Appendix A

Background Information

Definitions and Acronyms

AP (Advanced Placement): An intensive program of college-level curricula and exams developed by the College Board that provides high school students with an opportunity to earn college credit at participating colleges and universities across the country. The AP program offers students an opportunity to develop their academic strengths through rigorous curricula and challenging national examinations and exposes them to academic experiences usually reserved for college students.

CLASS (Classroom Assessment Scoring System): A classroom observation tool developed at the University of Virginia's Curry School of Education. It aims to provide a common lens and language focused on classroom interactions that encourage student learning. The CLASS tool organizes teacher-student interactions into three broad domains: Emotional Support, Classroom Organization, and Instructional Support. The upper elementary and secondary CLASS tools include a fourth domain, Student Engagement.

Cluster Grouping: The Cluster Grouping Model is a research-based approach of intentionally grouping students according to their strengths and needs in a mixed ability classroom with a teacher who has a background and understanding of gifted learners and knows how to plan and implement strategies and/or resources written for gifted learners on a daily basis. In a cluster classroom, there are at least 5-8 students identified as gifted.

CogAT (Cognitive Abilities Test): The Cognitive Abilities Test is a group-administered K–12 assessment intended to estimate students' learned reasoning and problem solving abilities through a battery of verbal, quantitative, and nonverbal test items. It measures students' learned reasoning abilities in the three areas most linked to academic success in school: Verbal, Quantitative, and Nonverbal.

COS-R (Classroom Observation Scale-Revised): The COS-R is an observation tool used nationally to assess the use of differentiation for the gifted in classroom practice.

Differentiation Form: The Gifted Services Office expects that parents of elementary students who are identified as gifted will receive a Differentiation Form with every report card. This form should explain how instruction was adjusted during the semester to challenge and engage the student.

Dually Identified: The term "dually identified" describes a student who is identified as having special learning needs in two areas. In this evaluation, this refers to students who are identified as both gifted and LEP, or as gifted and as having a disability.

ERO (Electronic Registrar Online): An electronic database used by APS to track teacher professional learning, to include registration and attendance.

ESOL/HILT (English for Speakers of Other Languages/High Intensity Language Training): The English for Speakers of Other Languages/High Intensity Language Training (ESOL/HILT) program supports and monitors instruction that develops academic language and content knowledge for English language learners.

Framework for Critical and Creative Thinking: A list of critical and creative thinking skills schools can use to raise the level of rigor for all.

GBC (Gifted Behavior Commentary): A dynamic document that allows school teams to document observable gifted behaviors over time, especially behaviors exhibited when students have had opportunities with critical and creative thinking lessons. It is part of the holistic case study approach and includes characteristics of diverse gifted learners.

Gifted Identification: A student is formally identified as gifted after being referred for consideration. Once a student is referred, a local school committee reviews multiple sources of student data to determine if the student will be identified.

Gifted Referral: A student may be referred to be considered for gifted identification by parents, guardians, school staff, community members, peers, self, or others; or they may be automatically referred based on meeting a benchmark on the NNAT or the CogAT.

IB (International Baccalaureate): An academic program licensed by the International Baccalaureate Organization (IBO) that, upon successful completion, results in the awarding of a high school degree. The curriculum emphasizes the importance of international awareness and responsible citizenship for students.

LEP (Limited English Proficient): A designation used by the Virginia Department of Education to indicate a student who is an English language learner. In APS, these students are served by the ESOL/HILT program.

MI (Math Inventory): A computer-adaptive universal screener and progress-monitoring tool that assesses student performance in five strands of mathematics. The results are reported using a measure called the Quantile, which indicates how well a student understands mathematical skills and concepts along a developmental continuum. MI data will soon be available in the data warehouse.

NAGC (National Association for Gifted Children): A national organization to support those who enhance the growth and development of gifted and talented children through education, advocacy, community building, and research. NAGC helps parents and families, K-12 education professionals, and members of the research and higher education community who work to help gifted and talented children as they strive to achieve their personal best and contribute to their communities.

NNAT (Naglieri Nonverbal Test): The Naglieri Nonverbal Ability Test is a group-administered K-12 nonverbal assessment of general intellectual ability. It provides a culturally neutral assessment and is ideal for use with a diverse student population.

PAT (Performance Assessment Task): Performance Assessment Tasks (PATs) are curriculum-embedded products that give evidence of students' deeper understanding of content and application of higher order thinking skills. PATs are currently used in social studies, science, and writing instruction and may be used to show growth. Currently student PAT results are not available centrally.

PRIME: Professional Related Intern/Mentorship Experience (PRIME) is an internship program for rising juniors and seniors designed to provide gifted students with unpaid internships in professional organizations related to their fields of interest.

RI (Reading Inventory): A computer-adaptive reading assessment that measures reading comprehension using Lexile measures. Lexile measures indicate a student's reading level and can be used to match readers with appropriately leveled text.

RTG (Resource Teacher for the Gifted): The teacher at each comprehensive school who works collaboratively with school staff to implement daily differentiation for gifted learners and raise the level of rigor for all learners. RTGs also manage the academic and visual/performing arts identification process.

SOLs (Standards of Learning): The SOLs are the Virginia Board of Education's curriculum objectives that describe the commonwealth's expectations for student learning and achievement by subject for grades K–12.

Universal Screening: An objective and systematic way of assessing potential in all students in a certain group such as with all Grade 2 students with the NNAT and all Grade 4 students with the CogAT.

Young Scholars: The Young Scholars (YS) Model identifies and nurtures advanced academic potential in students from historically underrepresented populations. Curricular interventions and support are provided through the collaboration of the classroom teacher and the resource teacher for the gifted to raise the level of rigor for all. As students progress through elementary and secondary school, continuing support and opportunities for accessing rigorous coursework are provided by school staff.

Best Practices for Advanced Learners Handbook

An electronic version is located on the Gifted Services webpage: https://www.apsva.us/gifted-services/teachers/

On the Critical and Creative Thinking link, Gifted Services will continue to add supporting documents (e.g. PowerPoints on strategy, graphic organizers) and ideas for integration.

Feedback and ideas are always welcome. Please email Cheryl.McCullough@apsva.us

Best Practices for Advanced Learners Handbook

Introduction

To support the continued implementation of Professional Learning Communities (PLC) and Arlington's Tiered System of Support (ATSS) the Gifted Services office has created a handbook to support all classroom teachers and particularly those teachers working with clusters of identified gifted students, or *cluster teachers*. The handbook also provides a common framework that supports meaningful and continuous collaboration between cluster teachers and each school's Resource Teacher for the Gifted (RTG).

In an effort to support teachers as they plan for both the academic and social needs of their advanced students, this handbook includes information about:

- *Curricular resources designed for advanced learners*
- *Critical and creative thinking skills that should be used with all learners*
- *Characteristics and traits of gifted learners*
- *Social and emotional needs of gifted learners*

PLCs: Maintaining a Focus on Learning and Curriculum

Within a PLC, the cultural shift from a focus on teaching to a focus on learning begins. As part of that shift, there is also a new lens through which we look at curriculum. Within a PLC, collaborative teams consider ways in which they can reduce content with the goal of identifying of delivering the most meaningful content taught at greater depths. For students that may have already mastered certain grade-level content, this more rigorous curriculum is necessary if they are to extend their learning.

