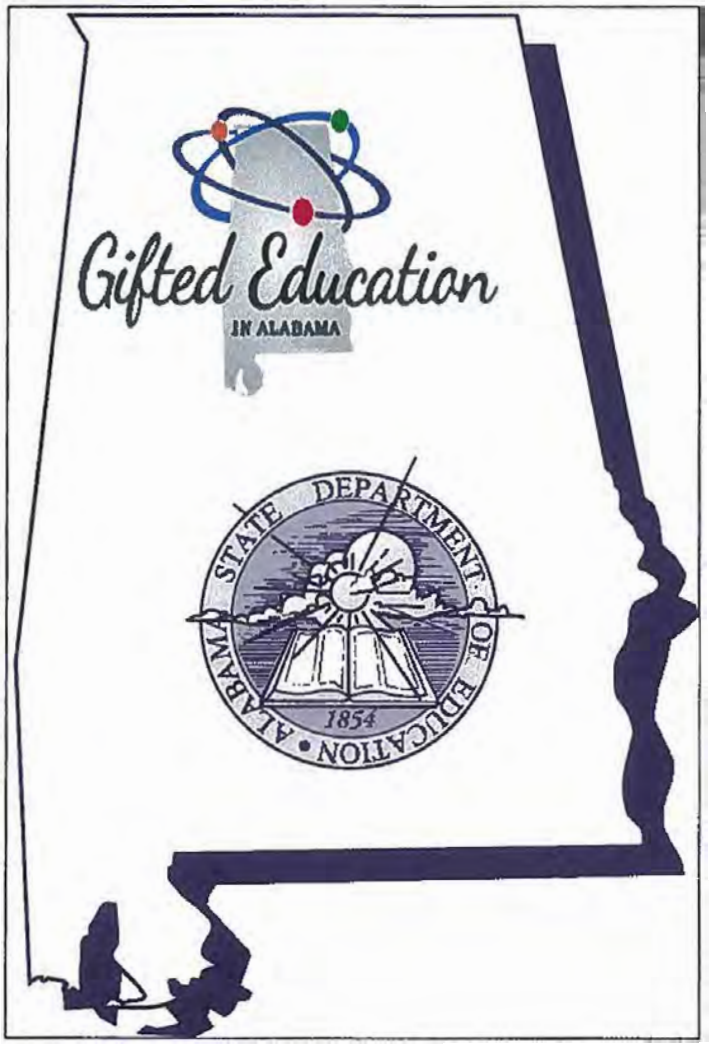
Alabama
Gifted Education Programs:
Standards and Student Outcomes



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State Superintendent of Education
ALABAMA STATE DEPARTMENT OF EDUCATION

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Alabama State Department of Education, Thomas R. Bice, State Superintendent of Education June 2015

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Introduction

We can whenever we choose successfully teach all children whose schooling is of importance to us.
We already know more than we need to do that.
Whether or not we do it must finally depend on how we feel about the fact that we haven't so far.

Ron Edmunds

The philosophy of the Alabama State Department of Education is that all children will be prepared to be successful in college and/or career upon graduation from high school. In order to reach that goal, all students will perform at or above proficiency and show continuous improvement and growth; be engaged in rigorous and relevant learning environments; develop a sense of personal and civil responsibility to ensure a learning environment that is safe and civil; be provided with individual and group counseling services; and enter ninth grade with a four-year plan that addresses their individual academic and career interest needs. Therefore, all students have the right to learn something new every day, including gifted learners.

The purpose of this guide is to support gifted education as mandated by *Alabama Exceptional Child Education Act* (Act 106) and the *Alabama Administrative Code.* Although many of these competencies may be found in current academic standards for all students, the point of introduction, pace of instruction, and depth and complexity require significant differentiation for gifted learners. In addition, a major objective of gifted education is to support and guide our gifted learners to be creative producers rather than consumers of knowledge.

Gifted Definition

I happen to like the label 'gifted' because it means to me that the child did nothing to deserve it. It means the child has a gift that was given to him or her and because he or she has that gift, he or she has certain responsibilities. He or she is not 'better than' merely 'different from.' And with the gift goes the responsibility to use it.

Dr. Walter Barbe, Ohio State University

The U. S. Department of Education defines gifted as:

Students, children, or youth who give evidence of high achievement capability in such areas as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services or activities not ordinarily provided by the school in order to fully develop those capabilities.

(No Child Left Behind Act, P.L. 107-110 (Title IX, Part A, Definition 22) (2002); 20 USC 7801(22) (2004))

However, the U.S. Department of Education requires that each state develop a definition of gifted and determine how this population will be identified and served. In the state of Alabama, the definition for gifted is set forth by the *Alabama Administrative Code,* Chapter 290-8-9.12(1):

> *Intellectually gifted children and youth are those who perform or who have demonstrated the potential to perform at high levels in academic or creative fields when compared with others of their age, experience, or environment. These children and youth require services not ordinarily provided by the regular school program. Children and youth possessing these abilities can be found in all populations, across all economic strata, and in all areas of human endeavor.* (p. 571)

Gifted children and youth have unique cognitive and affective needs (Daniels & Piechowski, 2009; Delisle & Galbraith, 2002; Kaplan, 2007; Lovecky, 1992; Reis, Burns, & Renzulli, 1992; Renzulli, 1978; Silverman, 2002; Tomlinson, 1999; Van Tassel-Baska & Stambaugh, 2005; Winebrenner & Brulles, 2012) that are developmentally different from age peers and must be met in order for these students to reach their potential. Although these students have high abilities and perform, or have the potential to perform, above their age peers, many gifted children and youth would not reach their potential and achieve at high levels without specialized services.

Gifted brains simultaneously process and make sense of vast amounts of different information. Billions of neurons constantly fire to exchange bits of information and assemble the information into something of value. Eide and Eide (2006) describe gifted students as having "brains on fire," which are hypersensitive to strong impressions and intense recollections, and characterized by multimodality allowing gifted students to make connections in ways other people do not.

The unique cognitive learning needs of gifted children and youth are (a) accelerated pacing, (b) depth and complexity in learning, and (c) creative expression. Their affective needs include (a) hypersensitivities, (b) overexcitabilities or intensities, (c) asynchronous development, and (d) peer relationships. Gifted learners may be gifted in one learning domain, such as math, or gifted in all areas. In their area(s) of giftedness, these learners must move at a faster pace with depth and complexity in the content, process, and product. In addition, they need outlets for creative expression. Affective needs can positively or negatively affect the cognitive needs.

Gifted Children's Bill of Rights

by Del Siegle, NAGC President, 2007-2009

You have a right to:

- Know about your giftedness.
- Learn something new every day.
- Be passionate about your talent area without apologies.
- Have an identity beyond your talent area.
- Feel good about your accomplishments.
- Make mistakes.
- Seek guidance in the development of your talent.
- Have multiple peer groups and a variety of friends.
- Choose which of your talent areas you wish to pursue.
- Not to be gifted at everything.

Gifted Services

According to the *Alabama Administrative Code*, services for gifted students are:

- Grades K-2: Consultative services-gifted specialist consults with classroom teachers to develop differentiated lessons, activities, and/or centers.
- Grades 3-5/6: Pull-out classes-gifted specialist provides student-centered, pull-out classes using concept-based curriculum that provides opportunities for career exploration, real-world problem solving, authentic learning, and authentic audiences.
- Grades 6/7-8: Pull-out, advanced, and/or electives-gifted specialist may provide pull-out classes, advanced classes, and/or electives; or highly qualified general education teacher provides advanced classes. Electives may be provided in addition to advanced classes.
- Grades 9-12: Advanced classes, electives-gifted specialist provides advanced classes and/or electives; or highly qualified general education teachers provide advanced classes and/or electives. ACCESS and dual enrollment may be used to provide courses.

In the state of Alabama, two models to identify and serve gifted students are used:

- **Gifted Program** is a delivery model to provide services to identified gifted students using the ALSDE *Gifted Eligibility Determination Form* and requires a gifted certified specialist to facilitate.
- **Enrichment Model Program** is a delivery model to provide services to identified gifted students plus an additional identified talent pool using a state-approved, multiple-criteria eligibility matrix. An Enrichment Model Program requires a certified gifted specialist to facilitate.

Both delivery options must acknowledge that gifted students have unique cognitive and affective learning needs not ordinarily met by the general education program and must provide for these needs.

An Enrichment Model Program should not be confused with the term *enrichment*, which is any supplemental activity that is above and beyond the core curriculum standards offered in any classroom. Enrichment may be administered or facilitated by any certified teacher or mentor.

Response to Instruction (RtI)/Acceleration

According to the Response to Instruction (RtI) Alabama Core Support for All Students document, "RtI refers to an instructional framework that promotes a well-integrated system connecting general, gifted, supplemental, and special education services in providing high-quality, standards-based instruction and intervention that are matched to students' academic, social-emotional, and behavioral needs. The RtI combines core instruction, assessment, and intervention within a multi-tiered system to increase student achievement and reduce behavior problems. The RtI process requires the involvement of classroom teachers, parents, students (when appropriate), building specialists, (e.g., principals, academic coaches, special education teachers, ELL teachers, counselors, gifted teachers, speech therapists), and community service providers." Therefore, RtI is provided to gifted learners.

Gifted specialists support classroom teachers through consultative services by which differentiated curriculum and instruction to meet the unique learning needs of gifted learners are provided.

Based on their research, Eide and Eide determined that the special brains of many gifted thinkers experience more frequent associations, analytic ability, vivid sensory perception, and prodigious memory. Therefore, educators of gifted thinkers should prepare lessons with fewer repetitions and explanations while remembering the students' sensitivities may be modality-specific rather than general. Gifted students often come to class with more outside knowledge than other students. Eide and Eide suggested that they should be allowed to spend any extra class time learning to think like experts and gather and process information, and how to utilize the knowledge they already have. This neurological research supports previous research on meeting the needs of gifted leaners (e.g., Delisle & Galbraith, 2002; Kaplan, 2007; Lovecky, 1992; Reis, Burns, & Renzulli, 1992; Renzulli, 1978; Silverman, 2002; Tomlinson, 1999; Van Tassel-Baska & Stambaugh, 2005; Winebrenner & Brulles, 2012).

