

## **Study Skills:**

### **A Research Review of the Cognitive Processes, Interventions, and Positive Outcomes**

The purpose of this paper is to offer a comprehensive overview of current research on the development of student study skills, including the cognitive processes, interventions, and positive outcomes for the development of study skills across a diverse scope of academic content areas, and for multiple types of learners.

### **Overview of Study Skills**

Study skills are comprised of a range of integrated neurological systems that enhance the efficiency and capability of a students' ability to gain, retain, and process information.

Study skills can be looked at from two distinct, and equally important, factors of academic and nonacademic processes (Crede' and Kuncel, 2008). Academic aspects of study skills include organizational and time-management techniques, information processing, memory procedures, and metacognitive comprehension (Awang & Sinnadurai, 2011). Nonacademic aspects are the mindset of successful studying, such as perseverance, motivation, self-efficacy, and the desire for growth and improvement (Putwain, Sander & Larkin, 2013).

According to Bandura's research on self-efficacy, this mindset is a stronger predictor of success than ability within a subject, and can be transferred to, and cultivated in, students (Bandura, 1986). Thus, the makeup of study skills must be evaluated and measured with two perspectives: (1) factors such as study tactics and habits, and (2) factors such as mindset and self-efficacy.

### **Cognitive Requirements for Proficient Study Skills**

Proficient study skills are made up of specified techniques and strategies, application of these into habit, and the motivation to press forward with attendance to the task. First and foremost, study skills must be taught, modeled, and practiced so that students can then apply the techniques independently (Kartika, 2007). These tactics may include note-taking, repetition, visual and auditory attention, organizational tools, active review, and time management. Effective studying requires specific training and consistent practice with tactics that help a learner to access, retain, organize, and apply information.

Secondly, proficient study skills require individual purposefulness, apart from the comprehension and application of techniques. This purposefulness differs from the incidental learning that may occur in a classroom setting because it requires deliberate and focused effort by the learner (Gardner, 2009). Studying is an individual and personal practice, as opposed to being in a classroom and listening to instructors and classmates. Therefore, motivation (e.g., initiative, persistence, work ethic) is a vital factor for efficient and fruitful studying, not only during the early gaining of study skills, but additionally for learning beyond traditional academic settings (Darwin, 2011).

### **Interventions: Study Skills Training**

Effective study skills must be comprised of specific tactics and/or strategies, which can consistently be drawn upon by the learner as a means of organization, retention, and processing of information (Kartika, 2008). For example, a study tactic could be a specific procedure, such as

underlining, note-taking, and summarizing. Such techniques are often taught through instruction wherein the skill is presented, but not practiced; therefore, the flawed assumption that knowing study tactics equates to effective studying. In fact, routine teaching of study habits and extensive study hours had no measurable effect on the success of students evaluated (Darwin, 2011). Merely teaching a sequence of behaviors does not necessarily encourage students to plan, think about, use, or monitor their studying.

### **Study Skills Via Traditional Education**

Instead of simply transmitting the content of information (study tactics) to a learner, the goal of effective study skills instruction is to empower a student with metacognitive processing that can ultimately be applied to ongoing and diverse topics (Feurerstein & Falik, 2010). Such tactics are best instructed in a manner that is both effective (the strategy is learned) and efficient (it is learned to an optimal level with minimal effort). However, the prevailing instructional approaches in US schools do not address the underlying processes for successful studying and efficient learning (Feuerstein & Falik, 2010). Unfortunately, students are expected to understand and employ study skills with completion of homework or prepping for tests, yet teachers ordinarily spend little time offering instruction and practice in such techniques (Zimmerman, 1998).

### **Empirical Research on Study Skills Training**

Because the application of study skills is so closely correlated with academic achievement, there exists a flood of studies on the subject. The ideal environment for teaching study skills is within a classroom setting, and as part of the curriculum for elementary grades through high school. However, research documents the lack of training in study skills and habits among public school educators, and particularly teachers within primary grades (Cornick, Guy, and Beckford, 2014). Curriculum for presenting learners with specific study techniques does not exist as a requisite and is seldom available within US schools, despite the fact that research confirms overall improvements in academic achievement when students apply good study skills (Demir, Kilinc, Dogan, 2011).

