

Research Guide (Grades Pre-K–6)

College and Career Competency: *Self-Efficacy*

Definition:

Self-efficacy refers to perceptions an individual has about their capabilities to perform at an expected level, achieve goals, and complete moderately challenging tasks (Noonan & Gaumer Erickson, 2018b, p. 23).

Essential Components for Students:

1. Focus on your effort, progress, and learning.
2. Take steps to increase confidence in your abilities.

Competency Sequence for Students:

These targets describe how students demonstrate competency knowledge (Noonan & Gaumer Erickson, 2018a). As outlined in the Assessments section, these targets can be used to determine students' growth over time through a performance-based observation process.

| | Self-Efficacy |
|-------------------|--|
| Beginning | <ul style="list-style-type: none"> • Demonstrates an understanding that making mistakes is normal. • Continues work on a challenging task by trying different ways to solve a problem. |
| Emerging | <ul style="list-style-type: none"> • Demonstrates approaching a challenging task with recognition that ability grows with effort. • Describes mistakes as normal and as opportunities to learn. • Provides examples of growth mindset self-talk statements. • Describes some basic structures of the brain and understands that a brain can “grow” and change with practice. |
| Proficient | <ul style="list-style-type: none"> • Explains the difference between a fixed mindset and a growth mindset. • Identifies times when their efficacy was strong and times when it was lacking. • Provides examples of how effort relates to accomplishing a challenging task and incorporates concept to own life. • Describes ways to increase self-confidence/belief in ability for various challenging tasks. • Demonstrates verbal persuasion and growth mindset self-talk. • Explains how our brain changes as it is challenged with new information (basics of neuroplasticity) and applies this to growth versus fixed mindsets. |

Research:

- A positive self-concept is important for school adjustment (Mantzicopoulos, 2006). Preschool-age children can bring a social mindset to school that encompasses positive self-regard and self-competence beliefs (Cvencek et al., 2016; McElroy, 2015).
- Goddard (2001) surveyed 452 teachers at 47 urban elementary schools in a large Midwestern district to examine the relationship between teacher self-efficacy and differences in school achievement. He found that teacher self-efficacy based on mastery experience was a significant

predictor of a school's collective efficacy and, further, that collective efficacy was strongly related to differences in student performance between schools.

- For young children who haven't yet had the social or academic experiences to form accurate self-beliefs about capability, getting honest and supportive feedback from parents and teachers that helps build a positive self-concept is important for development, achievement, and social interactions (Myers-Walls et al., 2015).
- Developmental research indicates that before middle childhood (ages 7–12), children have a limited capacity for judging their abilities accurately (Davis-Kean et al., 2009). Young children tend to overvalue their competence because they receive very positive feedback for efforts that are not necessarily related to individual accomplishment (Mantzicopoulos, 2006).
- Lee and Jonson-Reid (2016) found in their study of urban students in grades 1–3 that children with a highly developed sense of self-efficacy had significantly greater reading achievement. Task-specific self-efficacy, or the student's belief that it was possible to complete the task, has been found to have the largest impact on reading achievement.
- There is “a meaningful link between students' beliefs in their ability to conform to the rules of writing and their writing self-regulation and success” (Zumbrunn et al., 2020, p. 580).
- In a study of students in grades 4–8, researchers examined which sources of self-efficacy had the greatest impact in math and reading (Butz & Usher, 2015). Specifically, they surveyed students about these four sources: interpreting past experiences and performance (mastery), messages received from others (verbal/social persuasion), what they see others do (vicarious experience), and how they feel while doing or thinking about an activity (physiological and affective state). The researchers found that mastery and verbal/social persuasion were the most frequently reported sources of self-efficacy for math and reading in these grades.
- Researchers in France (Joët et al., 2011) examined sources of self-efficacy in mathematics and French (equivalent to English Language Arts) in a sample of 395 third-grade students. They concluded that interventions designed to raise student self-efficacy should target all four sources of self-efficacy (mastery experience, vicarious experience, verbal/social persuasion, and physiological and emotional states). Among the specific findings:
 - The third-grade girls perceived fewer mastery experiences in math than boys did. The girls reported receiving fewer positive social messages about their performance in math than the boys did. Girls reported lower self-efficacy in math. In French class, there was no difference between boys and girls in terms of sources of self-efficacy.
 - There were no significant differences found based on classroom context; however, students in classes with higher average self-efficacy reported feeling more capable.
 - Perceived mastery experiences were the primary source of self-efficacy in both domains, accounting for over half of the variance in academic self-efficacy. Mastery experience was predictive of achievement.
 - Verbal/social persuasions predicted math self-efficacy.
- When students learning to code were paired together, their self-efficacy scores were higher than those of students who had not been paired together (Wei et al., 2021). The paired students played different roles, navigator and driver, which allowed them to discuss problems they had as they coded for the first time. Additionally, students who paired up with friends rather than nonfriends not only enjoyed coding more but also performed better at coding.
- Martin and Rimm-Kaufman (2015) examined how student self-efficacy for math and the quality of student–teacher interaction impacted emotional and social engagement in fifth-grade math. Students with high self-efficacy will persist and try hard when presented with challenges, while

