

# Preparation for Life

**How the  
Montessori  
Classroom  
Facilitates the  
Development  
of Executive  
Function Skills**

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**As the workplace becomes increasingly competitive, the role of education will be critical to adequately prepare tomorrow's workforce for success.**

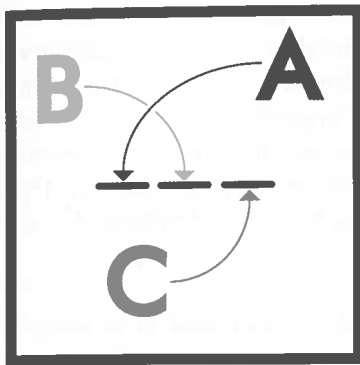
Educational philosophy in elementary and secondary schools has often centered on creating a "product," full of content knowledge and basic skills (Bagby, 2002). However, no longer is academic achievement in the classroom considered the sole gauge of lifelong success. Meltzer (2010) suggested that the development of executive functioning skills utilized to reach academic achievement is equally important—skills such as prioritizing, planning, self-checking, and setting short-term and long-term goals. In addition, it is imperative that 21st-century students learn *how* to recall previously learned information, *how* to fluidly shift learning approaches between tasks, and *how* to monitor their learning progress through self-reflection. All of these skills are essential if students are to transition successfully from the classroom to the workforce.

Being able to plan, organize, and monitor one's time are crucial skills in today's world. These three competencies are only a few of the elements of *executive function*, an umbrella term referring to the cognitive processes that guide, direct, and manage thinking, emotional responses, and behavior (Best, Miller, & Jones, 2009; Gioia, Isquith, Guy, & Kenworthy, 2000). Advances in neuroscience and technology are allowing researchers to study executive function in children and

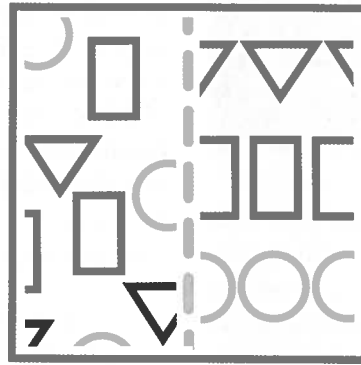
adults. Studies with children include analyzing executive function from a biological perspective, often in the hopes of intervening in the case of developmental delay (Anderson, P., 2002; Anderson, V., 2002; Cartwright, 2012; Cuevas, Hubble, & Bell, 2012; Molfese, Molfese, Molfese, Rudasill, Armstrong, & Starkey, 2010). Studies have found that changes in the child's prefrontal cortex, the perceived locus of executive function, can be affected by the child's experiences (Best, 2010). Recent findings (Bagby, Barnard-Brak, Sulak, Jones & Walter, 2012) suggest that the school environment does impact teacher ratings of students' executive functioning skills.

We believe the Montessori model of education encourages the development of executive function skills. Even though executive function research did not exist at the time of her writing, Maria Montessori referenced cognitive characteristics that today are considered key components of executive function. "For it is from the completed cycle of an activity, from methodical concentration, that the child develops equilibrium, elasticity, adaptability, and the resulting power to perform the higher actions, such as those which are termed acts of obedience" (Montessori, 1965, p. 105).

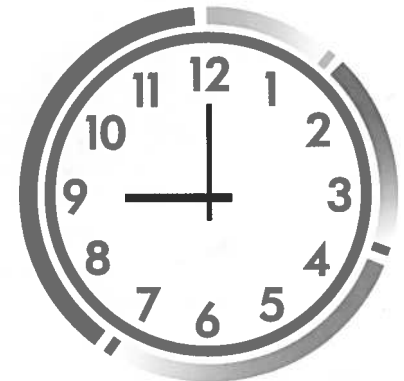
These concepts of equilibrium, elasticity, adaptability, and obedience fit within the contemporary understanding of executive function. In Montessori philosophy, the work cycle occurs in an uninterrupted block of time, typically 3 hours, during which students are allowed to choose and complete work at their own pace. Montessori advocated a



**PLANNING**



**ORGANIZATION**



**TIME MANAGEMENT**

long block of time for the work cycle because she believed that it is during this time period that the internal development of the child takes place and cognitive skills are developed (Montessori, 1965).

