E.F. Curriculum Notebook

High School

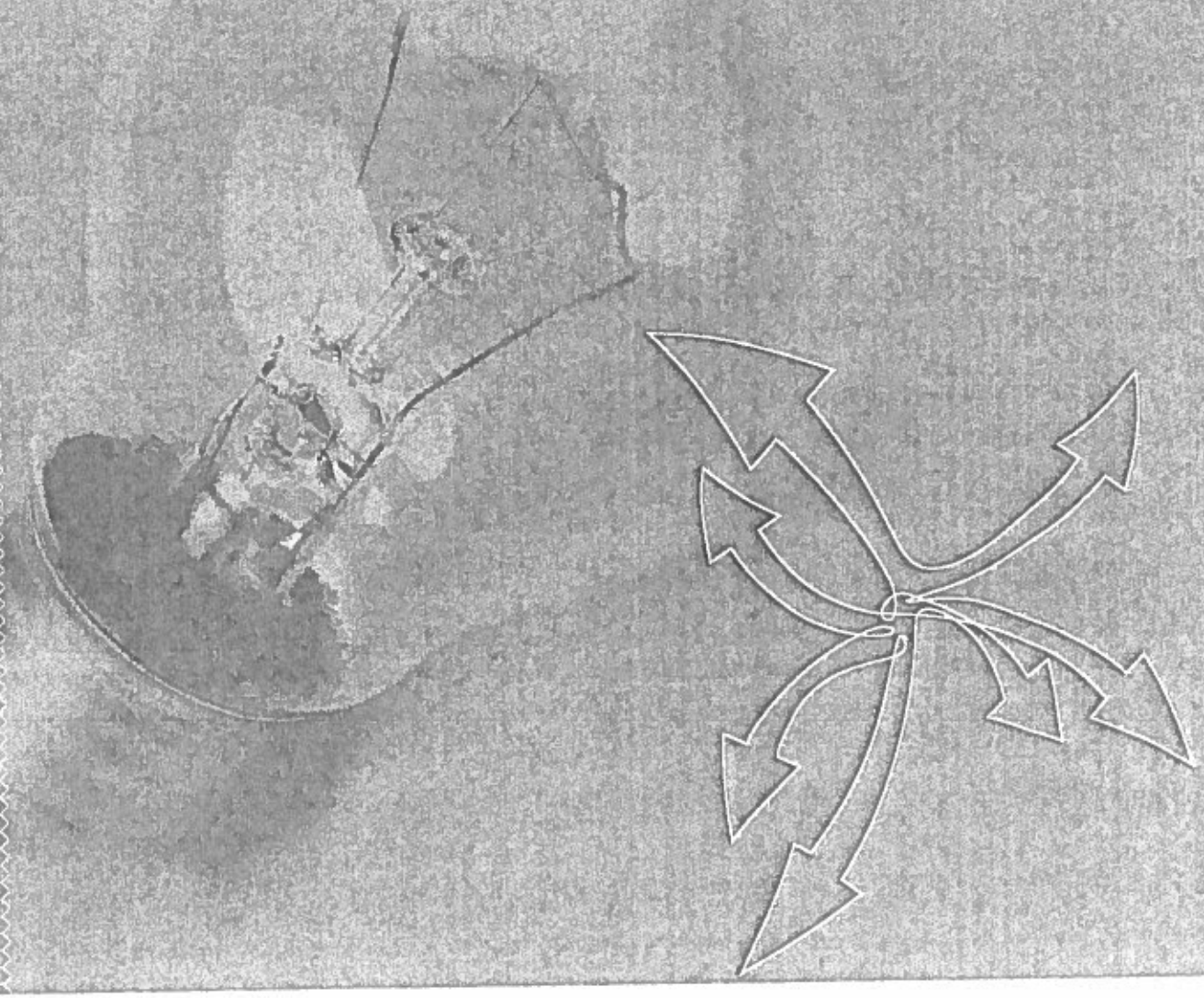
High School

Workbook

Curriculum

E.F.

1. OVERVIEW



UNIT CONTENTS:

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1. OVERVIEW

2. CLASSROOM STRUCTURES & LEARNING ENVIRONMENT

3. MATERIALS MANAGEMENT

4. TIME MANAGEMENT & PLANNING

5. STUDY STRATEGIES

6. GOAL SETTING

7. DECISION MAKING & PROBLEM SOLVING

8. LEARNING STRENGTHS

9. APPENDIX

RESULTS FROM SEVERAL INDEPENDENT STUDIES CONDUCTED OVER THE PAST TEN YEARS HAVE POINTED CONSISTENTLY TO THE RELATIONSHIP BETWEEN SUCCESS IN SCHOOL, ACADEMICALLY AND SOCIALLY, AND STRONG EXECUTIVE FUNCTIONS.

Executive functions are the cognitive processes occurring in the frontal lobe area of the brain that oversee higher-order competencies such as planning, organizing, making decisions, paying attention, regulating behavior, solving problems, and evaluating choices. Parents and students have long understood that the more highly disciplined students outperform their peers in report card grades, standardized achievement test scores, admissions to competitive high schools, and attendance. However, a powerful new study conducted with eighth-grade students (Duckworth, A.L., and Seligman, M.E.P. 2005 *Psychological Science, 16(12)*, 939–944) reported that self-discipline tests administered by the researchers more accurately predicted which students would achieve and improve their grades than a simple IQ test alone. Specific areas of results relevant to school performance included the following:

- Self-discipline predicted academic performance more robustly than IQ.
- Self-discipline has also predicted which students would improve their grades over the school year.
- Compared with more impulsive peers, highly self-disciplined students
  - achieve better grades on report cards and earn higher overall GPA's,
  - score higher in achievement tests and college admissions tests,
  - gain admission to selective high schools and colleges at a higher rate,
  - have fewer absences from class,
  - spend more time on coursework,
  - watch less TV,
  - start their coursework earlier in the day, and
  - begin long-term assignments earlier in the timeline of completing the project.