The RtI tiers are Tier I-Research-Based Core Instruction, Tier II-Targeted Interventions, and Tier III-Intensive Interventions for academic and behavioral successes. To provide the additional support for gifted learners, each public school system has developed acceleration procedures as part of its state-approved LEA Plan for Gifted. These procedures provide a three-level framework that supports the continued learning of gifted students. Level 1 of the Acceleration Procedures requires differentiation in the classroom that aligns to Tier II of RtI, calling for enriching and enhancing the education of students who have demonstrated proficiency in the benchmarks of the standards for a given discipline. In order to know if a student has previously mastered the standards, RtI Tier I for gifted learners begins with a pre-assessment of the lesson, chapter, or unit. Based on the results of the pre-assessment, the teacher can streamline the curriculum and instruction by eliminating standards, content, and skills that have been previously mastered. Tier II instruction for enrichment/acceleration/advancement of learning should contain sufficient depth, breadth, and complexity to increase individual student skills and concept formation.

When differentiation in the classroom does not meet the learning needs of a gifted student, Levels 2 and 3 of the Acceleration Procedures may be applied. Tier III of RtI aligns with Levels 2 and 3 of the Acceleration Procedures that provide guidance and support for subject and grade accelerations. The acceleration procedures designate committee members and steps in order to determine if a student should be accelerated for single subject or whole grade. To ensure student success after acceleration has been determined, continued support is included as part of the packet. To obtain a copy of the acceleration procedures, individuals can contact the school system's gifted coordinator or supervisor of gifted programming.

Differentiation for Gifted Learners

Resources to help gifted specialists and classroom teachers differentiate for gifted learners can be found at the following ALSDE links:

Challenging Activity Guides
http://www.alspdg.org/challenging_curriculum_guides.html

Click on the appropriate guide for science, social studies, math, and language arts. Each guide contains the Alabama College- and Career-Ready Standard for Grades K-8 and three high school courses. For each standard, teachers will find a replacement activity for gifted and advanced learners.

Recorded Webinars and Handouts to Differentiate for Gifted Learners
Fourteen differentiation strategies are listed on two tabs of the gifted education video gallery. One tab contains a set of strategies specific to elementary grade levels and one tab contains a set of strategies specific to secondary grade levels. Click the title link to access the recorded webinar. The link included in the description contains resources and handouts to accompany the webinar. When prompted to login in, click "Log in as a guest." The resources at each link can be used with whole faculties, individual professional development, or with professional learning communities (PLN). These strategies include:

Preassessments	Contracts	Independent Study
Critical and Creative Thinking Experiences	Student Choice- RAFTs & Tic-Tac-Toes	Open-Ended Assignments and Questions
Diversified Materials	Tiered Assignments	Real-World Connections
Curriculum Compacting	Literature Circles	Socratic Circles
Kaplan's Depth & Complexity	Differentiated Learning Stations	

Additional resources will become available at the ALSDE Web site for Gifted Education.

Concept-Based Curriculum

Concept-based curriculum focuses the study of topics by organizing multiple concepts into "big ideas." Concepts are timeless, universal, abstract, and broad. This curriculum framework is multi-disciplinary and skills-embedded. It goes beyond the facts to provide the depth and breadth in the topics that gifted students need. Unit activities will require students to learn and practice the skills and methodologies of topic related disciplines as they grapple with the essential questions in their quest to uncover certain essential understandings. By exploring relationships among broad concepts, students develop critical and creative thinking skills. Each concept-based unit ends with the culminating performance task designed to demonstrate the understanding of one or more of the essential understandings. Students present their product or performance to an authentic audience, working and thinking from the perspective of a professional (e.g., historian, biologist, or author). This authentic product is used to evaluate what students know, understand, and are able to do as a result of the unit of study.

Gifted specialists across Alabama develop concept-based curriculum units for their gifted pull-out classrooms or for advanced classes at the secondary level. The topics are based on student interests, although students have choices throughout the unit to pursue interests within the topic areas. Alabama College- and Career-Ready Standards are embedded into the unit starting at the grade level of the child and integrating all appropriate standards at any grade level. High-quality, concept-based curriculum units can be downloaded from the ALSDE Gifted Education Web page. These concept-based units are provided for teachers to use as written, for revision and use to meet the needs of their students, or as a guideline for developing a different unit.

Standards and Student Outcomes for Gifted Education

I=*Introduce, Instruct*; R=*Review, Reinforce*; E=*Expand, Elaborate*

Standards provide order to the content students will learn. The Gifted Standards and Student Outcomes provide order to the list of skills and processes students should learn and master. Gifted specialists throughout the state of Alabama have always included the competencies and skills/outcomes found in this document in their concept-based curriculum units. This standards and student outcomes document provides the organized progression of standards, competencies, and outcomes that gifted learners need in order to reach their potential. The purposes of this document are: (a) to provide information to gifted specialists on what gifted learners need in order to continue grow and achieve; (b) to communicate to gifted learners what they will be learning; and (c) to inform stakeholders (parents, teachers, administrators) of student outcomes in the gifted classroom.

This document provides guidance for teachers to be more purposeful when planning lessons and writing concept-based curriculum. The competencies and skills, i.e., student outcomes, are the framework for curriculum development. Teachers start by *introducing* and moving toward *instruction* of the competencies and skills. The next level is *review*, *reinforce* the skills. Teachers may add more depth and complexity to the skill at this level. The last level is *expand, elaborate*. Teachers will continue to add depth and complexity and provide authentic learning, assessments, and authentic audiences for students.

The standards and student outcomes contain two domains, each with competencies and skills/outcomes. Appendices in this document include: (a) a glossary for common vocabulary; (b) references to the research cited; (c) instructional models and strategies; (d) possible assessments; and (e) checklists to document mastery. Students and teacher can maintain checklists to document mastery of the competencies and skills/outcomes. By having students maintain a checklist with portfolio of best work and reflective evaluations, the teacher reinforces the first competency of metacognition.

These competencies and skills/outcomes are listed without a sequence. Sequencing depends on the developmental readiness and abilities of the students. By the time gifted students move from direct services with the gifted specialist to indirect services with teachers of advanced courses, all standards will have been taught and outcomes mastered.

These standards and student outcomes present examples of appropriate pedagogical methods and instructional strategies to incorporate into the gifted education classroom. Technology is only one, albeit important, of the resources that can be used to meet gifted students' social/emotional and academic needs. For today's learners, it is a critical and dynamic resource that can be integrated across populations, disciplines, and settings.

Cognitive Development

This means that no single logic is strong enough to support the total construction of human knowledge.

Jean Piaget, Developmental Psychologist and Philosopher

Cognitive development refers to how a child perceives, thinks, and gains understanding of his or her world. Among the areas of cognitive development are information processing, intelligence/aptitude, reasoning, language development (verbal and written communication), and memory.

Cognitive skills refer to the abilities to gain meaning and knowledge from experience and information. Cognition is more than just learning information; it is the ability to think about new information, process and speak about it, and apply it to other previously acquired information. As children mature they develop the ability to think on higher levels, process information more skillfully, and make connections to other information more easily.

Cognitive development includes several types of discrete thinking skills that can be addressed intentionally through instructional strategies in the classroom. Combinations of skills are needed for processes, such as creative problem solving, research, decision making, and communication. Thinking skills include: (a) metacognition; (b) critical thinking; and (c) creative thinking. These skills are used in classrooms as students learn new information through a variety of learning experiences: presentation of content by the teacher; class discussion; independent learning opportunities (research, problem solving); and collaborative learning experiences with peers (problem solving, problem-based learning, service learning).

For students to become masterful in their use of cognitive skills, they must receive explicit instruction in (1) what the specific skills are, (2) what type of thinking is necessary for a specific skill to be used effectively, and (3) in what situations a skill or set of skills should be used. In some cases, a combination of skills is necessary. For example, in the creative problem-solving process (CPS), a number of key thinking skills are used to accomplish the goal of solving a specific problem: productive thinking, analytical thinking, evaluation, decision making, forecasting, and communication. Inherent in any discussion related to the teaching of thinking skills and presumed necessary for effective cognitive development is the development and presence of other factors or skills: perception, attention, memory, visual/spatial processing, and executive functioning.

According to key experts (Burns et al., 2006; Schlichter & Palmer, 1993), thinking skills should be explicitly taught to students. The development of each thinking skill should follow a series of steps that facilitate teaching and learning. The teaching of thinking skills should progress from explicit instruction to guided practice, followed by real-world application to provide support as students gain more independence with each skill.

Thinking Skills

Metacognition

> *So few people are really aware of their thoughts. Their minds run all over the place without their permission, and they go along for the ride unknowingly and without making a choice.*
>
> Thomas M. Sterner

Metacognition is knowledge of one's own cognitive and affective processes and the ability to deliberately monitor and regulate these processes (Flavell, 1976; Hacker, 1998). Simply put, metacognition is "thinking about your own thinking." Students should be aware of their own thinking and learning processes they use while engaged in learning activities. They also should learn how to self-regulate and oversee their learning in order to make changes as needed. The cognitive goal should be the primary focus in guiding metacognitive practices.

Metacognitive practices do not come naturally to most students. The teacher should teach and model metacognitive strategies in a deliberate and focused manner. The following six basic practices can facilitate success with the implementation of metacognition in the classroom:

1. Understanding and identifying various competencies of metacognition.
2. Teaching and modeling a variety of specific metacognitive strategies with students before implementation of a lesson.
3. Planning instruction that intentionally incorporates specific metacognitive strategies.
4. Guiding students to practice using selective metacognitive strategies in both academic and real-world settings.
5. Incorporating the use of guided questioning strategies before, during, and after a lesson.
6. Building reflective strategies in students in order to help students achieve learning goals and become independent thinkers and autonomous learners.