Teachers within primary schools should be teaching study tactics, which can then become study habits and ultimately improve student motivation, self-efficacy, and achievement in later grades. Interviews with middle school teachers in one study revealed a lack of study skills instruction within the classroom and a significant lack of study skills knowledge among educators (Thorpe, 2010).

Research on the efficacy of focused study skills programs within higher education points toward a need and a solution which offers positive outcomes for students, yet would be most efficient if applied sooner and more consistently (Smith, Groves, Bowd, & Barber, 2012; Shetty & Srinivasan, 2014). In fact, university students who had been placed on academic probation were found deficient in the study skills needed to complete postsecondary education (Renzulli, 2015).

### **Positive Outcomes: Evidence-Based Correlates of Improved Study Skills**

Academic success is foundationally correlated with the acquisition and application of study skills, across a myriad of academic content areas, and for a variety of learners (Gettinger, Seibert, 2002; Awang & Sinnadurai, 2011). As expected, research confirms that improved study skills correlate to a higher GPA for learners of both genders, across a diverse spectrum of socioeconomic levels and within a variety of academic fields (Al-Hilawani, 2016). According to Feuerstein and Falik (2010), it is more

effective to incorporate a diverse and thorough cognitive approach to education than the traditional adherence to curriculum-based rote memorization and repetition. Teaching students the skills and habits of efficient studying contributes large dividends to their ongoing ability to learn and master information (Entress & Wagner, 2014).

Academic success is also fundamentally accompanied by the presence of a student's motivation and self-efficacy. The learner's work ethic, motivation, and perseverance have been determined as important as academic components (Yu, 2011). This aspect of intellectual prowess has been increasingly researched as a contributing factor of scholarly success, with correlates that outweigh traditional academic measures, such as grade point average (Niessen, Meijer, & Tendeiro, 2017). According to current research, self-efficacy is a byproduct of a student's acquisition and application of proficient study skills, and the two factors are mutually beneficial (Wernersback, Crowley, Bates, & Roshenthal, 2014). In other words, the development of study skills and self-efficacy create an environment of progressive motivation and study efficiency; study skills training increases self-efficacy, which leads to improved academic performance (Boysen & McGuire, 2005).

### **StudyRx: Cognitive Training to Impart Proficient Study Skills**

With such robust evidence of the impact study skills have on a learner's academic achievement, one would expect to see an abundance of effective programs to develop such skills. However, the content-based approach employed by US public schools is intended to focus on the transmission of information, without cognitive training that increases operational thinking and self-efficacy (Feuerstein & Falik, 2010). It is precisely this integration of both cognitive and non-cognitive aspects that facilitates proficient study skills and subsequent academic prowess.

Study skills must be taught, practiced, and ingrained into habitual use, which in turn improves confidence, work-ethic, and inner motivation (self-efficacy). According to Dweck (2015), this growth mindset is a learned characteristic, which can and should be systematically taught, encouraged, and cultivated. Her research confirms that students with a mindset of cognitive growth as a realistic and scientific process exhibit academic improvement and increased self-efficacy. The StudyRx cognitive training program comprehensively addresses both the intellectual and non-intellectual aspects required for proficient study skills. The student meets one-on-one with a certified trainer in a clinical setting for instruction in basic study skills, which are then practiced, encouraged, and refined throughout the course and training. The trainer provides information for practical study tactics and techniques, while also addressing a growth mindset through goal setting, motivation for improvement, perseverance in the face of obstacles, and self-efficacy. The 12 training concepts within StudyRx are as follows:

- 1) A mindset for success
- 2) Goal-setting strategies
- 3) Improved perseverance
- 4) Organizational skills
- 5) Better study habits
- 6) Improved essay writing
- 7) Visualization and memory skills
- 8) Stronger note-taking skills
- 9) Enhanced test-taking abilities
- 10) Homework success strategies

- 11) Planning and prioritizing skills
- 12) Improved time management skills

These procedures and concepts build on one another. In accordance with Bandura's seminal work on self-efficacy, the StudyRx trainer begins by modeling skills and techniques, then creates experiences of mastery during training, verbally encourages the student with dynamic feedback, and trains the student in stress management (Bandura, 1982). This diverse approach addresses both the cognitive and non-cognitive aspects needed for acquiring proficient study skills.