Studies conducted at the high school and college level underscore these same results. Greenfield Online (2006) conducted a survey with college students across all years, addressing high school preparation for skills essential for success in college. Eighty-eight percent named time management as the most challenging aspect of college life, and eighty-seven percent listed overall organizational skills as their chief problem area relative to earning better grades in their college courses. Similar to studies with high school and middle school students, difficulty with "getting organized and staying organized" was listed as the primary reason for academic underperformance.

In their study, Duckworth and Seligman addressed the issue of self-discipline, which is often referred to within the executive functions literature as self-regulation. Regarding their research conducted with graduating eighth-graders, they wrote, "Underachievement among American students is often blamed on inadequate teachers, boring textbooks, and large class sizes. We (the researchers) suggest another reason for students falling short of their intellectual potential: their failure to exercise self-discipline.... We believe that many American students have trouble making choices that require them to sacrifice short-term pleasure for long-term gain, and that programs that build self-discipline may be the royal road to building academic achievement."

EXECUTIVE FUNCTIONS RESEARCH: MIDDLE SCHOOL, HIGH SCHOOL, AND COLLEGE LEVEL

The following represents a summary of overall findings from studies conducted at the **middle school, high school, and college levels**, examining academic performance and executive functions competency:

- Mastery of executive functions is a better predictor of school success than IQ.
- Poor performance in executive functions is associated with high dropout rates, drug use, and crime.
- Self-regulation skills predict development across all domains, emotional and academic.

EXECUTIVE FUNCTIONS RESEARCH: PRESCHOOL

Adele Diamond (Diamond, A., Barnett, W.S., Thomas, J., and Munro, S. 2007. Preschool program improves cognitive control, *Science, 318*, 1387–1388.) examined executive functions in preschoolers, aged three and four, and reported remarkably similar results:

- Competency in executive functions is ranked by kindergarten teachers as most important for school readiness.
- Competency in executive functions more strongly correlates with reading and math proficiency than IQ.
- Ability to use working memory and inhibit unfocused behavior predicts math and reading readiness for elementary school.

RESEARCH SUMMARY FOR RNBC EXECUTIVE FUNCTIONS PROGRAM

Rush NeuroBehavioral Center (RNBC), an affiliate of Rush University Medical Center, has conducted internal research on the impact on students in schools that are implementing the Executive Functions Program. This research was conducted by an independent researcher, Dr. Scott Leon from Loyola University. The following is an executive summary of this multi-year research:

1. Students in the four schools included in this study of the Executive Functions Program during the school year 2006–2007 demonstrated a high degree of adherence to the foundational components of the materials management segment of the program. Put in terms of "meets and exceeds" expectations, the overall averages for these schools were as follows: 100% of students had their binders at school, 95% of those binders were set up appropriately with labeled dividers for the content areas, 82% of students used the front divider pocket correctly, and 86% used the back pocket correctly.
2. Students who performed well in the Executive Functions Curriculum had a higher rate of homework completion and earned higher grades, as measured in math and reading.
3. A quantitative evaluation of the Executive Functions Curriculum's possible impact on standardized assessment revealed that students who demonstrated greater adherence to the Executive Functions Curriculum throughout the school year performed significantly better on the spring *Learning First* reading assessment and on the ISAT reading tests, even after controlling for demographic variables and prior years' scores.

4. Students, parents, and faculty expressed satisfaction with the Executive Functions (EF) Curriculum. Sample student comments included: "I became more organized this year through the binder and the homework system. I didn't lose my homework as much." "I take better notes now. I can listen to the teacher and take notes at the same time; I couldn't do that before. It helps me study better. I study for shorter periods of time now."

5. Students demonstrated a real "pride of ownership" regarding the EF Curriculum. Across age and schools, students almost universally participated in several core features of the curriculum, including the following:
   - Arrived at school with binders on a daily basis
   - Used separate dividers for each class, as directed by the EF Curriculum
   - Had class names clearly written on dividers
   - Spoke to interviewing evaluators about how they successfully used the monthly calendar, homework board, and the planner

6. This EF Program is unique for a curriculum of its kind in providing an orientation based on integrating the EF Program with the broader school curriculum. For example, when learning about timelines in history, the students learned about the importance of making timelines in the EF Curriculum. This integrated component has led to measurable improvements in the students' adherence to the curriculum.

DEVELOPMENTAL SEQUENCE FOR EXECUTIVE FUNCTIONS

We know that what we are defining as executive functions begins developing at birth. Recent research (Bronson, 2000) points to clear development during the preschool years of many of the basic executive functions. Ylvisaker and Feeney (2002) conducted a comprehensive meta-study of the development of executive functions throughout childhood and into the young adult years. They state, "The understanding of EFs applies to the simple and concrete problem-solving behavior of preschoolers . . . at one extreme, and to the complex and abstract strategic thinking and problem solving of scientists at the other." These authors also point out that by the time a child enters kindergarten, he/she is demonstrating each of the basic executive functions, including planning and organizing, goal setting, initiating and inhibiting behavior, and decision making/problem solving.