students with low self-efficacy will dwell on past mistakes and not try as hard when presented with a challenge. Among the findings:

- Students with higher math self-efficacy reported higher levels of emotional and social engagement in math class. Classrooms with high levels of emotional support, where interactions between teachers and students were sensitive and responsive, had students reporting similar social and emotional engagement, regardless of their initial self-efficacy.
- The researchers suggest that supporting the emotional needs of students with lower levels of self-efficacy is important for their emotional and social engagement, more so than organizational or instructional supports.
- Paananen et al. (2019) found differences between populations of students in sources of self-efficacy. For a large population-based sample of students (PS), there was a positive association between vicarious experiences and levels of self-efficacy. For students with attention and executive function difficulties (AED), however, there was a negative association between vicarious experiences and levels of self-efficacy. Additionally, while mastery experiences accounted for 12% of the variance in self-efficacy in the PS group, it was 27% in the AED group. “These findings suggest that pupils with attention and [executive function] difficulties or [learning disabilities] build their confidence in self-regulation by relying mostly on past performance accomplishments that give immediate feedback and can be easily interpreted” (p. 58).

Assessments:

- The Self-Efficacy formative questionnaires are self-report measures that ask students to rate behaviors on Likert-type scales. Accommodations should be provided when appropriate and may include reading the items aloud, explaining the items, or having a scribe fill in the response option. These questionnaires should not be used as a pre/post measure. As students learn more about self-efficacy, their internal frame of reference may shift, causing them to become more critical in their self-assessment; this phenomenon is called response shift bias (Bray et al., 1984; Drennan & Hyde, 2008). Two self-efficacy questionnaires promote students’ reflection in kindergarten through second grade and third through sixth grade.
 - The Self-Efficacy Questionnaire (K–2) (Heger et al., 2022a) asks students to respond to eight items using emojis for *Like Me*, *Not Sure*, and *Not Like Me*. In most instances, this questionnaire should be read aloud to students. Two example items follow:
 - I believe I can learn to do anything if I try hard.
 - When I need to learn something new, I think about how I have learned hard things before.
 - The Self-Efficacy Questionnaire (3–6) (Gaumer Erickson et al., 2022b) asks students to respond to 20 items on a 5-point Likert-type scale from *Not Very Like Me* to *Very Like Me*. Two example items follow:
 - I can learn any skill if I work hard and practice.
 - I see making mistakes as a normal part of learning.

Results are immediately available for reflection. Teachers can access the questionnaires by setting up an account at <https://www.cccstudent.org/> and following the instructions to create an assessment and administer it to students. Students (and teachers) can use individual questionnaire results to identify self-efficacy strategies that students can focus on cultivating or strengthening.

- The Self-Efficacy Knowledge Test (3–6) (Gaumer Erickson et al., 2022a) includes 20 items. It is a curriculum-based measure that assesses students’ knowledge of self-efficacy constructs and judgement of the most effective course of action when applying these constructs. The test includes multiple-choice, true/false, situational judgement, and short-answer items. The following are a few example items:
 - True or false: If you get good grades in school, you automatically have strong self-efficacy.
 - When talking to a friend, which of the following statements would support them in building their self-efficacy?
 - a. You are good at this.
 - b. You are smart.
 - c. Practice makes perfect.
 - d. Practice makes progress.
 - Imagine that you are facing a challenge and you are not sure you can be successful. Name three things you could do to raise your belief in yourself.