StudyRx is offered at LearningRx centers across the US and abroad, as a standalone training or supplemental to other cognitive training programs, such as ReadRx, MathRx, or ThinkRx. Each of these programs also employs the same model of addressing both cognitive and non-cognitive aspects of learning and helps facilitate a student's progress in the subject area, as well as improved motivation and self-efficacy. StudyRx is designed to include eight 90-minute sessions of one-on-one training for a student, which can be completed in two to four weeks. To increase relevancy, the procedures incorporate a student's current school projects and coursework where possible. Evidence confirms that learners from middle school through high school and beyond who pursue and acquire proficient study skills will benefit academically across a variety of subjects, and with resulting improvements in motivation and self-efficacy.

### References

Al-Hilawani, Y. (2016a). Metacognition in real life situations and study skills and habits: Two types of processes. *International Journal of Progressive Education*, 12(1), 73-89.

Awang, M. G., & Sinnadurai, S. K. (2011a). A study on the development of strategic tools in study orientation skills towards achieving academic excellence. *Journal of Language Teaching & Research*, 2(1), 60-67. doi:10.4304/jltr.2.1.60-67

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development*, 67(3), 1206-1222.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122-147. doi:10.1037/0003-066X.37.2.122

Bandura, A. (1986). Self-efficacy beliefs in human functioning. *Passages from Social Foundations of Thought and Action*. Retrieved from <http://www.des.emory.edu/mfp/effpassages.html>

Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology*, 45(5), 1017-1028. doi:10.1037/0022-3514.45.5.1017 STUDY SKILLS 10

Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, 41(3), 586-598. doi:10.1037/0022-3514.41.3.586

- Ben-Hur, M., & Feuerstein, R. (2011). Feuerstein's new program for the facilitation of cognitive development in young children. *Journal of Cognitive Education & Psychology*, 10(3), 224- 237. doi:10.1891/1945-8959.10.3.224
- Berthiaume, P. (1995). Improving the academic achievement of high school students through the implementation of a study skills program
- Bipp, T., & van Dam, K. (2014). Extending hierarchical achievement motivation models: The role of motivational needs for achievement goals and academic performance. *Personality and Individual Differences*, 64, 157-162. doi:10.1016/j.paid.2014.02.039
- Boysen, G. A., & McGuire, S. (2005). Assessment of a study skills course using academic performance and self-efficacy. *Learning Assistance Review (TLAR)*, 10(2), 5-16.
- Bulgren, J.A., Schumaker, J.B., & Deshler, D.D. (1997). Use of a recall enhancement routine and strategies in inclusive secondary classes. *Learning Disabilities Research & Practice*, 12, 198-208.
- Cornick, J., Guy, G. M., & Beckford, I. (2015). Integrating study skills and problem solving into remedial mathematics. *Teaching Mathematics and Its Applications*, 34(2), 83-90.
- Cred, M., & Kuncel, N. R. (2008b). Study habits, skills, and attitudes: The third pillar supporting collegiate academic performance. *Perspectives on Psychological Science*, 3(6), 425-453. doi:10.1111/j.1745-6924.2008.00089.x
- Demir, S., Kilinc, M., & Dogan, A. (2012). The effect of curriculum for developing efficient studying skills on academic achievements and studying skills of learners. *International Electronic Journal of Elementary Education*, 4(3), 427-440.
- Di Fabio, A., & Saklofske, D. H. (2014). Comparing ability and self-report trait emotional intelligence, fluid intelligence, and personality traits in career decision. *Personality and Individual Differences*, 64, 174-178. doi://dx.doi.org/10.1016/j.paid.2014.02.024
- Dweck, C. S. (2007). The perils and promises of praise. *Educational Leadership*, 65(2), 34-39.
- Dweck, C. S. (2010). Even geniuses work hard. *Educational Leadership*, 68(1), 16-20.
- Dweck, C. S. (2015). Growth. *British Journal of Educational Psychology*, 85(2), 242-245. doi:10.1111/bjep.12072
- Entress, C., & Wagner, A. (2014). Beyond "hitting the books." *Science Teacher*, 81(4), 27-31.
- Fazal, S., Hussain, S., Majoka, M. I., & Masood, S. (2012). The role of study skills in academic achievement of students: A closer focus on gender. *Pakistan Journal of Psychological Research*, 27(1), 37-51.
- Feuerstein, R., & Falik, L. H. (2010). Learning to think, thinking to learn: A comparative analysis of three approaches to instruction. *Journal of Cognitive Education and Psychology*, 9(1), 4-20. doi:10.1891/1945-8959.9.1.4
- Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1997). Peer-assisted learning strategies: Making classrooms more responsive to diversity. *American Educational Research Journal*, 34, 174-206.