A. Metacognition (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Abstract Thinking	a. Observe, analyze, and implement abstract thinking skills modeled by others. b. Develop and ask questions for cognitive development: • Lower-level questions to develop a foundation for higher-level questions. • Hypothetical questions designed to explore possibilities and test relationships. • Clarifying questions to examine the coherence and logic of an argument, article, an essay, editorial, or presentation. • Elaborating questions to extend and stretch learning. • Divergent questions to engage in new ideas and promote sophisticated and/or contradictory thinking. • Viewpoint questions from different perspectives.
2. Reflective Thinking	a. Observe, analyze, implement, and record reflective thinking modeled by others.
	b. Ask questions: • Before, during, and after reading and/or instruction to develop a deeper understanding. • That seek reasons and evidence – why, how, what.
	c. Determine which resources and hands-on activities will develop exploration of the topic.
	d. Analyze and evaluate the learning situation – what is known, what is not yet known, and what has been learned. • Summarize and justify the knowledge gained through reading, activities, and/or instruction.

Critical Thinking

> *Believe what you like, but don't believe everything you read without questioning it.*
> Pauline Baynes, original illustrator of *The Lord of the Rings* and *The Lion, the Witch, and the Wardrobe*

Critical thinking is a process by which students identify, analyze, and evaluate information in order to make decisions, solve problems, and establish beliefs based on evidence. It entails effective communication and problem-solving abilities (Paul, 2012). According to Richard Paul, an effective critical thinker:

1. Raises vital questions and problems, formulating them clearly and precisely.
2. Gathers and assesses relevant information using abstract ideas to interpret it effectively.
3. Comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards.
4. Thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences.
5. Communicates effectively with others in figuring out solutions to complex problems.

As educators, it is our role to make sure our gifted students improve their critical thinking skills. Critical thinking skills can be strengthened when students explore viewpoints on a topic by seeking additional clarification, explanation, and justification. Teachers should prompt their students to use the text as evidence to move beyond using personal opinions as the sole basis for responses. To elicit deeper, more reflective responses, teachers should:

1. Model critical thinking: Respond to students with a reply supported by the text.
2. During discussion, ask questions directly related to the student's response.
3. Ask students for clarification, deeper explanation, and justification.
4. Facilitate discussion as opposed to contributing in an authoritative manner that kills the discussion.
5. Solicit opposing views; encourage students to make justified arguments for or against a topic.
6. Post questions that cannot be answered with a yes/no answer or simple statements.

By stimulating a student's reasoning process through probing and thought-provoking questions, teachers move students beyond being able to define a topic to possessing the ability to make an evaluative value judgment based on in-depth, sound interpretation of relevant information. The Alabama College- and Career-Ready Standards (CCRS) emphasize the use of critical thinking, particularly in English Language Arts (ELA) and reading across the content areas.

One of the best strategies for improving and enhancing critical thinking is the use of **Socratic discussion**. Whether it is a formal Socratic seminar or a more relaxed Socratic circle, the use of Socratic questioning encourages discussion that is high level and focused on the key tenets of critical thinking: clarification, evaluation, implications, assumptions, and consequences.

B. Critical Thinking (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Analyze	**a.** Identify main ideas in oral, written, and nonverbal form.
	b. Recognize relationships among ideas and data. • Compare and contrast attributes of varying ideas. • Classify information into logical categories. • Analyze various perspectives. • Analyze discrepancies in thought or information. • Determine cause and effect of relationships and events.
	c. Utilize inductive reasoning to solve problems. Utilize deductive reasoning to solve problems.
	d. Provide supporting evidence. • Sequence information to make points. • Verify solutions.
2. Evaluate	**a.** Assess the organization, content, value, effectiveness, and results of action/decision.
	b. Prove or disprove ideas by presenting evidence. • Assess accuracy and relevance of points used to support conclusions.

Creative Thinking

> *Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things.*
>
> Steve Jobs, founder and former CEO of Apple

Creative thinking is the process of making something new. It also includes refining and improving ideas and solutions and combining novelty and appropriateness. Creative thinking involves diversity, imagination, and inventive thinking and often is the result of collaboration or being stimulated by other people's ideas (Cash, 2011). The resulting product idea or behavior must be something new, different, or unique to be considered creative (Baer, 1997; Sternberg, Kaufman, & Pretz, 2002). A creatively gifted child produces unique and adaptive ideas, solutions, behaviors, and insights (Kaufman, Kaufman, Beghetto, Burgess, & Persson, 2009); although uniqueness or originality is necessary, it not sufficient for creativity (Runco, 2004).

The most common components of creative thinking as described by Torrance (1974) are:

1. Fluency: The student will produce a large number of ideas or alternatives to a presented problem.
2. Flexibility: The student will approach a problem from different perspectives, thereby producing ideas/solutions in a variety of categories.
3. Originality: The student will produce ideas that are unique or unusual.
4. Elaboration: The student will add details to embellish ideas or products.

As a 21st century skill, creative thinking is essential for leadership in many realms—industry, politics, education, business, and the arts. Unfortunately, creative thinking is often suppressed in school (Cross, 2011), as students are encouraged to find the "one right answer" or operate primarily using convergent thinking. Runco (2004) indicated because schools and organizations are more likely to invest in traditional educational skills (e.g., literacy) rather than in creative skills, creative individuals face a problem in schools. Rubenson and Runco (1992) suggest this problem likely occurs because the basic idea is that creativity is a riskier investment, with less-certain payoffs than literacy and other skills tied to traditional education. It is critical for gifted students to think creatively because they can engage in adventures to explore ideas, share ideas with others, and discuss progress during specific tasks. Creative thinking allows gifted students to learn to appreciate the different qualities in others' work and value those differences. Creativity facilitates and enhances problem solving, adaptability, self-expression, and health.

Gifted students need creative thinking skills to promote thinking differently, solve everyday problems, and to think about their work in multiple ways. Gifted students in the classroom who master creative thinking will become the world's problem solvers and should be encouraged and supported in their creative processes therein. Cross (2011) asserted that as students' creative awareness increases, so does their ability to understand the power of creative thought. It is imperative that within classrooms students are encouraged to question, make connections, discover new ways to solve problems, find new ones, and visualize possibilities through authentic experiences with creative thinking.

C. Creative Thinking (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Fluency	Develop the ability to use brainstorming techniques. • Create many ideas in order to maximize the possibility of finding the solution to the problem. • Accept the possibility of more than one right answer.
2. Flexibility	**a.** Create varied ideas in order to maximize the possibility of finding the solution to the problem.
	b. Adapt a single idea or materials to many different uses.
	c. Substitute, combine, adapt, magnify/minify, put to other uses, eliminate, or rearrange to change an idea or concept.
	d. Question relationships and interpretations. • Discern various interpretations of information. • Apply a principle or concept to different areas. • Develop an ability to shift approaches or change directions in thinking.
3. Originality	**a.** Create original ideas in order to maximize the possibility of finding the solution to the problem.
	b. Provide different or alternate outcomes in real-world situations.
	c. Use familiar objects in ways different from their intended purposes.
4. Elaboration	Provide detail that is accurate and complete to enhance meaning and understanding.
5. Synthesis	**a.** Combine commonplace ideas or materials in unusual ways.
	b. Combine concepts and generalizations in order to create a new understanding.

Thinking Processes

Problem Solving

> *To make any future that we dreamt up real requires creative scientists, engineers, and technologists to make it happen. If people are not within your midst who dream about tomorrow - with the capacity to bring tomorrow into the present - then the country might as well just recede back into the cave because that's where we're headed.*
>
> Neil deGrasse Tyson, American scientist

Intelligence is more than measured IQ and is not sufficient to ensure that gifted students can become successful and productive citizens of the world. Successful intelligence is centered on productivity or the demonstration of one's intelligence. According to Sternberg and Grigorenko (2007), successful intelligence requires abilities in analytical thinking, creative thinking, and practical thinking. However, the ability to adapt to a rapidly changing world depends not only on one's critical and creative thinking skills but also on one's problem-solving ability.

Problem-solving is a process or a method that can transform critical and creative thinking into productive thinking. In other words, problem solving is the practical application of critical and creative thinking. The problem-solving process is a method for approaching and effectively solving a problem. Typically, the solution is original. The steps in the problem-solving process include: (a) identifying a problem and defining the parameters of a problem (by gathering information about the problem); (b) brainstorming and formulating possible solutions to the problem; (c) developing criteria to select the most viable solutions, and (d) creating a plan to apply the solution.

When gifted students can solve problems imaginatively and effectively, they demonstrate their intelligence by engaging in observable, gifted behaviors (Renzulli & Reis, 1985). In other words, they are able to use their intelligence to create, to produce, and to contribute. The goal in teaching problem-solving skills to gifted students is to prepare them to be spontaneous problem solvers who are able to initiate and implement the problem-solving process throughout their lives. To that end, gifted students become successfully intelligent and productive citizens who can take effective action to make a difference in the world.

D. Problem Solving (Process)	
Competency	**Skill/Outcomes**
	Students will be able to:
Divergent and Convergent Thinking Skills	The problem solving process requires all of the following steps: **a.** Recognize and define the problem (hypotheses). **b.** Gather ideas and data. **c.** Brainstorm aspects of the problem. **d.** Identify underlying problems or sub-problems. **e.** Produce alternative solutions. **f.** Develop criteria for judging solutions. **g.** Evaluate alternative solutions using the criteria. **h.** Determine and implement possible solutions.