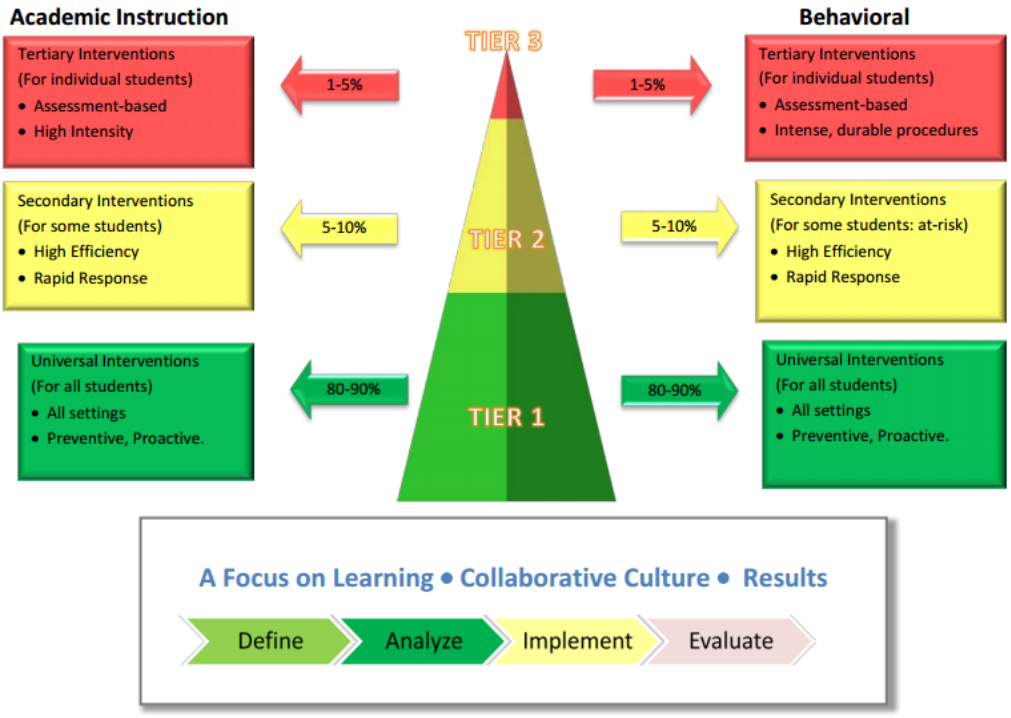
An effective method of reducing content is through the collaborative design and implementation of pre-assessments. Pre-assessments are a best practice for all learners in terms of identifying areas which students have mastered prior to direct instruction, and they can be particularly helpful for gifted learners. Data from pre-assessments enables teaches to utilize techniques such as **curriculum compacting** (Renzulli), *a technique for differentiating instruction that allows teachers to make adjustments to curriculum for students who have already mastered the material to be learned, replacing content students know with new content, enrichment/extension activities, or other activities.*

As teachers use pre-assessment data to determine the need for more rigorous curriculum, teachers ensure student learning while providing instruction that is commensurate with the students' ability. Furthermore, pre-assessments and curriculum compacting fall much very in line with key principles of ATSS:

- Intervene early through the use of universal screeners and other forms of assessment
- Use a multi-tiered system of support
- Tailor instruction to the individual learner's needs
- Use data-based decision making to inform instruction and monitor progress
- Use research-based interventions and instruction
- Ensure fidelity of implementation
- Document and encourage parental involvement in all steps of the process

Connecting to Arlington's Tiered System of Support (ATSS)

The Virginia Department of Education defines a Tiered System of Support as a framework and philosophy that provides resources and supports to help every student reach success in academics and behavior. The focus of ATSS is to address the whole child and what supports he or she needs to be successful both academically and social emotionally. The ATSS framework uses the data decision-based model in the Professional Learning Communities (PLC), to analyze data, identify students who are in need of remediation or extension and create timely action plans. More detailed information about ATSS can be found here.



In a blog post titled "Neglecting the Gifted and Talented," Richard and Rebecca DuFour reject the notion that, within a PLC, focusing on the needs of struggling learners will result in neglecting gifted learners. Instead, they state that the "staff of a PLC attempts to create a culture that stretches all students beyond their comfort zone and then provides the support to help them be successful in meeting the challenge." They go on to state that students "comfortable in the standard curriculum are called upon to stretch to meet the challenges of an accelerated curriculum. Students in the most rigorous curriculum are challenged to see how far they can go in extending their learning." (retrieved from http://www.allthingsplc.info/blog/view/74/neglecting-the-gifted-and-talented)

In its position statement regarding Response to Intervention (RtI) for Gifted Children, The Association for the Gifted, a division of the Council for Exceptional Children, posits that "the RtI model be expanded in its implementation to include the needs of gifted children." The use of the RtI framework for gifted students would support advanced learning needs of children in terms of a faster paced, more complex, greater depth and/or breadth with respect to their curriculum and instruction. It should also be noted that students who are gifted with disabilities may need more than one level of intervention and advancement in terms of curriculum and instructional strategies." (retrieved from https://www.nagc.org/sites/default/files/Position%20Statement/RtI.pdf)

The Schoolwide Cluster Grouping Model (SCGM)

This handbook links ATSS to a research-based model - the Schoolwide Cluster Grouping Model (Brulles & Winebrenner) - with which teachers can address the academic, social, and emotional needs of the county's gifted learners.

What is Cluster Grouping?

In their book *The Cluster Grouping Handbook: How to Challenge Gifted Students and Improve Achievement for All*, authors Diana Brulles and Susan Winebrenner describe a cluster group as "a group of five to eight identified gifted students clustered in a classroom with a teacher who has had training in how to teach exceptionally capable students." The term *cluster grouping* is used in reference to the Schoolwide Cluster Grouping Model (SCGM), which is their approach to help meet the needs of all students, including those identified as gifted. The stated goals of the SCGM are twofold: 1) ensure a balance of abilities throughout a grade level without returning to the practice of tracking and 2) reduce the learning range found in each classroom.

The SCGM is an inclusion model in which groups of gifted learners are integrated into heterogeneous classrooms comprised of students of mixed ability. The SCGM provides academic, social, and emotional advantages for gifted students, as well as makes the collaborative process for the cluster teacher and RTG more efficient. Perhaps of greatest significance, the SCGM allows for a full-time level of services for identified students because their learning needs can be met on a daily basis by the classroom teacher (with support from the RTG).

The Benefits of Grouping for Advanced Learners

In its four-page Position Statement about grouping, the National Association of Gifted Children (NAGC) outlines both the purposes for grouping and various grouping practices. The NAGC states that "grouping gifted children is one of the foundations of exemplary gifted education practice," and points out the "long, consistent, and overwhelmingly positive" research related to grouping.

Cluster grouping enables teachers to more effectively differentiate on a daily basis. Differentiating enables teachers to provide appropriately challenging instruction in at an ongoing and comprehensive level. This daily differentiation ensures a year of academic growth for gifted learners. Some ways that teachers can effectively differentiate their planning and instruction include:

- Omitting already mastered materials from existing curriculum using curriculum compacting
- Modifying or using units of study written for gifted learners within cluster groups for a comprehensive daily approach
- Adding new content, process, or product expectations to existing curriculum
- Extending existing curriculum to provide daily differentiation for gifted learners
- Providing coursework for able students at an earlier age than usual based on data

Cluster teachers have a number of options when determining how to most effectively differentiate for their high-ability learners. One option referenced earlier was **curriculum compacting,** a technique designed to assist teachers as they make appropriate adjustments to the curriculum.

Curriculum compacting involves three steps[1]:

1. defining the goals and outcomes of a particular unit or segment of instruction,
2. determining and documenting which students have already mastered most or all of a specified set of learning outcomes,
3. providing replacement strategies for material already mastered through the use of instructional options that enable a more challenging and productive use of the student's time

Curriculum Compacting: At a Glance

Step 1: Name It - Teams collaboratively determine the *curriculum areas to be considered* for compacting – this may be an upcoming unit of fractions in math, a unit on the solar system in science, a unit Jamestown in social studies, or a new pattern within Word Study. Teachers should also consider any evidence that suggests the need for compacting (exceptional ability levels; advanced reasoning skills; speed with which child acquires new content; pre-assessment data)

Step 2: Prove It - Teams *document how mastery was determined***.** This may involve a variety of formal and informal assessments, particularly data gathered from pre-assessments and/or relevant data from nationally-normed ability-tests (Naglieri Nonverbal Ability Test; Cognitive Abilities Test).

Step 3: Change It - Teams *determine procedures and tasks for compacting basic material*. Working with the RTG, teams make decisions about the activities and environment with which students interact. This may incorporate advanced content, self-selected tasks, tasks focused on critical/creative thinking; extension activities, learning menus, learning contracts, working at a quicker pace, etc.

Resources:

- *Curriculum Compacting: An Easy Start to Differentiating for High-Potential Students (Reis and Renzulli)*
- University of Connecticut's Neag Center for Gifted Education and Talent Development. (http://gifted.uconn.edu/schoolwide-enrichment-model/curriculum_compacting/)

Sources: [1] Reis, Sally, and Joe Renzulli. "UConn Logo University of Connecticut UC Title Fallback." Neag Center for Creativity Gifted Education and Talent Development. N.p., n.d. Web. 04 Aug. 2016. <http://gifted.uconn.edu/schoolwide-enrichment-model/curriculum_compacting/>.

Implementing Curriculum Designed for High-Ability Learners

In its Position Statement on Differentiating Curriculum and Instruction for Gifted and Talented Students, the National Association of Gifted Children recommends that, in order for a focus to remain on learning and continued growth, gifted students should be provided with access to curricular resources designed for advanced learners.