While acknowledging that each of the areas of executive functions begins developing early and continues developing into adulthood, these authors define certain executive functions that appear to be connected developmentally with specific age groups. That is, the elementary years place more developmental emphasis on self-regulation and visual analysis. During the later elementary years and throughout adolescence, complex planning and verbal fluency continue developing, along with attentional control, processing, and a more sophisticated approach to goal setting, planning, and time management. Strategic thinking skill areas related to self-monitoring and self-evaluation receive increasing focus developmentally moving into later adolescence. As one enters adulthood, emphasis seems to be placed more on strategic problem solving and decision making as well as developing cognitive flexibility.

The sequential and spiraling nature associated with the development of executive functions throughout childhood and into adulthood requires teachers and parents to provide an appropriate amount and level of support and scaffolding to meet individual students' needs relative to gaining proficiency in executive functions.

We know that development of executive functions during the school years, particularly in relation to academic tasks, depends in part on the nature of the student's instruction. As our research and that of others (Flaveli, 2002) indicates, students participating in school programs that intentionally incorporate executive functions into everyday instruction will demonstrate a higher level of application in their

academic undertakings. The RNBC Executive Functions Program features lessons constructed to maximize this developmental sequence inherent in a student's acquisition of these skill sets. Lessons within the RNBC Executive Functions Curriculum are grouped within three age categories: Intermediate (Grades 3, 4, and 5), Middle School (Grades 6, 7, and 8), and High School. Activities within each of these three Curriculum Notebooks are written specifically to appeal to each of these age/grade level groups.

ADMINISTRATIVE ROLE IN ACHIEVING A SUCCESSFUL IMPLEMENTATION

Building administrative leadership and support is prominent in each of the school sites that have demonstrated highly successful implementation of the Executive Functions Program. In many cases, the building principal attended the in-service meetings and some of the team or grade-level consultations, including model lessons conducted in classrooms. The school and district leadership in these settings has communicated to the faculty that the Executive Functions Program is a priority, which will be implemented within the school over several years. Some schools have selected faculty members to be the on-site Executive Functions point teachers, concerning matters involving implementation of the program.

Recently, several school sites have included the RNBC Executive Functions Program within their RTI (Response to Intervention) planning. Taken as a classroom-based intervention, applicable within the general student population, the Executive Functions Program fits as a Tier I intervention. When utilizing the progress monitoring component, located in the Curriculum Notebook within each separate topic, the Executive Functions Program fits within a Tier II intervention, applicable to meeting specific needs of individual students.

The type of implementation model for the Executive Functions Program varies depending on what best suits the individual school site. Some schools have chosen to begin the program as a pilot undertaking, involving only a few classrooms or, in smaller school systems, one or two grade levels consisting of ten teachers and under a hundred students. We have also worked with multiple grade levels in larger schools, consisting of around one hundred teachers and several hundred students. In all instances, the success of the implementation relative to student academic performance and creating a school culture that values executive functioning depends on the level of engagement of the teachers who are the daily users of the program and the level of support and prioritization of the building administrators.

STRUCTURE OF THE EXECUTIVE FUNCTIONS CURRICULUM

The sequence of lessons in the Executive Functions Curriculum is based on the logical sequence of teaching and learning experiences in the classroom. The first section has three topics (Classroom Structures & Learning Environment, Materials Management, Time Management & Planning) that are referenced in the Executive Functions Curriculum as the foundational units. Educators are well aware that these three areas are best addressed during the first weeks of school. Once firmly in place, these areas form a solid foundation for the classroom, maximizing the ways students benefit from the coursework curriculum. In keeping with the high level of importance of these foundational units, the Executive Functions Curriculum not only places them first, but also recommends on-going consistency and reinforcement of these topics throughout the school year.

The order of the second and third sections, Study Strategies (Following Directions, Academic Support, Memory Techniques, Note Taking and Organizing Information, Test Preparation and Reflection) and Personal Growth (Goal Setting, Decision Making & Problem Solving, Learning Strengths) respectively, reflects the customary academic priority of the regular classroom. That said, teachers might wish to evaluate the sequence of lessons within these last two sections, rearranging them to suit individual teaching philosophy, as well as the unique demands of each specific group of students and grade-level content requirements. In our experience, teachers may choose to lead the class in goal setting and/or learning strengths lessons (both from the Personal Growth section) early on in the school year, in order to build on and incorporate these areas into content curriculum.

In similar fashion, the Scope and Sequence is designed to be used as a guide for educators. After teaching the topics included in the Foundational Units, teachers can choose lessons from among the remaining topics and units, according to the needs of their classrooms and students. Once again, the Scope and Sequence makes recommendations for educators for this process and deliberately revisits the topics included within the Foundational Units at various intervals during the school year.

COMPATIBILITY OF THE EXECUTIVE FUNCTIONS CURRICULUM WITHIN A RTI FRAMEWORK

As educators, we understand that academic difficulties often co-exist with weaknesses in executive functions. Student ability to acquire academic skill sets, as well as student performance in content-area achievement assessments, can be significantly impacted by issues related to focusing and maintaining attention, organizational skills, time management, goal setting, and the ability to apply strategic, in-depth thinking to content material. According to recent studies, our twenty-first century classrooms feature a much higher percentage of students who exhibit concerns related to executive functions. (Saphier, Haley-Speca, Gower, *The Skillful Teacher,* 2008.)