Communication and Creative Expression

> *The two words 'information' and 'communication' are often used interchangeably, but they signify quite different things. Information is giving out; communication is getting through.*
>
> Sydney J. Harris, American journalist

Communication is the art of effectively expressing ideas, feelings, and concepts, and correctly interpreting those of others. The process of communication involves verbal (oral and written) and nonverbal skills. Gifted learners, who usually have highly developed vocabulary, sometimes struggle to communicate with age peers. Frequently, gifted students speak above the heads of other students. Gifted students need to broaden their communication skills (Baum, 1988) in order to effectively communicate with each audience, including age peers in the classroom. Both verbal and nonverbal communication skills are vital for students to be successful in college and/or career (Kennedy, 2007). Gifted students with overexcitabilities communicate with intensity and feelings in order to thrive. Learning appropriate communication skills helps these gifted learners not only to be effective communicators, but will also reduce stress, increase self-acceptance, increase understanding from and about others, and reduce friction at home and school. (Lind, 2001).

Gifted students are not merely consumers of knowledge but producers (Tannebaum, 1983) who must be able to communicate the new knowledge. If students cannot communicate effectively, then new and innovative ideas and solutions are never shared. Gifted students should be given the opportunity to develop advanced, organized communication skills and processes through:

1. Synthesis of knowledge.
2. Creation of unique products that utilize new techniques, materials, and formats.
3. Presentations that are critiqued by authentic audiences.

E. Communication & Creative Expression (Process)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Oral	• Plan, create, and present information orally in order to share thoughts and ideas to a variety of authentic audiences. • Contribute (with confidence) to a group or class discussion of a concept, topic, theme, issue, or problem. • Develop appropriate listening and speaking skills to effectively communicate a concept and/or idea to an audience and respond appropriately. • Support and defend personal opinions while collaborating with and respecting the opinions of others. • Demonstrate effective speaking skills such as appropriate rate, volume, tone, pitch, enunciation, and pace and effective body language, such as eye contact, inflection, and gestures.
2. Written	• Plan, create, and present written information in order to share thoughts and ideas to a variety of authentic audiences. • Create unique compositions that utilize their own voice. • Edit and refine all written communications by applying proofreading and editing skills.
3. Nonverbal (including Artistic and Kinesthetic)	• Plan, create, and present a nonverbal performance in order to share thoughts and ideas to a variety of authentic audiences. • Experience expression through various nonverbal forms. • Select, analyze, and utilize appropriate visual aids for effective communication.

Information Literacy: Research and Technology

Research is what I'm doing when I don't know what I'm doing.
Wernher von Braun, scientist and father of modern rocketry

Getting information off the Internet is like taking a drink from a fire hydrant.
Mitchell Kapor, American businessman

Informational literacy is the ability of an individual to locate, process, and use information to extend his/her understanding of a subject for real-world application (Cohen, 1995). To be information literate, a person must be able to identify when information is needed, engage effectively in a productive information-gathering process, assess the value of information sources, and synthesize the information into a useable format (McMaster University Libraries). Success in the 21st century is dependent on one's ability to use information and technology effectively. Individuals need to identify informational needs and locate, evaluate, and apply information to address those needs. Individuals must be discriminating in the selection of useful information for varied identified purposes (Eisenberg & Berkowitz, 1987). Inquiry is considered an essential skill for individuals in the 21st century. Inquiry is the driver of the complex thinking processes we have been engaged in since the dawn of consciousness. Our challenge in this new century is to help our students build upon their intrinsic curiosities about nature and our living, working, playing, creating, and surviving therein. Posing and pursuing substantive questions is what we should all be doing, in schools and as good citizens of this republic (Bellanca & Brandt, 2010).

Research

Beyond the foundational research skills all students are taught, gifted learners need access to research opportunities that incorporate advanced, in-depth, complex content and processes allowing learning to be accelerated to support individual talents, readiness, and interests outside the school curriculum. Gifted students benefit from work that is conceptually vigorous and intellectually challenging (Bellanca & Brandt, 2010). The National Association of Gifted Children describes the new standards as "raising the learning floor for all children and raising the ceiling for those students capable of achieving at the highest levels" (NAGC, 2011). Curriculum needs to be differentiated for gifted students, allowing them to grapple with progressively more complex issues and resources based on individual readiness, interests, and complexity of thinking. Typical students learn and apply information while gifted students often analyze and evaluate information in relation to its function and applicability to real-world situations (NAGC-FAQs). According to Van Tassel-Baska (1994), "gifted students thrive on making connections. The focus on overarching issues, themes and concepts elevates their understanding of the real world and how it works."

F. Information Literacy: Research (Process)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Identify a topic and formulate questions for research.	• Analyze the topic/problem/issue to determine areas to be researched. • Brainstorm questions related to the topic/problem/issue. • Identify related topics/problems/issues. • Identify a specific topic for research. • Formulate significant, complex questions for study.
2. Select and apply a research methodology appropriate for the topic.	• Select appropriate research method: case studies; historical studies; interviews; surveys; scientific method; descriptive research. • Construct a hypothesis. • Design a plan or experiment to test the hypothesis.
3. Collect information from primary and secondary sources using print and electronic media.	• Analyze the differences between primary and secondary sources. • Employ various digital tools, media, and strategies to locate and collect accurate and reliable information. • Take simple, accurate notes. • Understand ethics in copyright/fair use and cite sources to avoid plagiarism.
4. Assess the validity, reliability, and relevance of the information collected.	• Evaluate sources with respect to date, aspects covered, information provided, and relevance to the study. • Compare and contrast authors/interview subjects with respect to qualifications.
5. Organize and integrate information/data	Create and visually organize your data (chart, table, graph, map, web, or outline) using the various categories: • Chronological order. • Sequence of steps. • Generalizations. • Evidence. • Patterns. • Outline. • Compare/contrast. • Cause/effect.
6. Synthesize and interpret information	Make inferences about the data with respect to trends, future directions, similarities, and differences.
7. Develop conclusions and implications based on the problem.	Draw conclusions and develop generalizations based on and supported by data gathered in the course of research.
8. Demonstrate the ability to communicate research findings.	• Identify appropriate audience. • Select an appropriate medium (form) in terms of audience, impact, and type of information/data for which it is best suited.

Technology

To become workplace-ready, gifted students require learning environments that prepare them for a digital marketplace (Burger, 2007; Chin, Chang, & Atkinson, 2008). Over the past few years, this cliché is often stated, yet rarely defined. In addition to managing and manipulating techno-science knowledge, 21st century marketplaces are seeking workers who have cross-cultural, collaborative abilities to create, express, market, and disseminate innovative products and ideas (Casey, 2012; Greenhalgh & Rogers, 2010). In order to fully develop these skills, gifted students need explicit training on connecting technology, content, process, and product (Tomlinson, 2001). To satisfy this need, Besnoy, Dantzler, and Siders (2012) suggest that teachers of the gifted create effective digital ecosystems that liberate the gifted learner to freely associate his/her innate talent with technology. It is critical to recognize that technology is a channel through which young people can develop innovative skills and market their precocious talents.

The integration of technology is not a one-size-fits-all solution for preparing the gifted learner to meet future challenges. When designing a technology-rich learning experience, remember it is not the technology that engages the learner, it is the design of the experience. Having access to technological resources is only one variable in the integration equation; the other parts (content, pedagogy, and skill set) are critical components.

As the facilitator of learning, it is critical to view the gifted education classroom as a harmonious area where teachers and students learn together. While you might be the pedagogy expert, in a robust digital ecosystem, you might not be the content or technology expert. Just as mentioned before, use the expertise around you to create a robust and thought-provoking learning environment. As you plan for your process-oriented digital ecosystem, you need to think about the type of technological tools you want to integrate and the purposes of the learning activity.

G. Information Literacy: Technology (Process)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Technology Use	• Apply troubleshooting strategies to correct issues. • Use digital tools and strategies to locate, collect, organize, evaluate, and synthesize information. • Apply the principles of safe and appropriate Internet use including cyber-safety and "netiquette." • Use digital environments to collaborate and communicate.
2. Software	• Identify and use software appropriate to educational tasks including, but not limited to, Web browsers and office productivity suites. • Explore and evaluate alternative software options (e.g., compare and contrast different office-productivity programs such as Word and OpenOffice).
3. Project Development	• Identify appropriate technological tools for use in academic and creative projects. • Plan, create, and upload technological communications and/or presentations using technological software, online applications, or apps that may include blogs, WIKIS, podcasts, videos, and webinars.
4. Web Site Creation	• Design Web sites that appropriately convey desired information. • Understand principles of good Web site design including differences between Web site design and other forms of presentation.
5. Computer programming	• Write basic programs and macros in one or more computer programming languages. • Be familiar with differences among programming languages. • Understand the principles of good software design.

Affective Development

The child to be concerned about is the one who is actively unhappy, [in school]... In the long run, a child's emotional development has a far greater impact on his life than his school performance or the curriculum's richness, so it is wise to do everything possible to change a situation in which a child is suffering excessively.
Dorothy H Cohen, U.S. educator, child development specialist

Gifted and talented students have numerous needs that must be addressed through appropriate programming. Most people believe that meeting the intellectual needs of gifted and talented children is the most pressing programming concern; however, they often overlook the affective needs associated with this population. In describing the affective characteristics of gifted and talented children, Hébert (2011) reported that they often have perfectionistic tendencies; are hyper-emotionally sensitive and easily prone to extreme levels of empathy; and possess strong need for self-actualization and understanding of one's place in the larger world. While these characteristics are not unique to gifted and talented children (Daniels & Piechowski, 2009), they are typically accompanied with advanced cognitive reasoning skills. As such, it is important that programming for this population result in learning environments that foster gifted and talented children's cognitive and affective potential.

