19212514>). The article provides recommendations of activities from three researchers, including:
  - The game of “Simon Says,” which requires children to regulate themselves by thinking about each suggested action and deciding whether or not to take the action.
  - Joint storybook reading – books like *The Little Engine That Could* (Piper, 1930) and other children’s stories often feature characters who model effective self-regulation.
  - Opportunities for children to engage in complex imaginative play - unstructured, creative play encourages the application of self-regulation.
  - Encouraging students to talk to themselves – the use of “private speech,” where children talk to themselves about what they are doing, helps them develop self-regulation by applying self-talk in imaginary play as they are adjusting for things in their environment that are not provided (e.g., plastic props) or changing circumstances (e.g., new friend changing the rules).
- 30 Games and Activities to Teach Self-Regulation (Heffron, 2017) is available at <https://theinspiredtreehouse.com/self-regulation/>. The games and therapy tools support planning, problem solving, memory, attention, motor control, and sequencing that can help kids develop the ability to self-regulate despite challenging situations and circumstances (Heffron, 2017).
- Curricular programs for preschoolers have been found to be effective in promoting self-regulation. Ursache, Blair, & Raver (2012) defined a development model where executive function (EF) and emotion regulation are interrelated. To this end, they evaluated several preschool curricula programs, with a focus on the programs’ effects on improvements in EF and academic achievement. The authors suggest that the programs “not only fostered children’s learning but also may have enhanced the classroom environment, reducing classroom stress while improving students’ ability to pay attention and monitor their own learning” (Ursache et al., 2012, p. 124).  
Two of the programs included in this study (Head Start REDI and Tools of the Mind) are described below:
  - The Head Start REDI (Research-Based Developmentally Informed) program, which included the preschool version of PATHS (Promoting Alternative Thinking Strategies), was incorporated into the daily structure of the classroom. The program taught children to use language to scaffold self-regulation, and through the inclusion of PATHS taught children to understand and express emotions, negotiate conflicts, build prosocial skills, and inhibit impulsive behavior (Domitrovich, Greenberg, Kusche, & Cortes, 1999, as cited in Ursache et al., 2012).
  - The Tools of the Mind curriculum (Bodrova & Leong, n.d.) is based on findings that active play structured by social moderation (reaction to adults and peers) is one of the ways that children begin to develop self-regulation skills (Vygotsky, 1967, 1978, as cited in Leong & Bodrova, 2006). One of the activities from Tools of the Mind is having Pre-K students develop a Play Plan as an introduction to their intentional play time. Similarly, kindergarteners create a daily Learning Plan, as well as develop individualized learning goals for the week. Tools of the Mind is available at

<http://www.bostonchildrensmuseum.org/sites/default/files/pdfs/5-Tools-of-the-Mind-Curriculum.pdf> (Bodrova & Leong, n.d.).

- Teachers can help students develop self-regulatory skills through homework assignments by using a checklist or log that asks students to note when they began and completed the assignment (Ramdass & Zimmerman, 2011). For example, the *Advanced Homework Chart* (Empowering Parents, 2018) allows parents to help their child make a plan, monitor the progress, and adjust as needed. The checklist can be tailored to any age and is available at <https://www.empoweringparents.com/free-downloadable-charts/advanced-homework-chart/>.
- Teachers can incorporate activities to help students monitor their learning. For instance, researchers found that having students generate keywords when reading resulted in more accurate judgment of learning and comprehension for sixth and seventh graders. Their comprehension was both self-rated and assessed via a test (de Bruin, Thiede, Camp, & Redford, 2011).

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