The Executive Functions Curriculum, as represented by the four Executive Functions Curriculum Notebooks (Primary, Intermediate, Middle School, and High School), is designed to be compatible with the guidelines of Tier I RTI applications. The Executive Functions Curriculum has been written for implementation on a classroom basis across all content areas and for all types of learners. The content of the units represents research-based best practices in teaching students organizational skills, time management, a wide variety of study strategies, as well as goal setting and decision making capabilities. The lessons have been constructed to serve as a guide, facilitating incorporation of executive functions into regular content-area lessons and units. The Executive Functions Curriculum empowers educators to provide research-based practices in executive functions across the full range of the regular education system.

Additionally, the Executive Functions Curriculum is compatible with Tier II guidelines within a RTI framework. Each unit (except Classroom Structures and Learning Strengths) contains a progress-monitoring chart, which is coordinated with an eight-week progress-monitoring graph. This provision allows educators and problem-solving teams to monitor progress on a student-by-student basis, regarding the development of separate skill sets taken individually, as well as on all of the topics contained within a unit taken as a whole. Accordingly, the lessons within the curriculum have been constructed to be used as stand-alone instruction for individual students who need the extra practice or an introductory-level exercise as part of the process leading toward mastery of each skill set and/or concept. Having the capability to monitor progress for individual students according to separate skill sets or a group of skill sets enhances the application of the Executive Functions Curriculum within the context of RTI plans, IEPs, and 504 plans.

Rush NeuroBehavioral Center's Executive Functions Program

WHAT ARE EXECUTIVE FUNCTIONS?

Executive functions are the cognitive processes occurring in the frontal lobe area of the brain that allow one to plan, organize, make decisions, pay attention, regulate behavior, solve problems, and evaluate decisions. Following the mission at Rush NeuroBehavioral Center (RNBC), and in accordance with the teaching and research focus of Rush University Medical Center, RNBC's Educational Services Department has developed a school-based program for teachers and students. This program is currently being implemented in several public and private schools in both city and suburban settings. Based in neuroscience, the curriculum focuses on organizational skills, time management strategies, the ability to assess individual strengths, goal setting, and the utilization of study skills to optimize academic and behavioral successes. Current research suggests that the development of these executive functions is essential for success both in school and later in life.

Executive functions include:

- self-regulation of attentional, cognitive, and affective behaviors
- ability to efficiently manage time and materials
- awareness of one's strengths and weaknesses
- ability to engage in goal-directed behavior, including initiating behaviors
- ability to monitor and evaluate performance in relation to one's goals
- ability to flexibly revise plans and strategically solve problems

HOW DO EXECUTIVE FUNCTIONS DEVELOP?

The maturation of executive functions follows a developmental progression beginning in infancy and continuing into adulthood. Developing executive functions involves dynamic ongoing refinement of higher-order thinking skills, such as the ability to analyze a task, solve problems, and engage in the process of decision-making. The Executive Functions Program at RNBC is based on a firm understanding of brain research, and supports the step-by-step development of executive functions and the enhancement of higher-order thinking skills in an effort to optimize educational performance.

While many executive functions are thought to be acquired naturally, at RNBC we believe that these skills need to be incorporated into the educational setting and integrated into lesson plans. Therefore, this curriculum is designed to help facilitate the teaching and execution of a school-wide Executive Functions Program. Based on a consistent system of implementation, the objective for all students is the establishment of regular behavioral and cognitive routines.

Curriculum Contents and Organization

FOUNDATIONAL UNITS

Classroom Structures & Learning Environment

This unit includes suggestions for designing the physical environment of your classroom, handling the logistics of assigning and collecting homework, managing time and transitions, as well as modeling organization strategies for your students.

Materials Management

This unit lays out an organization system to help students better manage their materials, presents options for classroom or individual long-term storage of important papers, as well as describes techniques for tracking academic performance.

Time Management & Planning

This unit teaches students to manage time by using personal planners to record homework and important activities, prioritizing assignments, and breaking down long-term tasks.

STUDY STRATEGIES UNIT

This unit includes tips to improve students' ability to follow oral and written directions; take accurate notes and organize information; apply useful memory techniques; and effectively prepare for, take, and reflect on tests. This unit supports the foundational academic skills of reading, writing, and math. The reading and writing portion focuses on identifying main ideas, applying reading comprehension strategies, and practicing prewriting and editing techniques. The math section assists students with initiating math assignments by providing them with helpful tips and strategies.

PERSONAL GROWTH UNITS

Goal Setting

This unit emphasizes the importance of goal setting in a variety of contexts, describes characteristics of successful goals, and explains how to break down long-term goals into action steps.

Decision Making & Problem Solving

This unit demonstrates the necessary steps students should take when making important and difficult decisions. It emphasizes gathering information, weighing the pros and cons, and creating possible outcomes.