Peterson and Lorimer (2011) reported that many gifted and talented children struggle with expressing their emotions. Although their precocious cognitive abilities afford them tremendous intellectual potential, their advanced reasoning skills also means that they are able to process social situations at deeper and more complex levels than their non-gifted peers. These children are cognitively engaging with their social world before they have developed the social/emotional skill set to appropriate navigate their surroundings. This phenomenon is known as asynchronous development, meaning that individuals' cognitive abilities develop unevenly from their physical and affective abilities. As a result, typical grade-level academic content does not provide them with the academic skills to match their advanced needs.

Programming for gifted students must meet their affective needs as well as their intellectual needs. The *Alabama Gifted Standards and Student Outcomes* describe programming opportunities whereby educators can address this critical need. Educators must be willing to educate the whole child and not ignore gifted children's affective needs. The social-emotional domain addresses gifted children's unique needs. It encompasses the value systems and cultural experiences with respect to their behavioral outcomes.

Affective education respects the uniqueness of each student's beliefs and experiences. Gifted children experience the world with intensity and acceleration. Their asynchronous development may create affective learning needs. The purpose of affective education is to develop the whole gifted child and to produce self-actualized, responsible citizens.

Affective development encompasses that which is the personal, social, and emotional aspects of learning. It is not a discipline, yet it is not separate from the cognitive and intellectual realm. Because of this association, it important that education does not neglect the emotional and social

needs of students. Their intellectual and cognitive growth is negatively impacted when education emphasizes only cognition and neglects the affective components and its function in education.

Affective education is significant in that it impacts learning and development (Piaget, 1967). The philosophy of attending to students' affective needs is that it respects the uniqueness of each student's beliefs and experiences and the role it plays in cognition. When educating the gifted learner, *feeling* is a subjective construct. How a student feels, as well as past experiences and culture, can influence the quality of cognition, or it can signal conflict of identity. Especially in middle and high school where education is organized into disciplines, identity crises among the gifted are more likely to surface (Rimm, 2002).

The increasing number of suicides among middle and high school students has led to changes in program standards. Programs that are only concerned with cognitive development often breed competition rather than cooperation, and this adversely affects academic progress in school. If school is preparation for life, then it is essential that the emotional and social needs of gifted students are addressed in order for them to develop skills for coping with stress, understanding their giftedness, and developing self-awareness.

Social-Emotional

> *If your emotional abilities aren't in hand, if you don't have self-awareness, if you are not able to manage your distressing emotions, if you can't have empathy and have effective relationships, then no matter how smart you are, you are not going to get very far.*
>
> Daniel Goleman, American author, psychologist, and science journalist

The underlying philosophy of affective education is respect for the uniqueness of each student's beliefs and experiences. With such an increased emphasis on cognition and performance, affective education is often compromised by an educational system that fails to nurture a student's emotional needs. Since it is emotion that fuels commitment to ethical principles, the societal benefits gained by attending to the social and emotional needs of gifted children during their actualization stages of development are immeasurable. Affective education can be empowered by imbedding within the curriculum activities that will enhance both cognition and affective learning simultaneously. When curricula are designed to address the emotional, social, and intellectual needs of gifted learners, we produce healthy responsive citizens.

The gifted brain functions at an accelerated pace, which creates accelerated learning of skills and content with fewer repetitions (Eide & Eide, 2006). School is usually easy for gifted learners who have previously mastered content and skills or quickly learned the content and skills. However, giftedness does not mean that a child knows and can do everything. Gifted students may have unique social-emotional needs such as perfectionism, anxiety, asynchronous development, and overexcitabilities that inhibit their performance in school and beyond. An affective strand embedded in curriculum is necessary considering the emotionally intense lives of gifted children. Left unattended, these behaviors often surface as feelings of inadequacy, despite an individual's successful achievements. This paradoxical lack of self-esteem in the face of much success is called the "imposter phenomenon" (Harvey, 2005). Gifted students believe that they are not as smart as others perceive them to be and live in continuous trepidation of being unmasked as frauds. Affective education is valuable for helping gifted learners recognize that they are not alone in these feelings and teaches students positive strategies for addressing feelings of anxiety, depression, and inadequacy. Although feelings of inadequacy are evident in many children, gifted learners often mask these feelings by acting superior when they are, in fact, feeling inferior. By appearing emotionless, the gifted learner seeks to cover up heightened sensitivity and vulnerability.

Statistics on the suicide rate among gifted children ages 10 to 14 indicates a 100% increase from 1980-1996. Among youngsters 15-19 years of age, there was an increase to 114%. This makes suicide the fourth leading cause of death for this age group (U.S. Department of Health & Human Services, 1999). The literature has reported affective states, environmental conditions, and interpersonal problems as suicide risk factors (Blatt, 1995; Dixon & Scheckel, 1996; Hayes & Sloat, 1990). Although literature on the relationship between suicide and giftedness is limited, as are the statistics involving suicide rates among gifted adolescents, characteristics often associated with gifted young people may be viewed as suicide risk factors (Dixon & Scheckel, 1996). It is imperative that we understand the critical importance that the affective domain plays in the learning process; otherwise, the likelihood of gifted children becoming healthy, productive contributing adults is remarkably diminished.

H. Social-Emotional	
Competency	**Skill/Outcome**
	Students will be able to:
1. Cope with inner feelings	• Understand and evaluate the social, emotional and academic implications of giftedness. • Understand and analyze feelings and emotions in self. • Identify feelings and emotions in self. • Identify and utilize appropriate personal perceptual filters and defense systems for situations.
2. Cope with perfectionism goal setting, emotional intensity, anxiety, and stress	• Develop a healthy perception of perfectionism in accomplishing tasks. • Express and manage emotions in positive ways. • Develop a healthy response toward peer pressure and expectations of others. • Develop behavioral strategies appropriate to the situation. • Identify sources and possible solutions of stress and anxiety.
3. Develop self-acceptance	• Appreciate their personality styles. • Understand their asynchronous development. • Develop ethical practices. • Embrace their giftedness. • Develop and demonstrate appropriate self-efficacy and self-talk.
4. Demonstrate and evaluate responsibility for personal growth	• Understand how attitudes, attention, and commitment can affect one's knowledge and self-control. • Identify and assess strengths and weaknesses as a baseline for improvement. • Set goals for self-improvement and take the necessary steps to reach them. • Accept responsibility for choices made. • Develop and model self-discipline. • Show evidence of delayed gratification and impulse control. • Demonstrate leadership skills. • Accept failure as part of growth.
5. Enhance relationships with others	• Analyze, evaluate, and respond appropriately to various forms of body language. • Demonstrate respect for and empathy with others. • Participate in community building skills. • Differentiate constructive or destructive criticism.
6. Demonstrate an awareness of cultural diversity	• Recognize contributions and achievements of various cultures. • Recognize various forms of bias. • Question stereotypes.

Autonomous Learner

Free the child's potential, and you will transform him into the world.
Maria Montessori, educator

An autonomous learner by definition is "one who solves problems or develops new ideas through a combination of divergent and convergent thinking and functions with minimal external guidance in selected areas of endeavor." (Betts & Knapp, 1981)

Becoming an autonomous learner helps gifted and talented students by promoting learning that facilitates their growth as independent, self-directed learners through the development of skills, concepts, and positive attitudes within the cognitive, emotional, and social domains. When given appropriate choices and control over their own learning, gifted students see the value of these choices as tools for meeting their learning needs and goals, and they take on a pro-active role in their learning. If students feel they have ownership and control over their own learning, they gain a sense of responsibility and self-motivation.

Being an autonomous learner is important because students learn to identify their individual learning goals, their individual learning processes, and how they will evaluate and use their learning. Autonomous learners have a well-founded conception of learning, a range of learning approaches and skills, can organize their learning, possess good information processing skills, and are motivated to learn.

Autonomous learning engages students in in-depth learning rather than merely covering a topic. A major focus is the development of lifelong learning, with emphasis placed on meeting the individualized needs of learners.

I. Autonomous Learner	
Competency	**Skill/Outcome**
	Students will be able to:
1. Demonstrate independent learning	• Gather, organize, analyze, and apply new knowledge. • Exhaust resources prior to asking for help. • Formulate questions that will aid in learning. • Set, prioritize, and achieve goals. • Utilize time management skills.
2. Monitor and evaluate learning	• Reflect on progress as determined by established goals/timelines. • Self-evaluate progress of completing final tasks. • Revise, refine, and modify final tasks in relation to original goals and timelines. • Revise, refine, and modify goals and timelines in relation to the constraints of the project/situation/issue.
3. Increase intrinsic motivation	• Explore and pursue areas of personal interests/curiosity/passion. • Demonstrate personal motivation and task commitment. • Develop persistence when working on challenging activities.
4. Take academic risks	• Identify personal learning comfort zone. • Analyze the value of academic risk-taking by weighing the positive/negative outcomes of taking that risk. • Express the importance of risk-taking. • Take academic risks by accepting challenges outside of comfort zones.
5. Demonstrate personal flexibility	• Identify alternative methods of accomplishing a task. • Describe the benefits of developing alternative processes to accomplish a task. • Develop a method of transitioning from one process to an alternative.
6. Grow from constructive criticism	• Develop a receptive attitude towards feedback. • Reflect on the meaning of feedback received. • Differentiate constructive or destructive criticism. • Determine how to improve based upon feedback. • Respond to feedback with well-reasoned explanations. • Provide constructive criticism to others.
7. Exhibit professional or business ethical behavior (character education)	• Define attributes of ethical principles. • Identify and analyze outcomes of individual actions. • Evaluate the individual actions for ethical practices. • Uphold ethical principles.

Executive Skills

Education must not simply teach work—it must teach life."
W.E.B. Du Bois, American Civil Rights leader and writer

The executive functions are a set of skills and processes that involve managing oneself and available resources in order to achieve a goal (Cooper-Kahn & Dietzel, 2008). These skills are necessary in order to develop successful work habits, organization, management of time and materials, and project planning, as well as mental control and self-regulation. Although they are rarely taught explicitly, a lack of these skills can create some of the greatest barriers for gifted students in school.