- Gersten, R. (1998). Recent advances in instructional research for students with learning disabilities: An overview. *Learning Disabilities Research & Practice*, 13(3), 162-170.
- Gersten, R., Fuchs, L. S., Williams, J. P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of research. *Review of Educational Research*, 71, 279-320.
- Griffin, R., MacKewn, A., Moser, E., & VanVuren, K. W. (2012b). Do learning and study skills affect academic performance an empirical investigation. *Contemporary Issues in Education Research*, 5(2), 109-116.
- Guéguen, N., Martin, A., & Andrea, C. R. (2015). "I am sure you'll succeed": When a teacher's verbal encouragement of success increases children's academic performance. *Learning and Motivation*, 52, 54-59. doi:10.1016/j.lmot.2015.09.004
- Hall, M., Hanna, L., Hanna, A., & Hall, K. (2015). Associations between achievement goal orientations and academic performance among students at a UK pharmacy school. *American Journal of Pharmaceutical Education*, 79(5), 1-7.
- Harvey, S., & Goudvis, A. (2000). *Strategies that work: Teaching comprehension to enhance understanding*. York, ME: Stenhouse.
- Hickman, C., Jacobson, D., & Melnyk, B. M. (2015). Article: Randomized controlled trial of the acceptability, feasibility, and preliminary effects of a cognitive behavioral skills building intervention in adolescents with chronic daily headaches: A pilot study. *Journal of Pediatric Health Care*, 29, 5-16. doi:10.1016/j.pedhc.2014.05.001
- Huijbers, W., Pennartz, C. M. A., Rubin, D. C., & Daselaar, S. M. (2011). Imagery and retrieval of auditory and visual information: Neural correlates of successful and unsuccessful performance. *Neuropsychologia*, 49, 1730-1740. doi:10.1016/j.neuropsychologia.2011.02.051
- Kartika, A. (2008). Study skills training: Is it an answer to the lack of college students' study skills? *International Journal of Learning*, 14(9), 35-43. Retrieved from [http://www.academia.edu/28800951/Study\\_Skills\\_Training\\_Is\\_it\\_an\\_Answer\\_to\\_the\\_Lack\\_of\\_College\\_Students\\_Study\\_Skills](http://www.academia.edu/28800951/Study_Skills_Training_Is_it_an_Answer_to_the_Lack_of_College_Students_Study_Skills)
- Kerdijk, W., Cohen-Schotanus, J., Mulder, B. F., Muntinghe, F. L. H., & Tio, R. A. (2015). Cumulative versus end-of-course assessment: Effects on self-study time and test performance. *Medical Education*, 49(7), 709-716. doi:10.1111/medu.12756 STUDY SKILLS 13
- Klingner, J. K., Vaughn, S., & Schumm, J. S. (1998). Collaborative strategic reading during social studies in heterogeneous fourth-grade classrooms. *Elementary School Journal*, 99, 3-22.
- Kucan, L., & Beck, I. (1997). Thinking aloud and reading comprehension research: Inquiry, instruction, and social interaction. *Review of Educational Research*, 67, 271-299.
- Ley, K., & Young, D. B. (1998). Self-regulation behaviors in underprepared (developmental) and regular admission college students. *Contemporary Educational Psychology*, 23, 42-64.
- Lucangeli, D., Coi, G., & Bosco, P. (1998). Metacognitive awareness in good and poor math problem solvers. *Learning Disabilities Research & Practice*, 12, 219-244.