Learning Strengths

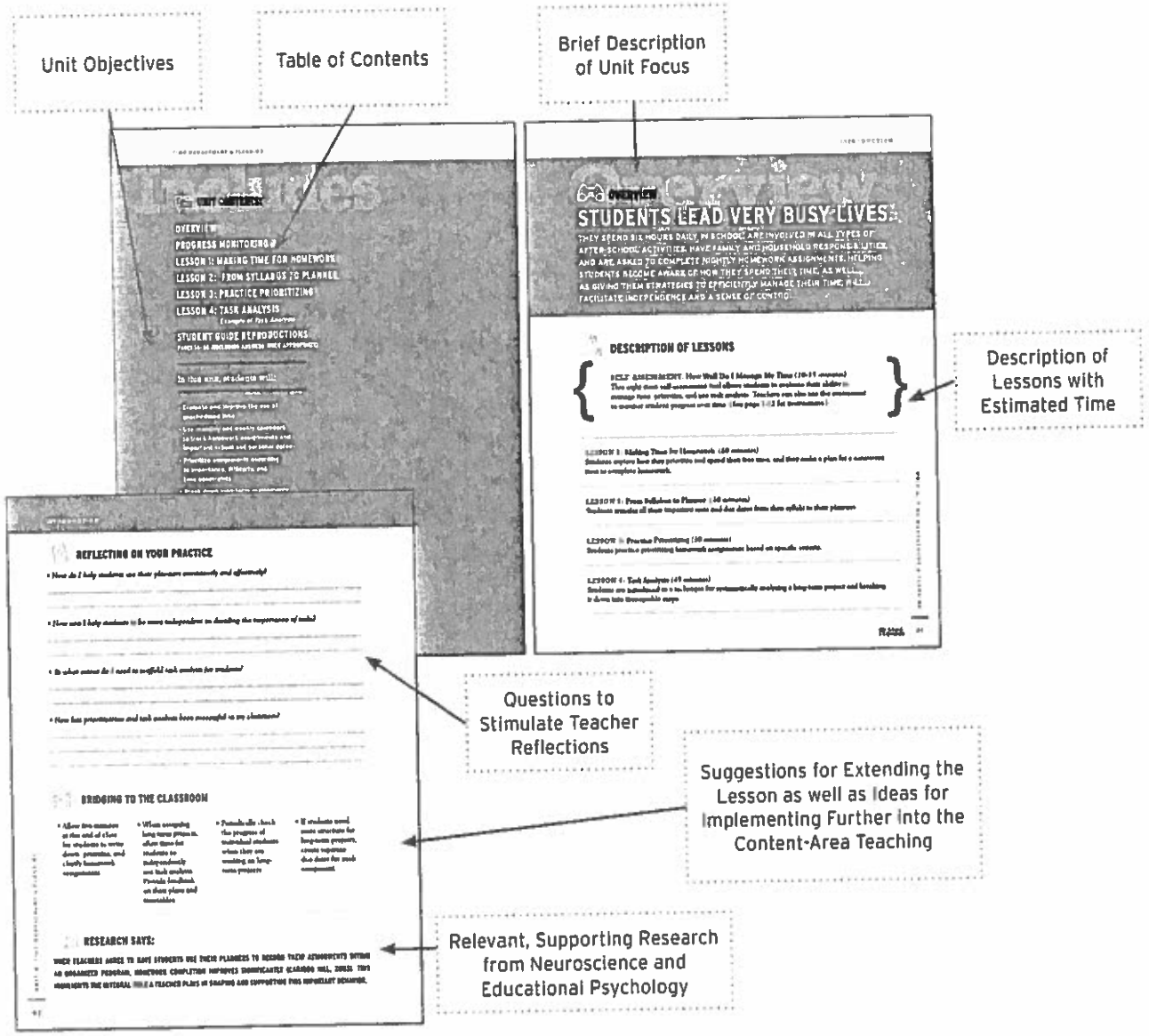
This unit helps students identify, understand, and optimize their learning strengths in the context of different tasks and academic content areas.

HOW TO USE THE CURRICULUM NOTEBOOK

The units are organized in a similar fashion to facilitate your use of the Curriculum Notebook. Each unit consists of an overview, a self-assessment tool (except Unit 8), teacher resources (except Unit 3), and lesson plans. The following pages explore each of these components more closely so that you can more efficiently and effectively use these teaching tools. The first unit—Classroom Structures & Learning Environment—uses a different format.