Gifted learners with weaknesses in these executive skills and processes have difficulty not just with school but in all areas of their lives (Yermish, 2012). Poor executive skills can frustrate the gifted children, his/her parents and siblings, and the classroom teacher.

In the middle school years when students begin transitioning classes and managing their own schoolwork, they are particularly vulnerable to falling behind, not because of academics, but due to lack of the executive skills that contribute to success. Executive skills help students select and achieve goals and develop solutions to problems in order to accomplish short- and long-term goals (Dawson & Guare, 2010). Understanding and improving their executive skills can help gifted students become more autonomous learners, equipping them with strategies to deal with their specific learning needs while in public school as well as in college and their careers.

J. Executive Skills	
Competency	**Skill/Outcome**
	Students will be able to:
1. Organizational Skills	• Develop and adhere to a time schedule. • Develop a priority list and adjust it as needed. • Develop lists of goals, projects, or "to-do's" and complete the items on the lists. • Re-evaluate the lists in order to prioritize greatest needs first or adjust to changing deadlines.
2. Decision-Making	• Develop, evaluate, and select criteria when given multiple alternatives. • Prioritize criteria. • Apply criteria to alternatives. • Explain your chosen decision based on criteria. • Act on selected decision.
3. Impulse Control	• Self-monitor verbal, non-verbal, and physical responses to others (including teachers) through wait time, self-talk, and reflection. • Code-switch according to audience.
4. Project Management	• Prioritize project elements. • Plan long- and short-term tasks. • Execute ideas to completion. • Self-evaluate the final projects/ideas/tasks.
5. Time Management	• Transition from one task to another. • Prioritize competing interests. • Create schedules and to-do lists in order to adhere to time constraints.
6. Adaptability	• Adjust expectations and behavior according to various academic environments. • Identify and articulate multiple solutions, goals, or perspectives. • Establish a unified solution, goal, perspective from consensus among the group.
7. Goal-Setting	• Develop realistic goals and objectives. • Evaluate the time to accomplish objectives. • Seek resources to accomplish objectives. • Set benchmarks to complete objectives.
8. Collaboration	• Use listening skills with others. • Respect perspectives of others. • Compromise and negotiate to accomplish tasks. • Relinquish control while working with others.

Appendix A
Glossary

Abstract thinking: A level of thinking characterized by the ability to use concepts and make and understand generalizations, such as the attributes or pattern shared by a variety of specific items or events. Adapted from *The American Heritage® Stedman's Medical Dictionary*-http://dictionary.reference.com/browse/abstract thinking.

Asynchronous development: Cognitive abilities develop unevenly from a person's physical and affective abilities.

Authentic audience: Individuals who have expertise or interest in the subject of the student's product other than the classroom teacher and classmates.

Authentic product: An activity, task, culminating performance task that reflects real-world problems and requires the students to approach the task from the perspective of disciplinarian or professional, using the vocabulary and tools of that professional or team of professionals in order to solve the problem.

Benchmark: Something that can be used as a way to judge the quality or level of other similar things. Merriam-Webster Dictionary-http://www.merriam-webster.com/.

Brainstorm: Generating a list of ideas, either individually or in a group.

Code-Switching: When a speaker switches between two languages, dialects, styles, registers (formal to informal), or behaviors in order to communicate to a specific audience or in a specific situation.

Criteria: A standard, rule, or test on which judgment or decision can be based. The Free Dictionary-http://www.thefreedictionary.com/criteria.

Deductive Reasoning: A logical process that goes from general to specific.

Delayed Gratification: The ability to resist an immediate award and wait for a later reward.

Elaboration: The process of enhancing ideas by providing more detail. Additional detail and clarity improves interest in, and understanding of, the topic. (Torrance 1979)

Empathy: The ability to understand and share the feelings of others.

Enunciation: A mode of utterance or pronunciation in an articulate or particular manner. *Dictionary.com Unabridged.* Dictionary.com Web site: http://dictionary.reference.com/browse/enunciate.

Ethics: A branch of philosophy that involves systematizing, defending, and recommending concepts of right and wrong conduct. In gifted education, ethics are grounded in character education and business or professional ethics.

Flexibility: Refers to the production of ideas that show a variety of possibilities or realms of thought. It involves the ability to see things from different points of view, to use many different approaches or strategies. (Torrance 1979)

Fluency: Refers to the production of a great number of ideas or alternate solutions to a problem. It implies understanding, not just remembering information that is learned. (Torrance 1979)

Inductive Reasoning: A logical process that takes specific information and makes broad generalizations.

Inference: The process of reaching a conclusion about something from known facts or evidence. Merriam-Webster Dictionary-http://www.merriam-webster.com/.

Minify: To make something smaller, less significant.

"Netiquette" (Network Etiquette): The techniques and strategies for communicating on the Internet.

Non-verbal: The process of communication through wordless cues between people. These cues include facial expressions; eye gaze; tone, pitch, and inflection of voice; body language and posture; personal space between individuals; and haptics, or touch between the individuals.

Originality: The production of ideas that are unique or unusual. It involves synthesis or putting information about a topic back together in a new way. (Torrance 1979)

Perceptual Filters: How we look at things based on our education, experience, expectations, and assumptions.

Verbal: Relating to or consisting of words, spoken or written.

Appendix B
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Appendix C

Examples of Instructional Resources: Models and Strategies

Listed below are models and strategies that have research and/or best practices evidence for use with gifted learners. This list is not comprehensive but provides tried-and-true models and strategies for addressing the instruction of cognitive and affective skills and processes presented in this guide.

Metacognition

Models	Strategies
• A New Taxonomy of Educational Objective • Betts and Kercher Autonomous Learner Model • Edward DeBono Cognitive Research Trust (CoRT) Thinking Program • SCAMPER • Habits of Mind • SMART Goal Plans • TALENTS Unlimited	• Debriefing/"What? So What? Now What?" • Explicit modeling • Graphic organizers (K-W-L type charts, semantic maps, flowcharts, etc.) • Mnemonic devices • Plan-Do-Check/Review • PMI – Plus, Minus, Interesting (deBono) • Self-talk • Think Time; Wait Time; 10:2/20:2 Rule • Verbal clarification and summary (Think-Pair-Share, Think Aloud, Numbered Heads Together, JIGSAW, etc.)

Critical Thinking

Models	Strategies
• Bloom's Taxonomy • Calvin Taylor Model of Creative Thinking and Critical Thinking (MCTCT) • Depth of Knowledge • Edward DeBono Cognitive Research Trust (CoRT) Thinking Program • Elements and Standards Model • Future Problem Solving Program (FPS) • Integrative Model • Kaplan's Depth and Complexity • Model United Nations (including various levels) • Paul's (1992) Elements of Reasoning • Talents Unlimited • Thinker Keys (Ryan)	• Analogies • Decisions and outcomes • Encapsulation • Explicit modeling • Graphic organizers • Higher-Order Thinking Skills (HOTS) • Lateral thinking • Points of View (POV) • Questioning • Socratic questioning (Socratic seminars, circles, discussion) • *Teachers' Guide for the Explicit Teaching of Thinking Skills* (book) • *Teaching for Thinking* (book) • "What? So What? Now What?"

Creative Thinking

Models	Strategies
• Calvin Taylor Model of Creative Thinking and Critical Thinking (MCTCT) • Destination Imagination • Edward DeBono Cognitive Research Trust (CoRT) Thinking Programme • Future Problem Solving Program • Model United Nations (including various levels) • Odyssey of the Mind • Problem-Based Learning (PBL) • SCAMPER • Six Thinking Hats • Synectics • Talents Unlimited • Type III Activities • Williams' Taxonomy	• Analogies • Brainstorming • Creative dramatics • Creative thinking: divergent thinking; brainstorming; analogies; metaphors; morphological synthesis; attribute listing • Encapsulation • Explicit modeling • Graphic organizers • Lateral Thinking • Points of View (POV) • Questioning • Socratic questioning (Socratic seminars, circles, discussion) • "What? So What? Now What?"

Problem Solving

Models	Strategies
• Creative Problem Solving (CPS) • Future Problem-Solving Program • Model United Nations (including various levels) • Problem-Based Learning • Project-Based Learning • Talents Unlimited	• Authentic performance task (such as the culminating performance task from concept-based curriculum units) • Decisions and outcomes • Encapsulation • Explicit modeling • Graphic organizers • Points of View (POV) • Questioning • Socratic questioning (Socratic seminars, circles, discussion) • Simulations (real-life situations to see how various professionals collaborative to solve problems) • "What? So What? Now What?"

Communication

Models	Strategies
• ACT Writing Competencies Model • Creative Problem Solving • Debate Model • Destination Imagination • Hamburger Model • Literature Circles • Model United Nations (including various levels) • Odyssey of the Mind • Talents Unlimited • Creation of Portfolios	• Debate and defend both sides of an issue • Effective questioning and paraphrasing techniques • Encapsulation/Six-Word Essay • Explicit modeling • Graphic organizers • Creation and interpretation of verbal and non-verbal products • Non-verbal cues • Organizational skills of thoughts, ideas, and material items • Proofreading and editing • Providing feedback • Simulations • "What? So What? Now What?"

Research

Models	Strategies
• 5E's (AMSTI) • Action Research • Big6 • Kids Computer Lab • Model United Nations (including various levels) • The Research Cycle • Research Project Guide for Teachers and Students • Scientific Method • William and Mary's Research Model	• Analyzing various types of primary source documents • Citizen science projects • Explicit modeling • Graphic organizers • Inquiry-based learning/discovery learning • Questioning • Socratic questioning (Socratic seminars, circles, discussion) • Service learning • "What? So What? Now What?"