Dawson and Guare (2010) provided an overview of how executive function skills operate to maximize student success. We will consider three of these skills—planning, organization, and time management—and will illustrate how each is developed through Montessori practices.

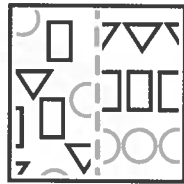
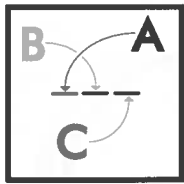
**Planning:** This skill pertains to a student's ability to map out the necessary steps needed to reach a desired goal or complete a task, and to determine priorities in completing those steps (Dawson & Guare, 2010).

The planning element is two-fold in a Montessori classroom. Beginning in Lower Elementary, students not only plan their work using a *work plan*, which is the equivalent of an adult's day planner, but they also plan in what order they will accomplish the work. Both of these elements require students to be aware of their own work pace and of the amount of time required to complete each task. As students progress through Montessori education, the work plan and planning behaviors may be adapted. In Upper Elementary, students plan not only the tasks on their work plans but also the assignments given as a follow-up to group lessons. These assignments are due one or more weeks after the lesson, requiring long-term planning and prioritizing based on when the various tasks are due. The planning process is teacher-guided at first, with less teacher involvement as students become more and more proficient in the process. Although the learning sequence is determined by the teacher, students consult with the teacher to decide the pace at which they will move through the curriculum, often adjusting the amount of scheduled work based on the difficulty of the various tasks. In addition to planning work

completed during school, students in Upper Elementary are required to plan and deliver an independent study. The work for the study is completed outside of school, a feat that requires both time management and planning skills. Students in the first year of Upper Elementary receive instruction from the teacher on how to plan for an independent project and may have intermediate deadlines set prior to the final deadline. As the students progress through Upper Elementary, more of the responsibility shifts to the student, and the instructional scaffolding is slowly removed.

The emphasis on planning sets Montessori education apart from other systems of education on several levels and is one area where Montessori's "follow the child" philosophy is evident. Since students not only have different academic abilities but also different capacities for producing work, both facets of the planning process are customized for students. The amount of control given to students is directly related to their ability to plan and prioritize appropriately, skills that require tremendous self-awareness. The actual work planned is customized to students' abilities as well as their activity level. Students who work more quickly may plan more work and move more quickly through the curriculum, while students who work more slowly will plan less and thus move more slowly. Students are placed in the curriculum according to academic ability rather than grade level, and their planning is based on this academic placement. One aspect of the planning process is that students in a Montessori classroom who work quickly through the curriculum may plan enrichment activities that extend their learning beyond their work plan.

Since the work plan is considered a contract between students and their teachers, incomplete work never just goes away. Like adults who miss a deadline at work, students who do not complete their work plan have natural consequences that escalate as they get older. In Upper



Elementary, these consequences extend to those who miss assignment deadlines for the week. Whereas, in Lower Elementary, the work moves to the following week, in Upper Elementary, students attend *tutorials*, a time set aside after school for students to make up incomplete work or missed assignment deadlines. Students are often proactive and attend tutorials voluntarily if they see that they are not progressing as they had intended on their work plan or on their assignments.

**Organization: Students develop and maintain their own systems for organizing their learning environment and/or materials** (Dawson & Guare, 2010).

Like planning, organization is multifaceted and changes as students move through the Early Childhood, Lower Elementary, and Upper Elementary levels. During lessons in Early Childhood classes, work is arranged in a very specific way, and students are expected to replicate it when they do the work independently. The teacher's organization and presentation of lessons at all levels provides a strong instructional model. As a part of each lesson, students are also taught how to organize their written work on the page. At all levels, the arrangement of work in the classroom is based on a logical progression through the curriculum for that level. As students move into Lower and Upper Elementary, some elements of the specific arrangement of work become less defined.