- Mastropieri, M. A., & Scruggs, T. E. (1997). Best practices in promoting reading comprehension in students with learning disabilities. *Remedial and Special Education, 18*, 197-213.
- Mokhtari, S., & Reichard, C. (2002). Metacognitive awareness of Reading Strategies Inventory. *Teaching Exceptional Children, 34*(2), 29-34.
- Poyraz, C. (2013). Investigating distance education students' study skills. *Turkish Online Journal of Distance Education, 14*(4), 69-82.
- Pressley, M., Woloshyn, V., & Associates. (1995). *Cognitive strategy instruction that really improves children's academic performance* (2nd ed.). Cambridge, MA: Brookline.
- Putwain, D., Sander, P., & Larkin, D. (2013). Academic self-efficacy in study-related skills and behaviours: Relations with learning-related emotions and academic success. *British Journal of Educational Psychology, 83*(4), 633-650. doi:10.1111/j.2044-8279.2012.02084.x
- Renzulli, S. J. (2015). Using learning strategies to improve the academic performance of university students on academic probation. *NACADA Journal, 35*(1), 29-41. Schunk, D. H., & Zimmerman, B. (Eds.). (1998). *Self-regulated learning: From teaching to self-reflective practice*. New York: Guilford.
- Shetty, S. S., & Raj Srinivasan, S. (2014). Effectiveness of study skills on academic performance of dental students. *Journal of Education & Ethics in Dentistry, 4*(1), 28-31. doi:10.4103/0974-7761.143175
- Sikhwari, T. D., & Pillay, J. (2012). Investigating the effectiveness of a study skills training programme. *South African Journal of Higher Education, 26*(3), 606-622.
- Smith, J., Groves, M., Bowd, B., & Barber, A. (2012). Facilitating the development of study skills through a blended learning approach. *International Journal of Higher Education, 1*(2), 108-117.
- Smith, M., Teske, R., & Gossmeier, M. (2000). *Improving student achievement through the enhancement of study skills*
- Stewart, J., & Landine, J. (1995). Study skills from a metacognitive perspective. *Guidance & Counselling, 11*(1), 16-20.
- Strichart, S. S., Mangrum, C. T., & Iannuzzi, P. (1998). *Teaching study skills to students with learning disabilities, attention deficit disorders, or special needs* (2nd ed.). Boston: Allyn and Bacon. Thorpe, C. (2010). *Promoting academic achievement in the middle school classroom: Integrating effective study skills instruction*. Online Submission.
- Turnbough, R. M., & Christenberry, N. J. (1997). *Study skills measurement: Choosing the most appropriate instrument*
- Waldron, N. L., & McLeskey, J. (2000). Preventing academic failure. In K. M. Minke & G. C. Bear (Eds.), *Preventing school problem—Promoting school success: Strategies and programs that work* (pp. 171-209). Bethesda, MD: National Association of School Psychologists.
- Winne, P. H., & Hadwon, A. F. (1997). Studying as self-regulated learning. In D. J. Hacker, J. Dunlosky, & A. C. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 234-256). Hillsdale, NJ: Erlbaum.

Wernersbach, B. M., Crowley, S. L., Bates, S. C., & Rosenthal, C. (2014a). Study skills course impact on academic self-efficacy. *Journal of Developmental Education*, 37(2), 16,.

Wittmann, M., Peter, J., Gutina, O., Otten, S., Kohls, N., & Meissner, K. (2014). Individual differences in self-attributed mindfulness levels are related to the experience of time and cognitive self-control. *Personality and Individual Differences*, 64, 41-45.

doi://dx.doi.org.lopes.idm.oclc.org/10.1016/j.paid.2014.02.011

Wright, L. A., & Slate, J. R. (2015). Differences in critical-thinking skills for Texas middle school students as a function of economic disadvantage. *Journal of Education Research*, 9(4), 345-356.

Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational Psychologist*, 47(4), 302-314.

doi:10.1080/00461520.2012.722805 Yu, D. D. (2011a). How much do study habits, skills, and attitudes affect student performance in introductory college accounting courses? *New Horizons in Education*, 59(3), 1-15.

Zimmerman, B. J. (1998). Academic studying and the development of personal skill: A self-regulatory perspective. *Educational Psychologist*, 33, 73-86.

Zimmerman, B. J., Bonner, S., & Kovach, R. (1996). *Developing self-regulated learners: Beyond achievement to self-efficacy*. Washington, DC: American Psychological Association.

Zimmerman, B. J., & Kitsantas, A. (1997). Developmental phases in self-regulation: Shifting from process to outcome goals. *Journal of Educational Psychology*, 89, 29-36.