Technology

Models	Strategies
• Big6 • Hour of Code • Khan Academy • Kids Computer Lab	• Explicit modeling • Graphic organizers • Web site design

Social-Emotional

Models	Strategies
• Betts and Kercher Autonomous Learner Model • Bibliotherapy • Debate Model • Literature Circles • Multiple Intelligences • Model United Nations (including various levels) • Social Interaction Model • Social Scripting • Socratic Circle	• Bias inventories/surveys • Collaborations: pair and small group • Cultures and custom studies • Decisions and outcomes • Decision-making matrix • Independent study • Interpret body language and social cues • Interest inventory • Learning style preferences • Mentors • Mistake modeling • Personality inventories • Points of View (POV) • PNI – Positive, Negative, Interesting • Reflection • Self-reflections • Self-talk • Service learning • Student leadership • Simulations/Roleplay • Team-building • "What? So What? Now What?"

Autonomous Learner

Models	Strategies
• Betts and Kercher Autonomous Learner Model • Bibliotherapy • Creative Problem-Solving for Personal Growth • DYI: https://diy.org/ (teacher must preview) • Flow by Csikszentmihalyi • Literature Circles • Social Scripting • Socratic Circles • Type I, II, and III	• Brainstorming • Checklists • Collaboration (various grouping strategies) • Decisions and outcomes • Decision-making • Decision-making matrices • Deferred decision-making • Ethical dilemmas • Forecasting • Explicit modeling • Feedback • Field experiences • Goal-setting • Graphic organizers: flow chart

	• Independent study • Interest inventory • Learning style preferences • Life skills: time management, transitioning • Mistake modeling • Negotiation, mediation, and compromise • Peer mediating • Problem-based learning • Project-based learning • Planning • Reflection of errors • Self-evaluation and revision • "What? So What? Now What?"

Executive Skills

Models	**Strategies**
• Betts and Kercher Autonomous Learner Model • Habits of Mind • Social Interaction Model • Social Scripting	• Decisions and outcomes • Citizenship (local, national, global) • Coaching • Code-switching • Collaboration (various grouping strategies) • Decision-making matrices • Explicit modeling • Forecasting, • Goal-setting • Graphic organizers • Intra- and inter-personal skills • Leadership • Life skills: active listening, checklists, note-taking, prioritizing, scheduling • Mentors • Mistake modeling • Negotiation, mediation, and compromise • Self-evaluation and revision • Self-talk • Time management • "What? So What? Now What?"

Appendix D

Formative and Summative Assessments

Listed below are formative and summative assessment options that can be used to evaluate student mastery of content knowledge, conceptual understanding, and skills/processes. This list is not comprehensive but provides assessment formats that can assist teachers in determining student progress and mastery of objectives/standards.

1. **Formative Assessments: Informal**
    - 3-2-1
    - Anecdotal record
    - Concept map/web
    - Conference/interview
    - Exit ticket
    - Graphic organizer
    - Observation notes/checklist

2. **Formative and Summative Assessments: Formal**
    - Creative product assessment
    - Debriefing questions/activity/task
    - Growth model
    - Peer and self-assessment
    - Portfolio
    - Pre-/post-test
    - Progress report
    - Quick Write
    - Quiz
    - Rubric
    - Teacher/expert assessment

3. **Inventories/Surveys**
    - Interest
    - Learning profile
    - Perception
    - Personality
    - Expression style

Appendix E
Quick Sheets

A. Metacognition (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Abstract Thinking	a. Observe, analyze, and implement abstract thinking skills modeled by others.
	b. Develop and ask questions for cognitive development: • Lower-level questions to develop a foundation for higher-level questions. • Hypothetical questions designed to explore possibilities and test relationships. • Clarifying questions to examine the coherence and logic of an argument, article, an essay, editorial, or presentation. • Elaborating questions to extend and stretch learning. • Divergent questions to engage in new ideas and promote sophisticated and/or contradictory thinking. • Viewpoint questions from different perspectives.
2. Reflective Thinking	a. Observe, analyze, implement, and record reflective thinking modeled by others.
	b. Ask questions: • Before, during, and after reading and/or instruction to develop a deeper understanding. • That seek reasons and evidence – why, how, what.
	c. Determine which resources and hands-on activities will develop exploration of the topic.
	d. Analyze and evaluate the learning situation – what is known, what is not yet known, and what has been learned. • Summarize and justify the knowledge gained through reading, activities, and/or instruction.

B. Critical Thinking (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Analyze	**a.** Identify main ideas in oral, written, and nonverbal form.
	b. Recognize relationships among ideas and data. • Compare and contrast attributes of varying ideas. • Classify information into logical categories. • Analyze various perspectives. • Analyze discrepancies in thought or information. • Determine cause and effect of relationships and events.
	c. Utilize inductive reasoning to solve problems. Utilize deductive reasoning to solve problems.
	d. Provide supporting evidence. • Sequence information to make points. • Verify solutions.
2. Evaluate	**a.** Assess the organization, content, value, effectiveness, and results of action/decision.
	b. Prove or disprove ideas by presenting evidence. • Assess accuracy and relevance of points used to support conclusions.

C. Creative Thinking (Skills)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Fluency	Develop the ability to use brainstorming techniques. • Create many ideas in order to maximize the possibility of finding the solution to the problem. • Accept the possibility of more than one right answer.
2. Flexibility	**a.** Create varied ideas in order to maximize the possibility of finding the solution to the problem.
	b. Adapt a single idea or materials to many different uses.
	c. Substitute, combine, adapt, magnify/minify, put to other uses, eliminate, or rearrange to change an idea or concept.
	d. Question relationships and interpretations. • Discern various interpretations of information. • Apply a principle or concept to different areas. • Develop an ability to shift approaches or change directions in thinking.
3. Originality	**a.** Create original ideas in order to maximize the possibility of finding the solution to the problem.
	b. Provide different or alternate outcomes in real-world situations.
	c. Use familiar objects in ways different from their intended purposes.
4. Elaboration	Provide detail that is accurate and complete to enhance meaning and understanding.
5. Synthesis	**a.** Combine commonplace ideas or materials in unusual ways.
	b. Combine concepts and generalizations in order to create a new understanding.

D. Problem Solving (Process)	
Competency	**Skill/Outcomes**
Students will be able to:	
Divergent and Convergent Thinking Skills	The problem solving process requires all of the following steps: **a.** Recognize and define the problem (hypotheses). **b.** Gather ideas and data. **c.** Brainstorm aspects of the problem. **d.** Identify underlying problems or sub-problems. **e.** Produce alternative solutions. **f.** Develop criteria for judging solutions. **g.** Evaluate alternative solutions using the criteria. **h.** Determine and implement possible solutions.

E. Communication & Creative Expression (Process)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Oral	• Plan, create, and present information orally in order to share thoughts and ideas to a variety of authentic audiences. • Contribute (with confidence) to a group or class discussion of a concept, topic, theme, issue, or problem. • Develop appropriate listening and speaking skills to effectively communicate a concept and/or idea to an audience and respond appropriately. • Support and defend personal opinions while collaborating with and respecting the opinions of others. • Demonstrate effective speaking skills such as appropriate rate, volume, tone, pitch, enunciation, and pace and effective body language, such as eye contact, inflection, and gestures.
2. Written	• Plan, create, and present written information in order to share thoughts and ideas to a variety of authentic audiences. • Create unique compositions that utilize their own voice. • Edit and refine all written communications by applying proofreading and editing skills.
3. Nonverbal (including Artistic and Kinesthetic)	• Plan, create, and present a nonverbal performance in order to share thoughts and ideas to a variety of authentic audiences. • Experience expression through various nonverbal forms. • Select, analyze, and utilize appropriate visual aids for effective communication.

F. Information Literacy: Research (Process)	
Competency	**Skill/Outcome**
Students will be able to:	
1. Identify a topic and formulate questions for research	• Analyze the topic/problem/issue to determine areas to be researched. • Brainstorm questions related to the topic/problem/issue. • Identify related topics/problems/issues. • Identify a specific topic for research. • Formulate significant, complex questions for study.
2. Select and apply a research methodology appropriate for the topic	• Select appropriate research method: case studies; historical studies; interviews; surveys; scientific method; descriptive research. • Construct a hypothesis. • Design a plan or experiment to test the hypothesis.
3. Collect information from primary and secondary sources using print and electronic media	• Analyze the differences between primary and secondary sources. • Employ various digital tools, media, and strategies to locate and collect accurate and reliable information. • Take simple, accurate notes. • Understand ethics in copyright/fair use and cite sources to avoid plagiarism.
4. Assess the validity, reliability, and relevance of the information collected	• Evaluate sources with respect to date, aspects covered, information provided, and relevance to the study. • Compare and contrast authors/interview subjects with respect to qualifications.
5. Organize and integrate information/data	Create and visually organize your data (Chart, table, graph, map, web, or outline) using the various categories: • Chronological order. • Sequence of steps. • Generalizations. • Evidence. • Patterns. • Outline. • Compare/contrast. • Cause/effect.
6. Synthesize and interpret information	Make inferences about the data with respect to trends, future directions, similarities, and differences.
7. Develop conclusions and implications based on the problem	Draw conclusions and develop generalizations based on and supported by data gathered in the course of research.
8. Demonstrate the ability to communicate research findings	• Identify appropriate audience. • Select an appropriate medium (form) in terms of audience, impact and type of information/data for which it is best suited.

G. Information Literacy: Technology (Process)	
Competency	**Skill/Outcome**
	Students will be able to:
1. Technology Use	• Apply troubleshooting strategies to correct issues. • Use digital tools and strategies to locate, collect, organize, evaluate, and synthesize information. • Apply the principles of safe and appropriate Internet use including cyber-safety and "netiquette." • Use digital environments to collaborate and communicate.
2. Software	• Identify and use software appropriate to educational tasks, including but not limited to, web browsers and office-productivity suites. • Explore and evaluate alternative software options (e.g., compare and contrast different office-productivity programs such as Word and OpenOffice).
3. Project Development	• Identify appropriate technological tools for use in academic and creative projects. • Plan, create, and upload technological communications and/or presentations, using technological software, online applications, or apps that may include blogs, WIKIS, podcasts, videos, and webinars.
4. Web Site Creation	• Design Web sites that appropriately convey desired information. • Understand principles of good Web site design including differences between Web site design and other forms of presentation.
5. Computer Programming	• Write basic programs and macros in one or more computer programming languages. • Be familiar with differences among programming languages. • Understand the principles of good software design.