The knowledge test is directly aligned with [Teaching Self-Efficacy in Elementary Classrooms 3–6](#) (Heger et al., 2022c; see the first item under Instructional Practices, below), available for purchase at <https://www.cccframework.org/competency-lessons-and-student-workbooks/>. The test can be used as pre/post measures prior to and after teaching the self-efficacy lessons. Accommodations should be provided when appropriate and may include reading the items aloud, explaining the items, and having a scribe fill in the response option. Once students have completed the knowledge test on <https://www.cccstudent.org/>, teachers can view graphed results for individual students and aggregate results for all their students. Teachers can also download a raw data file.

- The Self-Efficacy Performance-Based Observation (Noonan & Gaumer Erickson, 2018a) is designed to be embedded within authentic situations such as academic courses and extracurricular activities. The Self-Efficacy Performance-Based Observation can be used at purposeful intervals to monitor the development of each student. Based on observations across time or in specific situations, the educator rates each student’s self-efficacious behaviors on the following scale:
 - *Beginning*: Not yet able to demonstrate without scaffolding;
 - *Emerging*: Minimal or superficial demonstration, prompting likely required;
 - *Proficient*: Sufficient demonstration, including self-appraisal and detailed, personalized application;
 - *Advanced*: Independent and consistent demonstration, teaches/prompts others; or
 - *Not Observed*: Documented if there has not been the opportunity to observe the behavior performed by an individual student.

Example observed behaviors include the following:

- Continues working on a challenging task by trying different ways to solve a problem.
- Demonstrates approaching a challenging task with recognition that ability grows with effort.
- Demonstrates verbal persuasion and growth mindset self-talk.

Summary reports are automatically generated on <https://www.cccstudent.org/>.

- The Self-Efficacy Performance-Based Reflection (Noonan et al., 2021), directly aligned with the Performance-Based Observation, promotes students’ reflection on their demonstration of self-efficacious behaviors within authentic situations. This four-item rubric guides students to determine their use of self-efficacy strategies. Triangulating students’ ratings with the Performance-Based Observation results in a more comprehensive analysis of performance. The

Self-Efficacy Performance-Based Reflection can be used at purposeful intervals to monitor the development of each student. Using the rubric, students reflect on their self-efficacy behaviors related to:

- mastery experience,
- verbal persuasion,
- physiological feedback, and
- vicarious experiences.

The Self-Efficacy Assessment Suite: Technical Report (Gaumer Erickson & Noonan, 2022) includes further background on self-efficacy constructs, administration procedures, validity and reliability evidence, recommended uses of the results, and descriptions of the assessment items.

Instructional Practices:

- [*Teaching Self-Efficacy in Elementary Classrooms K–2*](#) (Heger et al., 2022b) and [*Teaching Self-Efficacy in Elementary Classrooms 3–6*](#) (Heger et al., 2022c) each outline more than 25 instructional activities across nine lessons:
 - Lesson 1: Introducing Self-Efficacy
 - Lesson 2: Understanding Your Current Level of Self-Efficacy
 - Lesson 3: Approaching Challenges With a Growth Mindset
 - Lesson 4: Viewing Mistakes and Setbacks as Opportunities to Learn
 - Lesson 5: Reflecting on Past Accomplishments to Build Your Confidence
 - Lesson 6: Giving and Accepting Feedback and Praise
 - Lesson 7: Understanding How Your Emotions Impact Your Self-Efficacy
 - Lesson 8: Building Your Self-Efficacy by Observing Others’ Success
 - Lesson 9: Self-Efficacy—Putting It All Together

The lessons include explicit instruction and application elements that teachers can modify based on students’ experiences and needs. The lessons, accompanied by PDF student workbooks with worksheets that can be reproduced to facilitate learning, are available for purchase at <https://www.cccframework.org/competency-lessons-and-student-workbooks/>.