UNIT OVERVIEWS

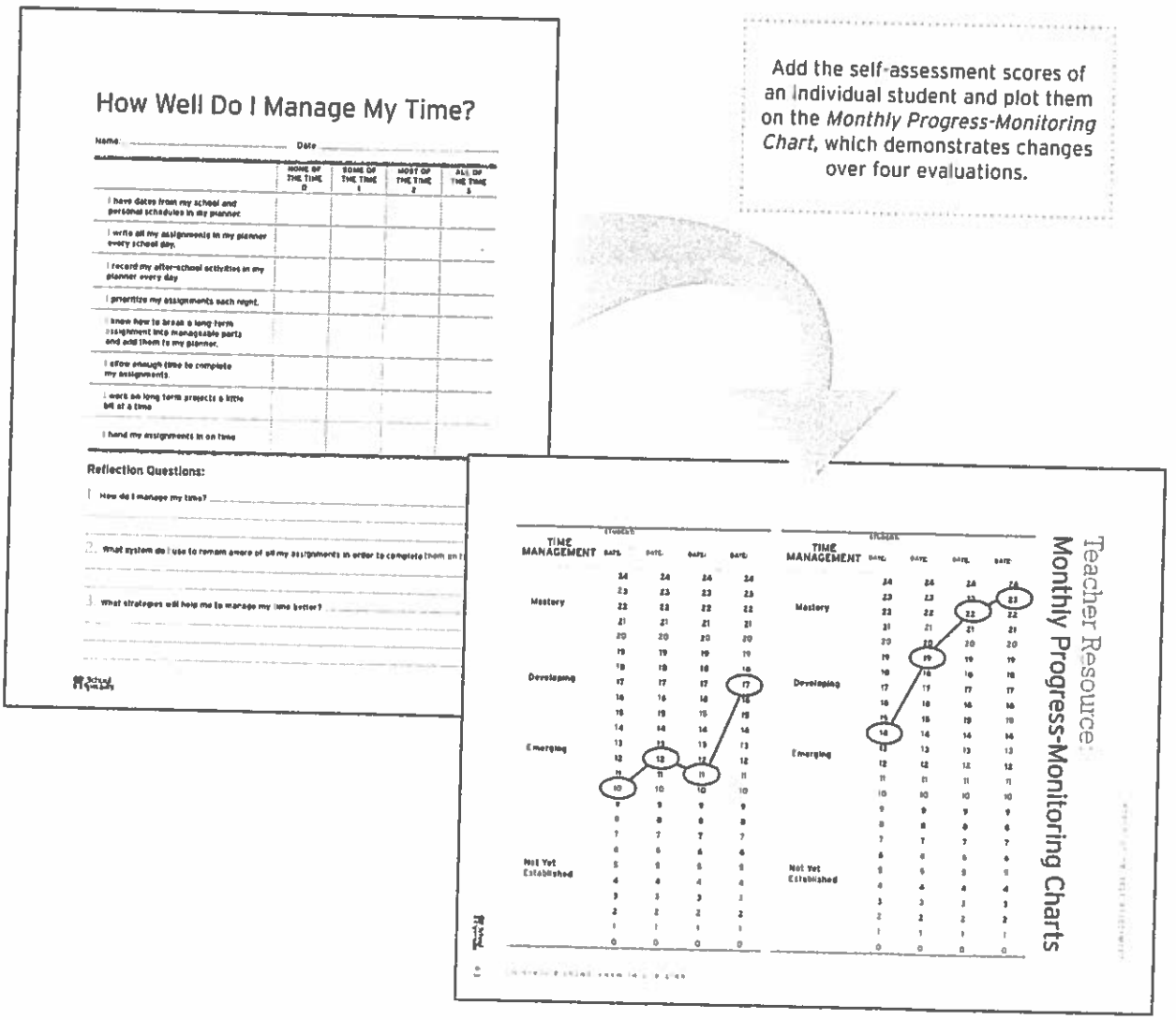
Each unit begins with a unit overview. This overview contains the table of contents, student objectives, a general overview and description of the unit topic. It also briefly describes the lesson plans, provides tips for content-area teaching, questions for reflection, and supporting research.



SELF-ASSESSMENTS

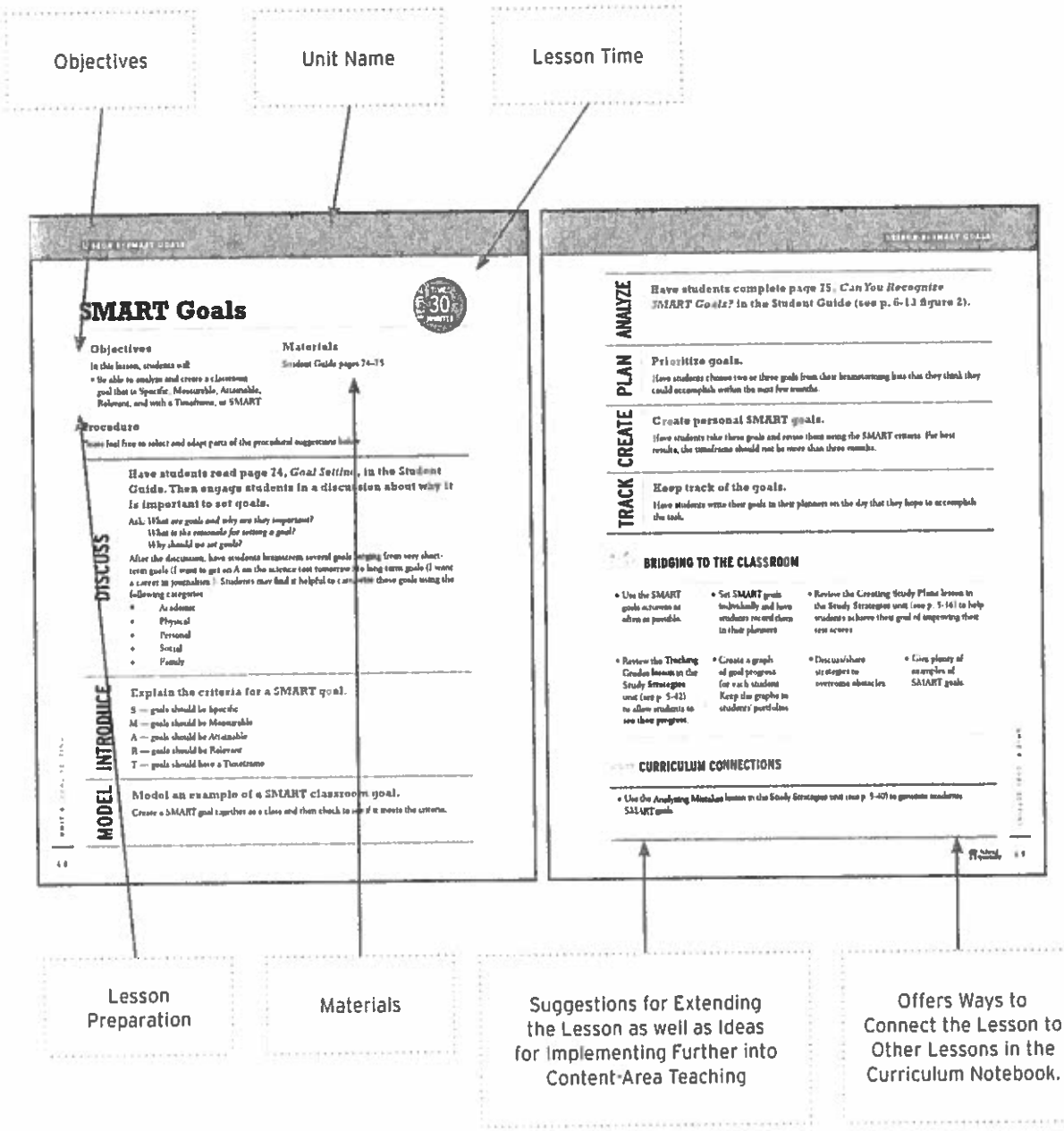
Self-Assessment tools have been developed for Units 3–7 and can be found in the Student Guide after each unit introduction. The self-assessments are designed to determine if a student is already using any of the skills presented in the unit as well as a way to monitor progress. The assessment can be completed in less than 10 minutes and can be self-administered or presented during a teacher-student interview. The self-assessments yield important data regarding students' habits and performances. Teachers can use the self-assessments to gather baseline data before beginning a unit, providing important information about students' prior knowledge. Additionally, students can use the assessments to reflect on what skills they already possess and what skills might be beneficial for them to learn.