The next section of the handbook contains information about curriculum, resources, and models to help cluster teachers as they plan for ways to add depth and complexity across the content areas. This portion of

the handbook will be of great benefit as cluster-teachers work with the RTG to plan and implement systematic interventions for high-ability students. Much of the curriculum within the handbook was developed at William and Mary's Center for Gifted Education (CFGE) or the University of Connecticut's Neag Center for Gifted Education and Talent Development. These curricula were included for a number of reasons: they are designed for advanced learners, developed by leaders within the field of gifted curriculum, comprehensive in nature, and in some cases, award-winning. Links for each center's page are below:

- CFGE Curriculum Page: (http://education.wm.edu/centers/cfge/curriculum/)
- UConn's Gifted Home Page: (http://www.gifted.uconn.edu/)

Please talk with the RTG in your building, as well as content-area lead teachers in your building, to familiarize yourself with the resources outlined in the Handbook, as well as other resources that may be available in the professional/personal library of the teachers in your building.

Grade K-12: Language Arts	
Resources Designed for Advanced Learners	**Brief overview of resource**
William and Mary Literature Units	The most comprehensive of William and Mary's (W & M) materials, consisting of numerous lessons for a differentiated approach to teaching integrated standards. Designed for high-ability students and organized around a guiding concept. Develops skills related to analytical and interpretive skills, creative writing, linguistic competency, reasoning, and conceptual understandings within literature.
Literature Trilogies	A series of literature trilogies created by Michael Clay Thompson. Each series consists of three works of literature providing close-ups of poetic techniques, four-level analysis of grammar and writing strategies.
William and Mary Navigator Novel Guides	Navigators are ideal for differentiation. The guides provide teachers and students with numerous and varied activities that can be done within shorter time frames (a few class periods) or span longer time periods (multiple weeks).
Jacob's Ladder – Primary 1 and 3: Level 1, 2, 3, 4, 5 (Fiction/Nonfiction)	W & M resource than can often be used within a few class periods. Shorter passages with accompanying questions that require students to move "up the ladder" of complexity. Promotes critical thinking and discourse.
Schoolwide Enrichment Model Reading Framework (SEM-R)	An enrichment-based reading framework designed to challenge all readers, but particularly talented readers through the use of strategies that are important to gifted education (critical/creative thinking; differentiation, independent study, etc.).
Building Language	A supplementary vocabulary program created by Michael Clay Thompson. *Building Language* contains 10 lessons that introduced important Latin stems; also the Roman roots of our buildings and our language. Serves as a precursor to *Caesar's English I* and *Caesar's English II.*
Caesar's English I	A supplementary vocabulary program created by Michael Clay Thompson. *Caesar's English I* contains 20 lessons, each of which introduces students to a variety of Latin stems and includes a variety of activities related to the stems. Serves as a precursor to *Caesar's English II.*
Caesar's English II	A supplementary vocabulary program created by Michael Clay Thompson. *Caesar's English II* contains 20 lessons, each of which introduces new Latin stems and revisits stems previously learned in *Caesar's English I*.
The Word within the Word I	A supplementary vocabulary program created by Michael Clay Thompson. *The Word within the Word I* contain 30 lessons. The first 20 lessons offer a list of 25 stems each, along with several example words that contain each stem, and the last 10 lessons provide twenty-five words that students will need to be familiar with to navigate well through advanced academic endeavors.
The Word within the Word II	A supplementary vocabulary program created by Michael Clay Thompson. *The Word within the Word II* contains 30 lessons. Each lesson begins with a list of stems, along with their meanings and words that contain them, followed by a list of advanced academic words that contain the stem in the list. There are ten new words in each lesson, as well as five words brought forward from *The Word within the Word I*. Volume I focused on ancient

	Greeks while Volume II focuses on the Roman Republic.
The Word within the Word III	A supplementary vocabulary program created by Michael Clay Thompson. is the third volume in the series. It is intended to build on cumulative work in Volumes I and II.
Word Study Resources	
Word Journey's by Kathy Ganske	Provides a comprehensive approach to building a child's word knowledge. Designed for students in grades K-8.
Inquiry and Discussion	
Socratic Inquiry/Socratic Seminar	Socratic Inquiry and the associated Seminars provide students with an opportunity to exchange their opinions, perspectives, and ideas as they search for their ideas about a particular literary work.
Junior Great Books	Junior Great Books is an anthology which moves through a series of activities that allow students to explore vocabulary, analyze and interpret text, write critically and creatively, and participate in open-ended discussions.
Philosophy for Kids	The intent of this book, according to its author, is to "foster a sense of wonder and aim it in many directions." Organized into four sections titled *Values, Knowledge, Reality,* and *Critical Thinking,* this resource is filled with questions to get kids thinking conceptually.

Grade K-12: Math	
Resources Designed for Advanced Learners Resources	**Brief overview of resource**
Project M^2: Mentoring Mathematical Minds	Comprehensive in nature. These curricular units consist of chapters and lessons, include pre and post-assessments, and promote mathematical writing and discourse.
Project M^3: Mentoring Mathematical Minds	Comprehensive in nature. These curricular units consist of chapters and lessons, include pre and post-assessments, and promote mathematical writing and discourse.
William and Mary Math Units	Comprehensive in nature, but not quite as in-depth as Project M3 units. Unit consists of several lessons and include pre and post-assessments.; designed for use across multiple grade-levels
Hands-On Equations and Verbal Problems	A hands-on introduction to algebraic reasoning, with 21 lessons divided into three Levels of complexity; a supplemental Verbal Problems resource allows for continued applied practice
Supplemental Resources (for short-term activities)	
Groundworks Series	Sets of activities related to five mathematical strands (Algebra, Data & Probability, Measurement, Geometry, and Number Sense). Activities combine critical thinking with mathematical writing and discourse. Sets can be completed quickly (1-2 class periods).
Nimble with Number Series	Activities and games that couple applied practice with critical thinking; well-suited for extensions of particular standards; often used in centers or stations
Number Sense Series	Similar in nature to *Nimble with Numbers;* Activities and games that couple applied practice with critical thinking; well-suited for extensions of particular standards; often used in centers or stations.
The Problem Solver Series	Story problems designed around a variety of problem solving strategies (logic, draw a picture, make a table, etc.). Well-suited for direct instruction of problem-solving skills.
Challenge Math Series by Edward Zaccaro: *Upper Elementary Challenge Math, Challenge Math, and Real-World Algebra*	Chapters focus on a particular topic (ex. fractions, measurement, decimals, etc.). Chapters have leveled story problems (Level 1 through Einstein Levels); suited for small-group or individual extensions of grade-level concepts.
Puddle Questions Assessing Mathematical Thinking	Open-ended tasks that promote critical thinking and encourage mathematical discourse. Designed to be completed within a shorter time frame (1-3 class periods).
Continental Math League	A collection of story-problems that, in order to be solved, require students to apply one of a variety of problem-solving strategies. *Contact your Math Lead or RTG regarding information about the competition as well as "Best of CML" Materials for your classroom use.*
Wake Forest Problem-Based Learning Cases	Provide real-world context for math and science. The cases are well-suited for small groups; usually 1-4 hours, depending on age group.

Grade K-12: Science	
Resources Designed for Advanced Learners	**Brief overview of resource**
William and Mary Project Clarion Science Units	These comprehensive units were designed to introduce young students to science concepts, processes, and macro-concepts. Hands-on lessons that allow students to explore science concepts through play and planned investigations.
William and Mary Problem Based Learning Science Units	These comprehensive units are designed to provide students with real-world problems facing today's society. They are geared towards different clusters of grade-levels, but can be adapted for use across grades K-8.
Supplemental resources	
Wake Forest Problem-Based Learning Cases	Provide real-world context for math and science. The cases are well-suited for small groups; usually 1-4 hours, depending on age group.
Great Explorations in Math and Science (GEMS)	GEMS activities engage students in direct experience and experimentation to introduce essential, standards-based principles and concepts
Science Investigation and Research	
Engineering is Elementary	Hands-on, project-based engineering activities. Each unit includes 8-11 hours on instructional time. http://www.eie.org/
WebQuests/Inquiries	WebQuests are inquiry-oriented online tools for learning. Lengths of WebQuests can vary from short term (one lesson) to long term (an entire unit). The link to an Education World article titled "Creating a WebQuest: It's Easier Than You Think" is provided: http://www.educationworld.com/a_tech/tech/tech011.shtml
Science Team Competitions	
Odyssey of the Mind	An international educational program that provides creative problem-solving opportunities for students from kindergarten through college. Team members apply their creativity to solve problems that range from building mechanical devices to presenting their own interpretation of literary classicshttp://www.odysseyofthemind.com/
Future Problem Solvers	A yearlong educational program which combines the rigorous intellectual challenge of creative problem solving with an interdisciplinary study of the future. http://www.vafps.org/
Virginia Junior Academy of Sciences (VJAS)	Stimulus for scientific research by sponsoring programs for the advancement of science in grades 7 through 12 and by encouraging students to enter scientific research investigations in competition for awards at the annual VJAS Research Symposium.