H. Social-Emotional	
Competency	**Skill/Outcome**
Students will be able to:	
1. Cope with inner feelings	• Understand and evaluate the social, emotional, and academic implications of giftedness. • Understand and analyze feelings and emotions in self. • Identify feelings and emotions in self. • Identify and utilize appropriate personal perceptual filters and defense systems for situations.
2. Cope with perfectionism goal setting, emotional intensity, anxiety, and stress	• Develop a healthy perception of perfectionism in accomplishing tasks. • Express and manage emotions in positive ways. • Develop a healthy responses toward peer pressure and expectations of others. • Develop behavioral strategies appropriate to the situation. • Identify sources and possible solutions of stress and anxiety.
3. Develop self-acceptance	• Appreciate their personality styles. • Understand their asynchronous development. • Develop ethical practices. • Embrace their giftedness. • Develop and demonstrate appropriate self-efficacy and self-talk.
4. Demonstrate and evaluate responsibility for personal growth	• Understand how attitudes, attention, and commitment can affect one's knowledge and self-control. • Identify and assess strengths and weaknesses as a baseline for improvement. • Set goals for self-improvement and take the necessary steps to reach them. • Accept responsibility for choices made. • Develop and model self-discipline. • Show evidence of delayed gratification and impulse control. • Demonstrate leadership skills. • Accept failure as part of growth.
5. Enhance relationships with others	• Analyze, evaluate, and respond appropriately to various forms of body language. • Demonstrate respect for and empathy with others. • Participate in community building skills. • Differentiate constructive or destructive criticism.
6. Demonstrate an awareness of cultural diversity	• Recognize contributions and achievements of various cultures. • Recognize various forms of bias. • Question stereotypes.

I. Autonomous Learner	
Competency	**Skill/Outcome**
	Students will be able to:
1. Demonstrate independent learning	• Gather, organize, analyze, and apply new knowledge. • Exhaust resources prior to asking for help. • Formulate questions that will aid in learning. • Set, prioritize, and achieve goals. • Utilize time management skills.
2. Monitor and evaluate learning	• Reflect on progress as determined by established goals/timelines. • Self-evaluate progress of completing final tasks. • Revise, refine, and modify final tasks in relation to original goals and timelines. • Revise, refine, and modify goals and timelines in relation to the constraints of the project/situation/issue.
3. Increase intrinsic motivation	• Explore and pursue areas of personal interests/curiosity/passion. • Demonstrate personal motivation and task commitment. • Develop persistence when working on challenging activities.
4. Take academic risks	• Identify personal learning comfort zone. • Analyze the value of academic risk-taking by weighing the positive/negative outcomes of taking that risk. • Express the importance of risk-taking. • Take academic risks by accepting challenges outside of comfort zones.
5. Demonstrate personal flexibility	• Identify alternative methods of accomplishing a task. • Describe the benefits of developing alternative processes to accomplish a task. • Develop a method of transitioning from one process to an alternative.
6. Grow from constructive criticism	• Develop a receptive attitude towards feedback. • Reflect on the meaning of feedback received. • Differentiate constructive or destructive criticism. • Determine how to improve based upon feedback. • Respond to feedback with well-reasoned explanations. • Provide constructive criticism to others.
7. Exhibit professional or business ethical behavior (character education)	• Define attributes of ethical principles. • Identify and analyze outcomes of individual actions. • Evaluate the individual actions for ethical practices. • Uphold ethical principles.

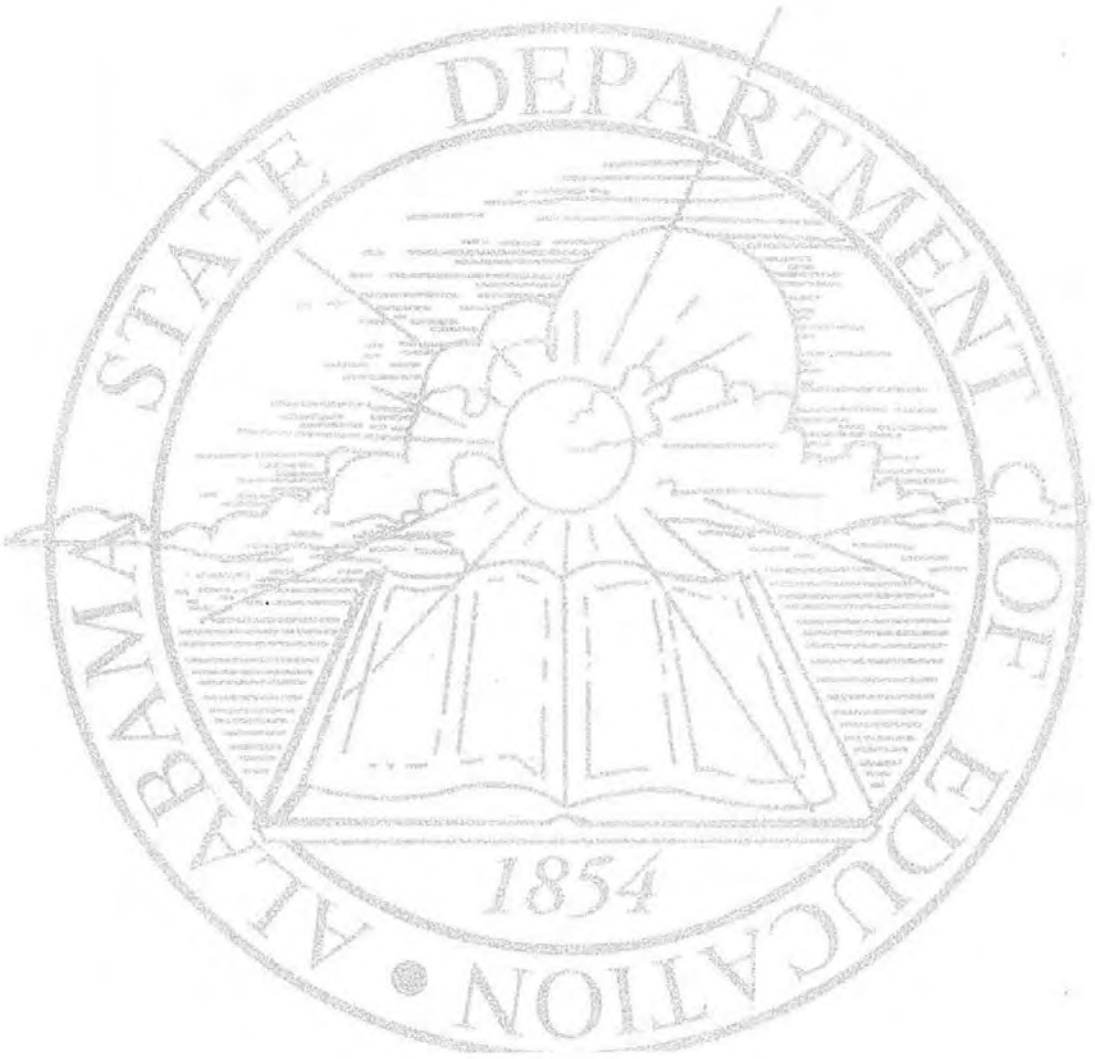
J. Executive Skills	
Competency	**Skill/Outcome**
	Students will be able to:
1. Organizational Skills	• Develop and adhere to a time schedule. • Develop a priority list and adjust it as needed. • Develop lists of goals, projects, or "to-do's" and complete the items on the lists. • Re-evaluate the lists in order to prioritize greatest needs first or adjust to changing deadlines.
2. Decision-Making	• Develop, evaluate, and select criteria when given multiple alternatives. • Prioritize criteria. • Apply criteria to alternatives. • Explain your chosen decision based on criteria. • Act on selected decision.
3. Impulse Control	• Self-monitor verbal, non-verbal, and physical responses to others (including teachers) through wait time, self-talk, and reflection. • Code-switch according to audience.
4. Project Management	• Prioritize project elements. • Plan long- and short-term tasks. • Execute ideas to completion. • Self-evaluate the final projects/ideas/tasks.
5. Time Management	• Transition from one task to another. • Prioritize competing interests. • Create schedules and to-do lists in order to adhere to time constraints.
6. Adaptability	• Adjust expectations and behavior according to various academic environments. • Identify and articulate multiple solutions, goals, or perspectives. • Establish a unified solution, goal, perspective from consensus among the group.
7. Goal-Setting	• Develop realistic goals and objectives. • Evaluate the time to accomplish objectives. • Seek resources to accomplish objectives. • Set benchmarks to complete objectives.
8. Collaboration	• Use listening skills with others. • Respect perspectives of others. • Compromise and negotiate to accomplish tasks. • Relinquish control while working with others.

Appendix E
Student and Teacher Checklist

Student Names	Metacognition						Critical Thinking						Creative Thinking									
	A1a	A1b	A2a	A2b	A2c	A2d	B1a	B1b	B1c	B1d	B2a	B2b	C1	C2a	C2b	C2c	C3a	C3b	C3c	C4	C5a	C5b

Student Names	Problem Solving	Communication & Creative Expression			Information Literacy: Research								Information Literacy: Technology				
	D1a,b,c,d,e,f,g,h	E1	E2	E3	F1	F2	F3	F4	F5	F6	F7	F8	G1	G2	G3	G4	G5

Student Names	Social-Emotional						Autonomous Learner						Executive Skills							
	H1	H2	H3	H4	H5	H6	I1	I2	I4	I5	I6	I7	J1	J2	J3	J4	J5	J6	J7	J8


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