- “Learning environments that construe ability as an acquirable skill, deemphasize competitive social comparison, and highlight self-comparison of progress and personal accomplishments are well suited for building a sense of efficacy that promotes academic achievement” (Bandura, 1993, p. 125). Conversely, certain teaching practices can lower students’ self-efficacy. Results from a 3-year study of students in grades 2–4 suggest that certain classroom instructional practices, such as grouping students by ability, rewarding correct answers versus effort, and having high expectations of some children and low expectations of others, can impact how capable children believe themselves to be, lowering self-efficacy (Hughes & Chen, 2011).
- Teachers can strengthen young children’s self-concept by helping them individually set goals and then helping them track progress using charts in the classroom (Myers-Walls et al., 2015). Teachers can also encourage self-praise. The research and tools included in the article by Myers-Walls et al. (2015) are available in [this handout](#).
- In the subject area of writing, Pajares et al. (2007) found that perceived mastery experience (how students interpret their own previous performance) had the largest impact on writing self-efficacy beliefs. The authors suggest that teachers can help students experience mastery in writing by making sure students are engaged in the process and by maintaining a high level of interaction with students as they self-evaluate their writing.

- Instructional strategies that lead to higher levels of self-efficacy include (Schunk, 1985):
 - [Modeling the application of certain cognitive skills](#), such as explaining out loud how you solved a mathematics problem. It builds self-efficacy to describe “good” mistakes that show learning by explaining the learning demonstrated.
 - Having a peer model how they coped with solving a difficult problem, again by verbalizing the steps followed and discussing the outcome.
 - Training students in understanding and applying learning strategies. For example, in a remedial listening comprehension program, teachers modeled comprehension strategies, then had the students practice by verbalizing a strategy before they applied it to a question. The self-verbalization worked as a form of rehearsal, building students’ belief in their ability to complete the task independently.
 - Offering explicit performance feedback so that students’ attention is intentionally focused on the skills and **knowledge** they are acquiring. For example, conveying where the student is making progress is especially important when students are learning complex skills where they quickly learn some components but not others. Specific feedback by the teacher can highlight the correct components and help the student address the problem areas. The teacher feedback can be provided verbally or with charts. The most important thing is that the feedback be clear and timely.
- Interventions that promote positive academic mindsets can be relatively brief but still have long-term effects. This is because the interventions affect the self-repeating processes that cause results to accumulate over time (Yeager & Walton, 2011). An example of a brief but effective intervention is having struggling students meet with older students to discuss challenges with academic success that they encountered while transitioning to a new environment (e.g., elementary to middle school), and how they overcame the challenges and improved their grades. This helps the struggling students understand that poor performance is normal in a transition, that poor grades do not reflect lack of ability, and that the grades can improve as the student adjusts to the new environment.
- Researchers (McMahon et al., 2009) found that classroom climate (in terms of areas such as cohesiveness, student satisfaction, level of difficulty, competitiveness, etc.) had an effect on the academic self-efficacy of low-income students in grades 4–5. Some of the conclusions from the research are:
 - Positive and supportive classroom environments together with school belonging were related to higher language arts self-efficacy.
 - Using cooperative, interactive teaching strategies regardless of subject area can promote cohesion and belonging among students.
- Successful approaches to reinforcing positive academic mindsets include (Dweck et al., 2014):
 - Setting high standards that promote a growth mindset and learning goals:
 - Early intervention when difficulties arise (in school year, in transition) is important.
 - Teachers should avoid overpraising for mediocre work.
 - Standards must be perceived by the student as attainable.
 - Providing cognitive and motivational scaffolding:
 - Personalize high-quality feedback that includes encouragement to continue.
 - Support students to rephrase self-criticism. Instead of saying, “I’m not good at this,” say, “I’ve learned this part, but I still need to work on this” (Dweck, n.d.).
 - Support student autonomy through cues that emphasize good performance as a result of the student’s effort.

- Support intrinsic **motivation** by emphasizing relevance of the activity to personal growth. For example, discuss how the activity that the student is undertaking directly supports the goal of getting a job, going to college, or contributing to the community.
- Helping students feel connected and supported:
 - Express interest in the student’s social/family environment.
 - Establish small groups of peer learners who can work on problems as a community of learners.

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