Inquiry-Based Approaches	
Socratic Inquiry/Socratic Seminar	Socratic Inquiry and the associated Seminars provide students with an opportunity to exchange their opinions, perspectives, and ideas as they search for their ideas about a particular literary work, in this case literary passages related to science can be utilized.

Grade K-12: Social Studies	
Resources Designed for Advanced Learners	**Brief overview of resource**
William and Mary Social Studies Units	The most comprehensive of William and Mary's (W & M) materials, consisting of numerous lessons for a differentiated approach to teaching integrated standards. Designed for high-ability students and organized around a guiding concept. Develops skills related to primary source analysis, critical thinking and concept development, historical thinking and research and the integration of major concepts across disciplines.
TCI History Alive! Units	History Alive! (K-5) Knowledge, skills, attitudes and values, and civic actions in the social sciences through a variety of approaches including History Alive! The pedagogical approaches are designed to make instruction more engaging, relevant, meaningful and memorable for students. It is based upon the work of Howard Gardner's Multiple Intelligences, Elizabeth Cohen's Cooperative Interaction, and Jerome Bruner's Spiral Curriculum Model. The approach provides a structure and teaching strategies that can be included in lesson design, an organizational structure for students, and methods for establishing a classroom environment that will promote cooperation, tolerance and some risk-taking
Project DBQ – Full DBQs and Mini Qs	Each unit is inquiry-based and requires students to analyze a series of documents in order to answer a particular question (i.e. Citizenship in Athens and Rome: Which was the better system?). Students must analyze the documents in order to both form and justify an opinion. Provides opportunities for discussion and written responses.
Engaging With History in the Classroom	Comprehensive units focusing on learning history through primary source analysis, concept based learning and considering different perspectives to understand different time periods. Each unit consists of detailed lesson plans with hook activities, suggested materials, lesson content, teacher notes, tips, historical documents and great online resources. Also included in the units are suggestions for differentiation for gifted learners and learners who may need accommodations.
Resources for Research	
Library of Congress Teaching with Primary Sources	The Library of Congress provides teachers with classroom materials and professional development to help teachers effectively use primary sources from the Library's vast digital collections in their teaching

Web Quests/Inquiries	WebQuests are inquiry-oriented online tools for learning. Lengths of Web Quests can vary from short term (one lesson) to long term (an entire unit). The link to an Education World article titled "Creating a WebQuest: It's Easier Than You Think" is provided: http://www.educationworld.com/a_tech/tech/tech011.shtml
National History Day	NHD offers year-long academic programs that engage over half a million middle- and high-school students around the world annually in conducting original research on historical topics of interest.
Inquiry-Based Approaches	
Socratic Inquiry/Socratic Seminar	Socratic Inquiry and the associated Seminars provide students with an opportunity to exchange their opinions, perspectives, and ideas as they explore their thinking about a particular text that connects to social studies content. Maps, portraits, and photographs, and primary sources from the Library of Congress are also excellent resources for Socratic Inquiry in Social Studies.

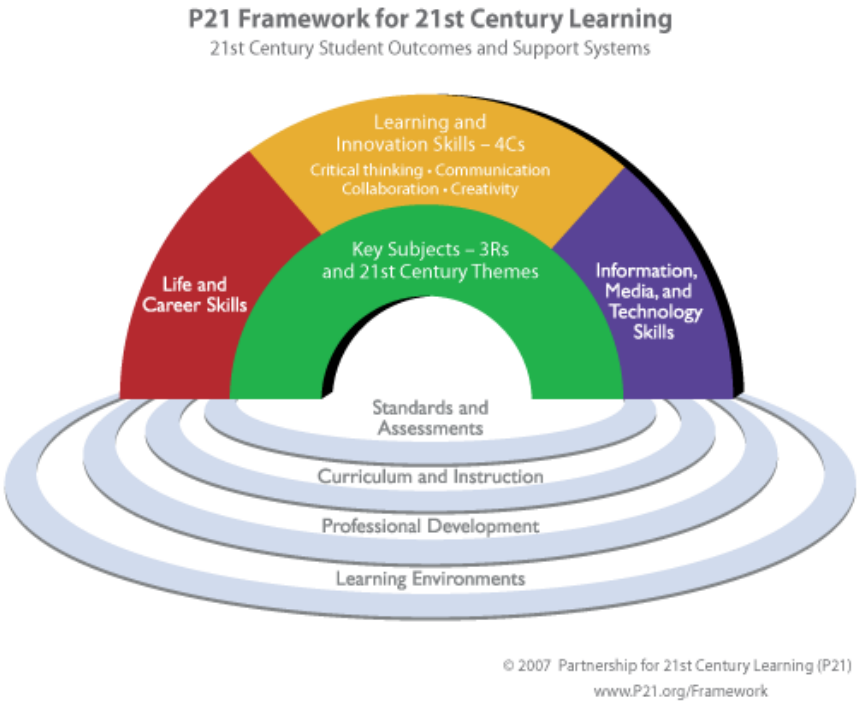
Overview of Critical and Creative Thinking Strategies

Why Teach Critical and Creative Thinking Strategies?

In the article "Preparing Creative and Critical Thinkers," Donald J. Treffinger states that educators "must empower students to become creative thinkers, critical thinkers, and problem solvers—people who are continually learning and who can apply their new knowledge to complex, novel, open-ended challenges; people who will proceed confidently and competently into the new horizons of life and work."[1]

In an effort to put our youngest learners on such a path, APS utilizes critical and creative thinking lessons designed for students in grades K-5. These lessons develop students' abilities to think abstractly, see numerous relationships, make generalizations, and work at varying levels of complexity. Each lesson focuses on a specific thinking strategy that can be used at any grade level and across the content areas.

The connection between critical and creative thinking skills and 21st Century Learning is clear. The framework below is drawn from the work of P21: Partnership for 21st Century Learning, a national nonprofit organization that advocates for 21st century readiness for every student.



Though all elements of the framework must be in place to ensure 21st century readiness for all learners, this section will focus on Learning and Innovation Skills – 4 Cs (Critical Thinking, Communication, Collaboration, and Creativity)

P21 states: **"**Learning and innovation skills increasingly are being recognized as the skills that separate students who are prepared for increasingly complex life and work environments in the 21st century, and those who are not. A focus on creativity, critical thinking, communication and collaboration is essential to prepare students for the future." [2]

Additional information about the P21 framework can be found here:- http://www.p21.org/index.php

Enduring Understandings of Teaching Thinking Skills to Students

- Abstract/complex content requires a systematic way of thinking
- Instruction in productive thinking tools ---creative, critical, problem solving, logical---improves higher level thinking
- Development of students' understanding of thinking tools increases their ability to apply these tools across disciplines

[1]Treffinger, D. J. (2008). Preparing Creative and Critical Thinkers. Retrieved August 03, 2016, from http://www.ascd.org/publications/educational-leadership/summer08/vol65/num09/Preparing-Creative-and-Critical-Thinkers.aspx

[2]Framework for 21st Century Learning - P21." Framework for 21st Century Learning - P21. P21, n.d. Web. 08 Aug. 2016. <http://www.p21.org/about-us/p21-framework>

Collaboration with Resource Teacher for the Gifted (RTG)

The RTG and classroom teacher collaboratively introduce students to four primary areas of productive thinking: creative thinking, critical thinking, problem solving, and logical thinking. The RTG supports the classroom teacher by:

- modeling application of thinking tools using content with the whole class and/or small groups
- collaboratively identifying lessons/units that teach the thinking tools and provide additional practice opportunities
- providing teachers with training related to strategies that promote opportunities for higher-level thinking
- providing resources to support instruction

Connection to the Gifted Referral Process

Critical and creative thinking lessons are an effective way to introduce higher-level thinking to all students. In addition, the various skills, processes, and products associated with these levels allow teachers and RTGs to document evidence of students' ability to think and/or reason at advanced levels. As such, these lessons can be used as a means of both identifying and nurturing advanced potential in our students.