Montessori education emphasizes a prepared environment, a concept that changes as students move through the various levels. In Lower and Upper Elementary, the teacher provides a model of a prepared environment. Such an environment may extend beyond the materials on the shelf. If the class is pursuing a particular unit of study, such as the continent/country study in Upper Elementary, the teacher provides the books and materials necessary for research. This concept of the prepared environment serves as a model for students as they organize their own environments later.

These foundational experiences in organization teach students by example how to organize their own work. In addition, Upper Elementary students encounter another level of organization as they become skilled in keeping up with their assignments. Since assignments are due one or more weeks from the time that they are given, students are responsible not only for completing the assignments but

also for keeping up with the completed assignments until it is time to turn them in. Aside from the lessons and work, personal organization is fostered by providing students with a specific place for storing their work and their belongings.

This development of organizational skills extends beyond the curriculum to the organization of class meetings and the development of problem-solving skills. An Upper Elementary teacher at Waco Montessori School described class meetings as follows:

*Students discuss any problems that need to be brought before the class, and they learn how to determine what a class problem is and what is an individual problem. . . . They take the problem and they take ideas for solutions. They usually take a vote and the leader then restates the solution, and they vote on them and then they state the solution so everyone is clear on it, and the next week they work on another and some get solved and never come up again.* (Bagby, 2002, p. 80)

Such organizational skills certainly benefit Montessori students as they transition to high school, college, and, eventually, into the work force.

**Time management: This skill not only deals with the ability to determine the time needed to complete a task, but also involves judging how much time to allot to specific tasks based on the total amount of time available. Time management includes being able to work in specific time increments on multistep tasks in order to meet deadlines** (Dawson & Guare, 2010).

Time management and planning go hand in hand in a Montessori classroom. When students plan their work, they use their time management skills. This involves awareness of the work required to complete each task, the time constraints, and the student's own work pace. It also involves recognition of outside factors, such as other students' need for the same materials. With good time-management skills, the student develops proficiency in switching focus from one task to another, or multitasking, a concept referred to as "switching" or "shifting" in the executive function literature (Cartwright, 2012).

In time management, as in other areas, teacher direction and support is stronger in Early Childhood and Lower Elementary. In the Lower Elementary classroom, students learn time management through concrete examples. The work plans utilized begin with structured lessons from a teacher, during which a student is taught to plan independent work for a morning work period. As the student becomes more proficient at managing work time for a single morning, the time period for planned work may be increased. By

the end of the first year in Lower Elementary, the student will have moved through the steps to independent time management and be able to write a realistic work plan for a normal workweek. The student will then be responsible for completing the work plan in the given time frame, as it represents a contract between the student and the teacher. The natural consequence of not completing the work plan is that the work moves to the next week.

Direction decreases as students move into Upper Elementary. As students become acclimated to Upper Elementary, they find the rhythms and routines that work best for them. Some students prefer to do all of their work in one subject first, some prefer to do all of their hard work first, some prefer to do all of their easy work first, and some prefer to go with what they are "in the mood" to do at the moment. As long as they are able to complete their work in the designated time, teachers allow students the freedom to determine the method that works best for them. Older students in multi-age classrooms often mentor younger students by helping them with their time-management skills (Bagby & Sulak, 2011). This freedom to organize their time in light of specific goals is another example of how the Montessori program contributes to the development of executive function.

In conclusion, the three specific executive functioning skills highlighted in this article, *planning, organization, and time management*, are all naturally interwoven into the Montessori learning environment. Activities designed to foster the development of these skills are built into the environment from the child's earliest experiences in Early Childhood, and continue through Lower Elementary and into Upper Elementary. These skills, and other executive functioning abilities, emerge as a natural outgrowth of Montessori education and are critical components of success as students move beyond educational settings and toward becoming productive citizens in our work force. The Montessori model of education provides abundant experiences and unique opportunities for children to develop executive function skills, preparing them not only for academic success but preparing them for life as well.

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*Executive function: choice, attention, follow-through!*

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