The unit self-assessment can be re-administered after completing the unit and at multiple points during the year. This generates data that can be used to understand changes in students' behaviors and attitudes and to adapt instruction accordingly. To score, total the points on the student's assessment and circle the corresponding number on the tracking sheet. When the student completes the assessment for a second time, the points are again added and the number in the column immediately to the right is circled. The circled numbers can be connected, creating a line graph of progress. This process can be completed up to four times, such as once a week for a month, or once a month for a semester. Tracking sheets are located after each Unit Overview.



LESSON PLANS

Lesson plans identify student objectives, necessary preparations, materials, procedures, and tips for extending the lesson and/or integrating it into content-area teaching. Feel free to adapt and change aspects of the lesson plans to fit your needs.

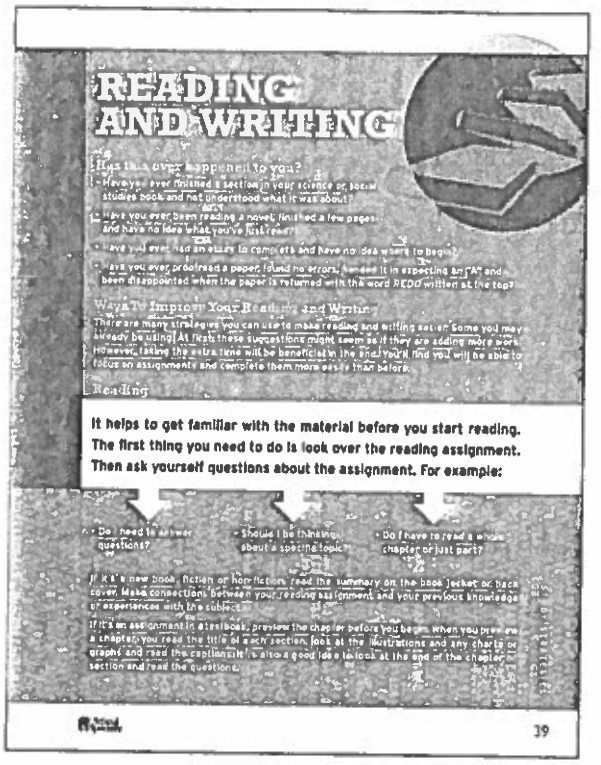


RESOURCES

STUDENT GUIDE PAGE

Each lesson contains pages in the Student Guide that allow students to engage in lesson objectives and solidify mastery of skills. Pages may be in the following formats:

- Informational Text
- Worksheet


READING AND WRITING

Has this ever happened to you?

- Have you ever finished a section in your science or social studies book and not understood what it was about?
- Have you ever been reading a novel, finished a few pages and have no idea what you've just read?
- Have you ever had an essay to complete and have no idea where to begin?
- Have you ever proofread a paper, found no errors, handed it in expecting an "A" and been disappointed when the paper is returned with the word REDO written at the top?

Ways To Improve Your Reading and Writing

There are many strategies you can use to make reading and writing easier. Some you may already be using. At first these suggestions might seem as if they are adding more work. However, taking the extra time will be beneficial in the end. You'll find you will be able to focus on assignments and complete them more easily than before.

Reading

It helps to get familiar with the material before you start reading. The first thing you need to do is look over the reading assignment. Then ask yourself questions about the assignment. For example:

- Do I need to answer questions?
- Should I be thinking about a specific topic?
- Do I have to read a whole chapter or just part?