Arlington Public Schools
K-12 Critical and Creative Thinking Strategies

Big Ideas
*Overarching Concepts – Change, Patterns, Systems, Perspectives, Cause/Effect, Cycles
*Taba Concept Development

Critical Thinking Teaching Models
*Frayer Model
*Future Problem Solving
*Hamburger Model of Persuasive Writing
*Jacob's Ladder
*Literature Web
*Paul's Elements of Reasoning
*Research Model
*Vocabulary Web (Literature Web/Analyzing Primary Sources Model)

Creative Thinking
*Creative Problem Solving (CPS)
*FFOE (Fluency, Flexibility, Originality, Elaboration)
*SCAMPER

Decisions and Outcomes
*Habits of Mind
*Plus, Minus/Modify, Interesting
*Problem Based Learning
*Project Based Learning

Making Connections
*Analogies
*Mind-Mapping
*Synectics
*Visualization

Point of View (Different Perspectives)
*Debates
*deBono's Hats
*RAFT
*Socratic Seminar/Junior Great Books
*Structured Academic Controversy

Critical Thinking Teaching Models

Concept-Based Instruction

Concept-based instruction allows for the integration of learning across the disciplines, incorporates new knowledge into prior knowledge, and facilitates multi-age learning experiences under one theme. Concepts are abstract and can be linked to more than one subject area, domain, or discipline.

The concept development model used in William and Mary units, based on Hilda Taba's Concept Development Model, focuses on the creation of generalizations from a student-derived list of created concepts. The important principle underlying this model is that understandings are built, not acquired. The foundation and framework for understanding concepts is the prior knowledge and experience of the learner. The model is comprised of five steps and involves student participation at every step.

Step 1: Listing, Naming the Items

Students are asked to list specific items related to a subject. This data may be drawn from their own experience or from material that has been introduced in class. Items should be written somewhere where they are visible to all participants. It is important to have a comprehensive list from which student generalizations can emerge.

Step 2: Grouping, Categorizing the Items

When the teacher feels a sufficient number of items have been listed, it is time to move to the question, "Which of the items we have listed go together because they are alike in some way?" Students begin to examine the relationships between items. It is important in this step to ask students to explain the reasoning behind their choices. Even if the reason seems obvious, students should be directed to articulate and defend their thinking.

Step 3: Labeling, Defining Relationships between Items

Students give labels to the newly formed groups. The sophistication of the labels depends on the age and background of the group. The teacher must remain passive so students feel the group values their judgments. The purpose of labeling is to develop students' skills in drawing inferences and in making generalizations as they decide how to label the items they have grouped together. The teacher asks, "What would you call this group of items you have formed?"

Step 4: Regrouping, Reanalyzing or Subsuming Items

This step centers around the question, "Are there items now in one group that you could put in another group?" and asks for the learner's reasoning. Just as during the naming step, the obvious relationships are pointed out first. As time goes on, students will discover that every person, object, or idea has many characteristics and may be grouped in many different ways.

Step 5: Synthesizing, Summarizing Data and Forming Generalizations

The teacher now asks the students to look over their work, consider all the labels, and summarize all the information in one sentence. "Can someone say, in one sentence, something about all these groups?" Students must sort various items, decide what the larger categories are to be, determine what information is subordinate and what is super ordinate. This stage gives students an opportunity to appreciate the richness

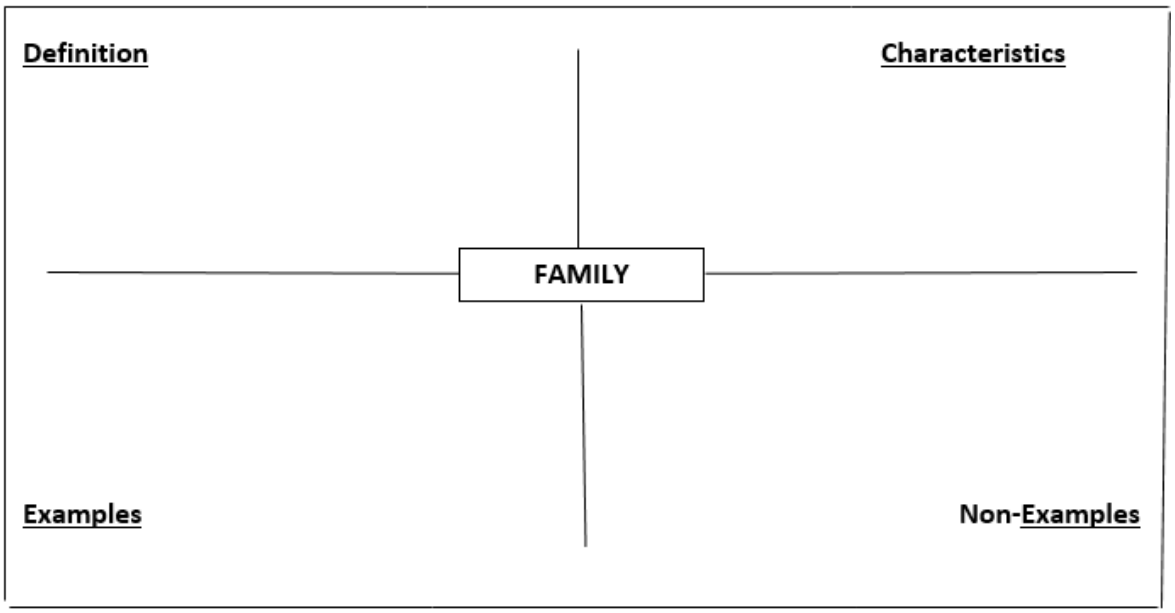
and complexity of ideas. By examining conflicting data, students begin to understand the dimensions of the topic being studied.

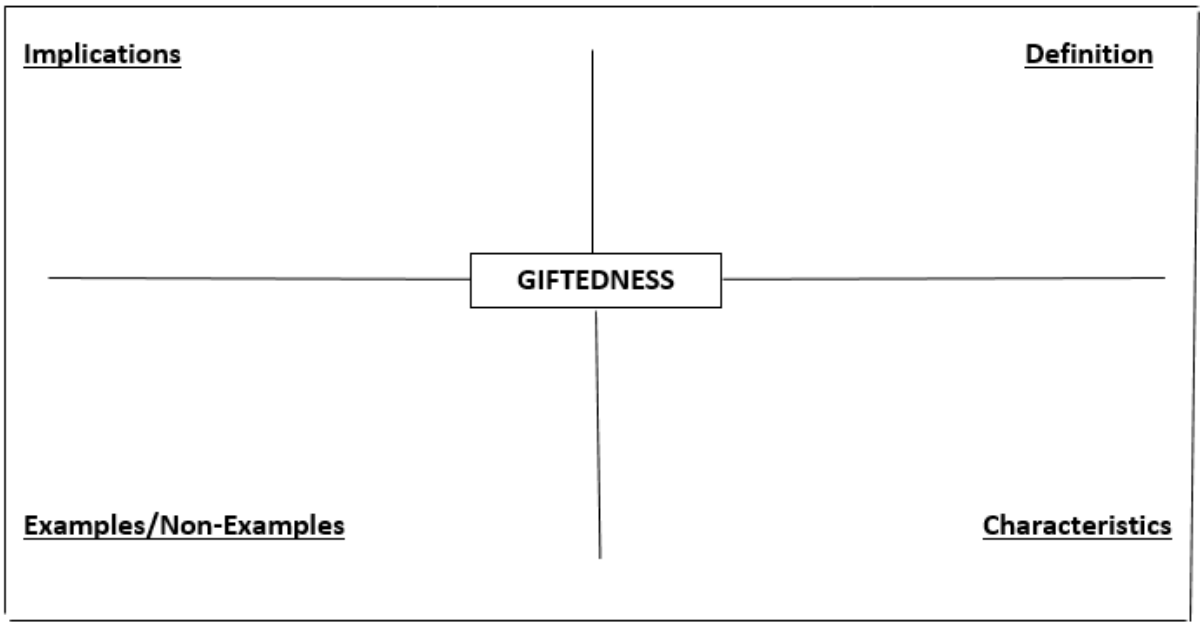
The Frayer Model

The Frayer Model is a strategy for vocabulary and/or concept development that incorporates the use of a graphic organizer. The organizer, which is typically broken into four sections, guides students through a variety of critical thinking skills, helping them build connections between their existing knowledge and new concepts.

When exploring key vocabulary or concepts, students can use the Frayer Model can to generate examples and non-examples, identify characteristics, and establish definitions. Teachers can modify the model to incorporate nonlinguistic representations or perhaps adding sections that explore implications.

The Frayer Model can be used as part of whole-group, small-group, or individualized instruction. A sample model is included below.





Future Problem Solving (FPS)

Future Problem Solving is an enrichment activity in which four-student teams (Grades 4-12) solve problems using the Creative Problem Solving (CPS) model. The stated mission of Future Problem Solving Program International, Inc. is to: *develop the ability of young people globally to design and promote positive futures using critical and creative thinking*.

Future Problem Solving Program International (FPSPI) is a "research-based academic program teaching problem solving strategies, collaboration, critical/creative thinking, and effective communication across the curriculum. While promoting the development of students' ethical leadership abilities through structured problem-solving situations, FPSPI's interdisciplinary approach provides a unique opportunity for students to learn essential life skills."[1]

FPS teaches students a problem solving process that incorporates six steps:

1. Identify Challenges
2. Determine an underlying problem
3. Produce solution ideas
4. Develop criteria
5. Apply criteria to solution ideas identify the best solution
6. Develop an action plan

Future Problem Solving Program International Home Page
http://www.fpspi.org/index.html

Future Problem Solving of Virginia
http://www.vafps.org/index.html

Article: "Foster 21st Century Learning Skills with Future Problem Solving"

Appendix A2

http://www.fpspi.org/pdf/ArtPub/21st%20CenturyFPSPI.pdf

[1] "Future Problem Solving: Meeting Standards of Today and the Future..." (n.d.): n. pag. Web. 4 Aug. 2016. <http://www.fpspi.org/pdf/ArtPub/FPSPI%20Standards%202015.pdf>.

[2] "Foster 21st Century Learning Skills with Future Problem Solving." (n.d.): n. pag. Web. 4 Aug. 2016. <http://www.fpspi.org/pdf/ArtPub/21st%20CenturyFPSPI.pdf>.

WILLIAM AND MARY TEACHING MODELS

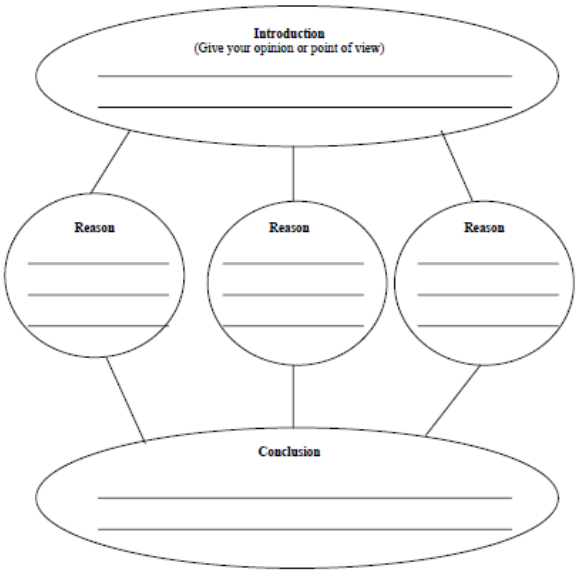
As teachers implement William and Mary Literature units, they will use a variety of teaching models that help students develop and refine their critical and creative thinking skills. An overview of the various models follow.

Hamburger Model of Persuasive Writing

The purpose of the Hamburger Model is to provide students with a familiar metaphor to aid them in developing a persuasive paragraph or essay. The model outlines the use of:

- an initial statement of one's point of view about an issue or question (the top bun)
- reasons or evidence - typically three examples - to support one's thinking (patties)
- elaboration on those reasons (the fixings)
- a concluding sentence or paragraph (the bottom bun)

On the CFGE Teaching Models page, you can find examples of three types of Hamburger Models.
The Primary Version – includes the "buns" and the "patties"
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/primaryhamburger.pdf



The Regular Version – includes the "buns", "patties", and "fixings"
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/hamburgermodelregular.pdf

The Dagwood Version – designed to include arguments of the contrasting viewpoint, thus has multiple layers of "patties" and "fixings."
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/dagwoodmodel.pdf

Jacob's Ladder Reading Comprehension Program

The *Jacob's Ladder Reading Comprehension Program* is reading program intended to supplement the William and Mary Language Arts Units. In this program, students have the opportunity to read poetry, myths/fables, and nonfiction texts. Each text is associated with a set of tasks that is organized around skill ladders, each of which is comprised of three rungs. As students move up the rungs of the ladder, the tasks become increasingly complex and intellectually demanding. The skill ladders correspond with the higher-level critical thinking skills that are focal points in the William and Mary language arts units.

Currently there are a number of leveled programs published by Prufrock Press.

- Jacob's Ladder Primary 1 (Grades K – 1)
- Jacob's Ladder Primary 2 (Grades 1 – 2)
- Jacob's Ladder Level 1 (Grades 2 – 3)
- Jacob's Ladder Level 2 (Grades 4 – 5)
- Jacob's Ladder Level 3 (Grades 5 – 6)
- Jacob's Ladder Levels 4 and 5 (Grades 7 – 9)

In the Fall of 2016, three new programs were published:

- Jacob's Ladder Nonfiction Grade 3
- Jacob's Ladder Nonfiction Grade 4
- Jacob's Ladder Nonfiction Grade 5

NOTE: Each book may be used across grade levels to provide increasing levels of difficulty to help students in mastering reading comprehension.

The RTG in your building will have copies of the different levels of the reading program and can provide you with additional information as needed. The CFGE site also has a link that provides background information about the program.
http://education.wm.edu/centers/cfge/curriculum/languagearts/materials/jacobsladders/index.php

Paul's Reasoning Model

The William and Mary Literature units incorporate the work of Richard Paul's Reasoning Model (1992). His model for critical thinking focus on eight elements: issue, purpose, point of view, assumptions, concepts, evidence, inferences, and implications or consequences. As teachers consider ways to introduce these terms to students, they may want to incorporate and issue, perhaps one at school or locally, that is familiar to the students.

The CFGE site includes links to:
A Reasoning Web (graphic organizer)
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/reasoningweb.pdf

Questions based on Elements of Reasoning
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/reasoningquestions.pdf

Reasoning About a Situation or Event

In addition, the CFGE includes a graphic organizer that can be used when students are "analyzing a specific event where two or more people or groups of people conflict with one another and have a vested interest in the outcome of the event."
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/reasoningevent.pdf

William and Mary Research Model

The William and Mary Research Model provides students with a framework that will help students approach an issue of significance and explore it individually and in small groups. Its organization follows major elements of reasoning. The model is organized in such a way that students will move through the following steps:

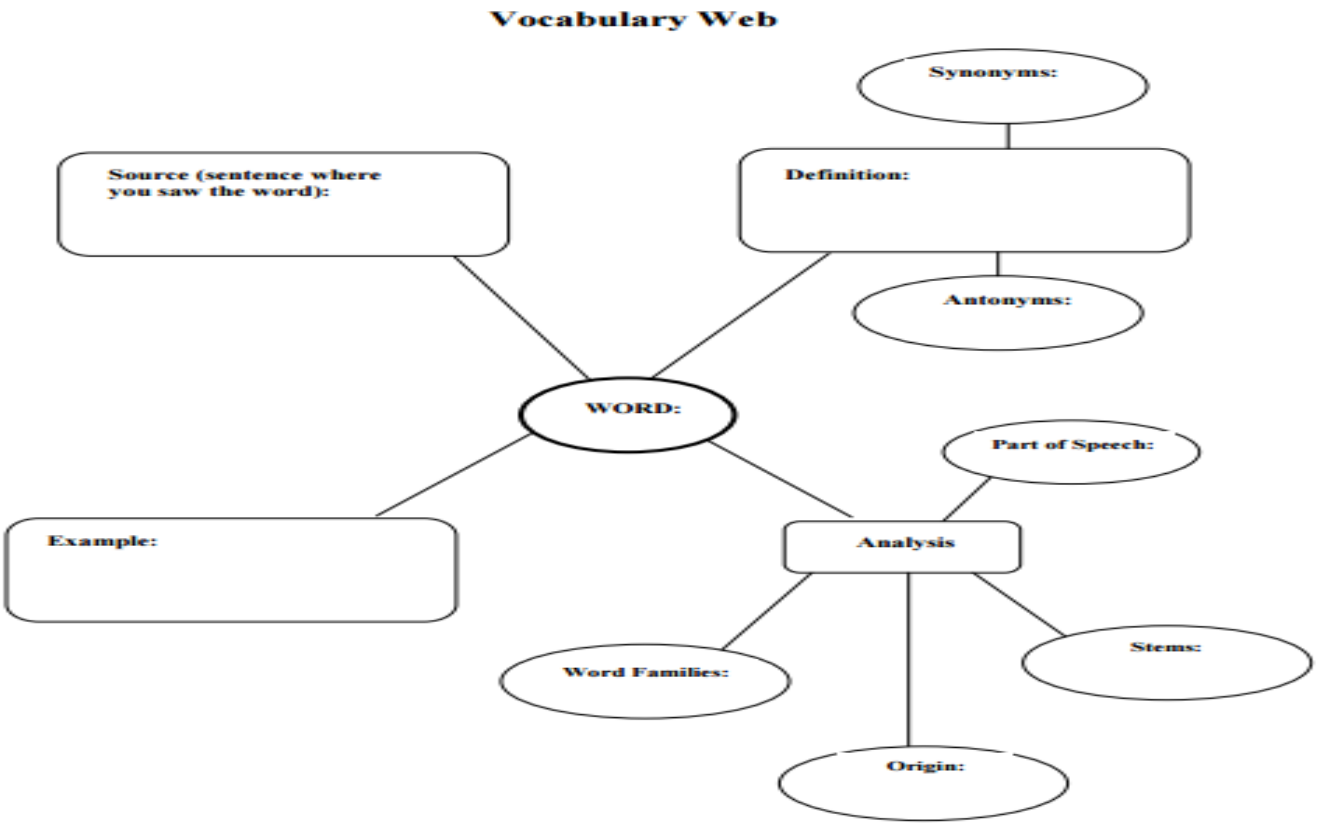
1. Identify an issue or problem
2. Read about the issue and identify points of view or arguments using various sources.
3. Develop a set of questions that can be answered with specific data sets.
4. Gather evidence using various research techniques (surveys, interviews, and/or primary/secondary source analysis
5. Manipulate data so that it can be interpreted.
6. Draw conclusions and make inferences.
7. Determine implications and consequences
8. Communicate one's findings.