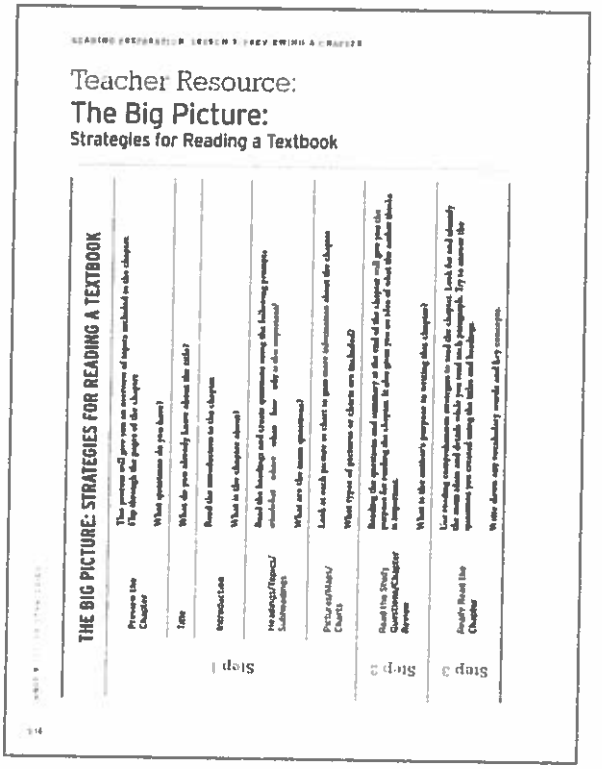
If it's a new book (fiction or non-fiction), read the summary on the book jacket or back cover. Make connections between your reading assignment and your previous knowledge or experiences with the subject.

If it's an assignment in a textbook, preview the chapter before you begin. When you preview a chapter, you read the title of each section, look at the illustrations and any charts or graphs and read the captions. It's also a good idea to look at the end of the chapter, section and read the questions.

39

TEACHER RESOURCES

Most units contain teacher resource pages. These documents are intended to clarify and expound upon key concepts.


Teacher Resource:

The Big Picture:

Strategies for Reading a Textbook

THE BIG PICTURE: STRATEGIES FOR READING A TEXTBOOK

Step 1

Step 2

Step 3

EXECUTIVE FUNCTIONS CURRICULUM SCOPE AND SEQUENCE

High School Curriculum Notebook

MONTH	UNIT	LESSON	PAGE	CLASSROOM APPLICATION
BEFORE SCHOOL BEGINS			2-1	Suggests a variety of ways to manage the demands of preparing for the school year.
				Students Will:
SEP.	Materials Management	Setting Up a Student System	3-4	Organize their classroom materials.
	Time Management & Planning	From Syllabus to Planner	4-6	Transfer all important tests, projects, and events from their syllabus to their planner.
	Goal Setting	SMART Goals	6-8	Set specific and measurable goals that they will achieve within a certain time frame.
OCT.	Time Management & Planning	Task Analysis	4-9	Break down and plan out a long-term project.
		Making Time for Homework	4-4	Manage their time after school.
	Study Strategies	Organizing Information	5-26	Organize information using main idea and details.
	Learning Strengths	Identifying Learning Strengths	8-3	Identify individual learning strengths, allowing teachers to incorporate these strengths into group and independent work.
NOV.	Materials Management	Long-Term Storage	3-6	Clean out their system to avoid overstuffing while still allowing access to previous work.
	Time Management & Planning	Practice Prioritizing	4-7	Review and analyze their homework routines.
	Study Strategies	Three-Column Note Taking	5-32	Take notes using the three-column method.
DEC.	Study Strategies	Creating Study Plans	5-36	Plan out when and how they will study for exams.
		Creating a Troubleshooting Journal for Math	5-21	Devise a list of strategies to assist them in independently completing math assignments.

MONTH	UNIT	LESSON	PAGE	CLASSROOM APPLICATION
JAN.	Time Management & Planning	Reinforce Task Analysis	4-9	Break down and plan out a long-term project.
	Study Strategies	Analyzing Mistakes	5-40	Use tests as a learning tool as well as an assessment tool.
		Tracking Grades	5-42	Keep track of their grades and progress toward a goal.
		Reading for Different Purposes	5-7	Enhance reading comprehension skills by providing a purpose for reading.
	Goal Setting	Creating Action Steps for SMART Goals	6-10	Create action steps as a way to achieve their SMART goals.
FEB.	Study Strategies	Tips for Editing	5-20	Enhance their reading and writing skills through a self-editing process.
	Decision Making	Making Quick Decisions	7-19	Make quick decisions by weighing possible outcomes for real-life problems.
	Study Strategies	Making Your Own Test	5-38	Construct their own test as a study strategy.
		Review Organizing Information	5-26	Organize information using main idea and details.
MAR.	Learning Strengths	Experiencing Multiple Intelligences	8-11	Experience a variety of applications for different learning strengths.
	Study Strategies	Writing an Effective Summary	5-18	Identify and express the important information from a text.
		Reinforce Analyzing Mistakes	5-40	Use tests as a learning tool as well as an assessment tool.
APR.	Decision Making	Making Long-Term Decisions	7-4	Make long-term decisions by analyzing the options and doing thorough research.
	Goal Setting	Review SMART Goals	6-8	Set specific and measurable goals that they will achieve within a certain time frame.
MAY	Study Strategies	Review Creating Study Plans	5-36	Plan out when and how they will study for exams or cumulative assessments.
	Learning Strengths	Reinforce Identifying Learning Strengths	8-3	Incorporate appropriate study strategies into a study plan based on one's learning strengths.