More detailed information about each of these steps is available in the document linked below.
Research Model
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/researchmodel.pdf

Vocabulary Web

The purpose of the Vocabulary Web Model is to support students in their efforts to gain an in-depth understanding of interesting words. Students find definitions, synonyms and antonyms, and explore the word's etymology. Students also identify other words with the same meaning-based stem, or "word families." As students synthesize what they've learned about the words, they can then provide examples of the word in a number of formats: a sentence, an analogy, a visual representation, or some other creative-productive format. The Vocabulary Webs can also be an effective resource as teachers plan to implement APS Growing Words program and/or resources related to Michael Clay Thompson's Vocabulary Programs.

On the CFGE Teaching Models page, you can find examples blank samples of the web as well as a completed sample of the web.
***Note**: Some teachers find that students have an easier time working with the webs if they are reformatted slightly. This can be done relatively easily using a program like Microsoft Word. One such example is included on the next page.*
Blank Vocabulary Web:
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/vocabularyweb.pdf



Sample Vocabulary Web:
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/vocabularywebexample.pdf

VOCABULARY WEB (reformatted)

Word Families (related words)	Synonyms	Antonyms
	Dictionary Definition	

Analysis		Sentence in Text
Part of Speech		
	Origin	
Stems		
	Student Example	

Literature Web

The Literature Web model is used throughout the Literature Units and encourages students to consider five aspects[1] of a selection they are reading:

- **Key Words**: interesting, unfamiliar, striking, or particularly important words and phrases contained within the text
- **Feelings**: the reader's feelings, with discussion of specific text details inspiring them; the characters' feelings; and the feelings the reader infers the author intended to inspire
- **Ideas**: major themes and main ideas of the text; key concepts
- **Images and Symbols**: notable sensory images in the text, "pictures" in they reader's mind and the text that inspired them, symbols for abstract ideas
- **Structure**: the form and structure of the writing and how they contribute to meaning; may identify such features as use of unusual time sequence in narrative, such as flashbacks, use of voice, use of figurative language, etc.; style of writing

Samples of the models are available are available on the Center for Gifted Education website. Update versions of the webs are also in the newly released units. Talk to your RTG to see which resources are available as you plan for ways to meet the needs of your high-ability language arts learners.

Literature Web Template:
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/literatureweb.pdf

Literature Web Example:
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/literaturewebexample.pdf

[1] The five aspects are drawn directly from descriptions on the Teaching Models page of the CFGE website.
http://education.wm.edu/centers/cfge/curriculum/teachingmodels/index.php

Analyzing Primary Sources Model

The CFGE describes their primary source analysis model as "a means for teaching students how to confront a historical document, the questions to ask of it, and how to critically examine information they receive." Students use the model to help put the source into context and consider the purpose of the source. Students then move into schools of evaluation and interpretation, including determining the authenticity or reliability of the source as well as consequences or outcomes of the source.

Analyzing Primary Sources model
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/analyzingprimarysources.pdf

Analyzing Primary Sources model (simpler language)
http://education.wm.edu/centers/cfge/_documents/curriculum/teachingmodels/analyzingprimarysourcessimplerlanguage.pdf

***

Additional Resources for Primary Source Analysis

The Library of Congress (www.loc.gov/education/)

Teacher Resources

- Free resources to help teachers effectively use primary sources from the Library's vast digital collections in their teaching

Lesson Plans

- Teacher-created lesson plans using Library of Congress primary sources

Primary Source Sets

- Sets of primary sources on frequently taught topics

Professional Development

- Primary source-based, ready-to-use resources for teachers and facilitators

The Virginia Historical Society (http://www.vahistorical.org/)

On its Collections and Resources page, teachers will find resources that will provide primary sources that supplement the Grade 4 Social Studies Standards of Learning.

Creative Thinking
Creative Problem Solving (CPS)

The roots of the model go back to the work of Alex Osborn in the 1940s and Sid Parnes in the 1950s. There are numerous variations of Creative Problem Solving that one will fine with a quick Google search. For this section of the handbook, we will refer to a model used by the Creative Education Foundation (CEF), which they describe as focusing on "an evolution of the Osborn-Parnes Creative Problem Solving process called the CPS Learner's Model."

Core Principles of Creative Problem Solving

CPS operates under two primary assumptions:

- Everyone is creative in some way
- Creative skills can be learned and enhanced

The CPS model is comprised of four stages with a total of six explicit process steps, each of which focuses on divergent and convergent thinking.

Stage	Step	Purpose
CLARIFY	Explore the Vision	Identify the goal, wish, or challenge.
	Gather Data	Describe and generate data to enable a clear understanding of the challenge.
	Formulate Challenges	Sharpen awareness of the challenge and create challenge questions that invite solutions.
IDEATE	Explore Ideas	Generate ideas that answer the challenge questions.
DEVELOP	Formulate Solutions	To move from ideas to solutions. Evaluate, strengthen, and select solutions for best "fit."
IMPLEMENT	Formulate a Plan	Explore acceptance and identify resources and actions that will support implementation of the selected solution(s).

Learner's Model based on work of G.J. Puccio, M. Mance, M.C. Murdock, B. Miller, J. Vehar, R. Firestien, S. Thurber, & D. Nielsen (2011)

To learn more about CPS, as well as divergent thinking, convergent thinking, and brainstorm, teachers can visit the CEF website:
http://www.creativeeducationfoundation.org/creative-problem-solving/the-cps-process/

Source: "The CPS Process." Creative Education Foundation, n.d. Web. 9 Aug. 2016. <http%3A%2F%2Fwww.creativeeducationfoundation.org%2Fcreative-problem-solving%2Fthe-cps-process%2F>.

Fluency, Flexibility, Originality, Elaboration (FFOE)

These thinking strategies and processes help students brainstorm, make connections, and develop creative ideas. Sample activities that show how this strategy can be woven into grade-level content appear below.

- ***Fluency*** – The ability to generate numerous ideas or alternatives to solve a problem that requires a novel solution
- ***Flexibility*** – The ability to consider a number of different perspectives in an effort to generate a wide variety of ideas or alternatives.
- ***Originality*** – The ability to generate novel, unique, and rare ideas or alternatives to solve a problem that requires an innovative solution
- ***Elaboration*** – The ability to generate a large number of minute details or descriptions that explain a specific and novel solution to a problem

Kindergarten Sample (Topic: Holidays)

- ***Fluency***: List as many foods as you can think of that you might eat on Thanksgiving.
- ***Flexibility***: Now imagine that Thanksgiving didn't happen because of all the turkeys went on vacation. What would be some other ways you and your family could celebrate?
- ***Originality***: If you could make your own holiday, what would you call it? Try to give it a name that you don't think anyone else will come up with.
- ***Elaboration***: Now design a Holiday Card to help everyone understand what makes your day so special. What details can you include so that everyone understands as much as possible about your new day?

Grade 2 Sample (Topic: Famous Americans)

- ***Fluency***: Make a list of as many Famous Americans as you can think of.
- ***Flexibility***: Choose one Famous American and imagine he/she has traveled through time and is now the principal of your school. What would be different? Use pictures or words to describe what may change.
- ***Originality***: Create a nickname, a slogan, or a catchy phrase that sums him/her up.
- ***Elaboration***: Add your **Originality** idea to the front side of the $20. What additional pictures, images, and symbols would you add to that bill that represent your Famous American? Remember, there are two sides to a $20.

Grade 5 Sample (Topic: Systems)

- ***Fluency***: List of all the systems needed for a civilization to flourish.
- ***Flexibility***: Discuss how the civilizations might be affected if one or more of those systems "failed."
- ***Originality***: Brainstorm ideas for a failed ancient civilization. Think about the 5 W's while you are brainstorming.
- ***Elaboration***: Using your social studies textbook as a model, design a 1-2 page description of the rise and fall of your civilization. Use nonfiction text features (maps, charts, diagrams, tables, headings, etc.) to further elaborate.

SCAMPER

SCAMPER was developed by Bob Eberle. Students use the checklist format to brainstorm multiple possibilities to create unusual connections between objects, and/or ideas. The model is used to generate unique thought, explore relationships, and search for new or different combinations. Students have the opportunity to share ideas using originality and elaboration.

SCAMPER

- encourages fluid, productive, flexible and divergent thinking
- provides structure for open-ended responses
- encourages problem solving
- stimulates creativity and imagination
- promotes risk taking
- uses higher-level questioning strategies
- applies previous knowledge to new situations,
- encourages inventive, "out-of-the-box" thinking

Substitute	To have a person or thing act or serve in the place of another. Who else? What else? Other place? Another other?
Combine	To bring together, to unite. Combine what? Bring whom together? Combine purposes? Ideas? Materials?
Adjust	To adjust for the purpose of suiting a condition. Reshape? Tune-up? Tone-down? Accommodate? Agree?
Modify *-or-* **M**agnify *-or-* **M**inify	To alter, to change the form or quality. A different color, sound, motion, or form? Another shape, taste, or odor? To enlarge, to make greater in form or quality. How to make something higher, stronger, thicker, or faster? To make less, to minimize. How to make what something smaller, lighter, slower, less frequent? How to shrink or reduce?
Put To Other Uses	Use for purpose other than originally intended. New uses as it is? Other place to use it? Use when or how?
Eliminate	To remove, simplify, omit, or get rid of a quality. What to cut out or weed out? Remove/simplify.
Reverse -or- **R**earrange	To place opposite or contrary. Flip 180° To turn what around? Upside down? Inside out? Change the order or sequence. Another pattern? Layout? Scheme? How can you regroup? Redistribute? Plan?

Additional Readings:

Scamper, (1977) and Scamper On, (1984) by Bob Eberle.

Classroom Ideas for Encouraging Thinking and Feeling by Frank E. Williams

DECISION AND OUTCOMES

16 HABITS OF MIND

In the book *Developing Minds: A Resource Book for Teaching Thinking*, Arthur L. Costa describes a habit of mind as "a disposition toward behaving intelligently when confronted with problems." He goes on to identify 16 habits of mind – "specific behaviors that human beings engage in when we respond intelligently to problems." (Arthur L. Costa and Bena Kallick, *Habits of Mind: A Developmental Series*, Copyright © 2000) Source: http://www.chsvt.org/wdp/Habits_of_Mind.pdf

1. ***Persisting:*** Sticking to task at hand; Follow through to completion; Can and do remain focused.
2. ***Managing Impulsivity:*** Take time to consider options; Think before speaking or acting; Remain calm when stressed or challenged; Thoughtful and considerate of others; Proceed carefully.
3. ***Listening with Understanding and Empathy:*** Pay attention to and do not dismiss another person's thoughts, feeling and ideas; Seek to put myself in the other person's shoes; Tell others when I can relate to what they are expressing; Hold thoughts at a distance in order to respect another person's point of view and feelings.
4. ***Thinking Flexibly:*** Able to change perspective; Consider the input of others; Generate alternatives; Weigh options.
5. ***Thinking about Thinking (Metacognition):*** Being aware of own thoughts, feelings, intentions and actions; Knowing what I do and say affects others; Willing to consider the impact of choices on myself and others.
6. ***Striving for Accuracy:*** Check for errors; Measure at least twice; Nurture a desire for exactness, fidelity & craftsmanship.
7. ***Questioning and Posing Problems:*** Ask myself, "How do I know?"; develop a questioning attitude; Consider what information is needed, choose strategies to get that information; Consider the obstacles needed to resolve.
8. ***Applying Past Knowledge to New Situations:*** Use what is learned; Consider prior knowledge and experience; Apply knowledge beyond the situation in which it was learned.
9. ***Thinking and Communicating with Clarity and Precision:*** Strive to be clear when speaking and writing; Strive be accurate to when speaking and writing; Avoid generalizations, distortions, minimizations and deletions when speaking, and writing.
10. ***Gathering Data through All Senses:*** Stop to observe what I see; Listen to what I hear; Take note of what I smell; Taste what I am eating; Feel what I am touching.
11. ***Creating, Imagining, Innovating:*** Think about how something might be done differently from the "norm"; Propose new ideas; Strive for originality; Consider novel suggestions others might make.
12. ***Responding with Wonderment and Awe:*** Intrigued by the world's beauty, nature's power and vastness for the universe; Have regard for what is awe-inspiring and can touch my heart; Open to the little and big surprises in life I see others and myself.
13. ***Taking Responsible Risks:*** Willing to try something new and different; Consider doing things that are safe and sane even though new to me; Face fear of making mistakes or of coming up short and don't let this stop me.
14. ***Finding Humor:*** Willing to laugh appropriately; Look for the whimsical, absurd, ironic and unexpected in life; Laugh at myself when I can.

15. ***Thinking Interdependently:*** Willing to work with others and welcome their input and perspective; Abide by decisions the work group makes even if I disagree somewhat; Willing to learn from others in reciprocal situations.
16. ***Remaining Open to Continuous Learning:*** Open to new experiences to learn from; Proud and humble enough to admit when don't know; Welcome new information on all subjects.

Plus-Minus/Modify-Interesting or Plus-Minus-Implications (PMI)

Students use the PMI structure to keep an open-minded attitude and consider an issue from multiple perspectives. Younger students may consider what would make a certain idea interesting (i.e. what if books were round?), older students may use the "I" to consider implications, as used in the case below. The following activity is drawn from the short story "How the Camel Got His Hump" from the Junior Great Books Series 2 anthology.

"How the Camel Got His Hump"
*Session 3: Plus, Minus, Implications**

> *It is the working man who is the happy man. It is the idle man who is the miserable man.*
> Benjamin Franklin

Decision: I Choose to Work		
Plusses	Minuses	Implications*

What do you think about this quote? Today we will explore the decision **to work or remain idle** using a thinking skill called Plus, Minus, Implications.

Decision: I Choose to Remain Idle		
Plusses	Minuses	Implications*

For this activity, think of **implications** as possible *future* effects or results.

Problem-Based Learning

Problem-based Learning: PBL takes place in a learning environment in which the problem drives the learning. That is, before students learn some knowledge they are given a problem. The problem is posed so that the students discover that they need to learn some new knowledge before they can solve the problem. Problem-based Learning environments might be a research projects such as an engineering design that is more than a synthesis of previously learned knowledge.

Problems:

- are ill-structured
- are messy and complex in nature
- require inquiry, information-gathering, and reflection
- are always changing and tentative

- have no simple, fixed, formulaic solution

The problems demand:

- acquisition of critical knowledge
- problem solving proficiency
- self-directed learning and/or team participation skills

The Flow of the Problem:

- Problem Engagement – students meet problem with opening scenario
- Inquiry and Investigation – gather answers to questions on Learning Issues Board
- Problem Definition – acquire clear understanding of problem (issues to address + constraints that are parameters of their actions)
- Problem Resolution – resolve problem minimizing undesirable conditions and acknowledging constraints
- Problem Debriefing – compare thinking process to that of experts who have solved or are trying to solve a similar problem

LECTURE V. PBL

Curriculum as Prescription	*Curriculum as Experience*
Teacher/Expert-centered	Student/Learner-centered
Linear and rational	Coherent and relevant
Part to whole organization	Whole to part organization
Teaching as transmitting	Teaching as facilitating
Learning as receiving	Learning as constructing
Structured environment	Flexible environment

Project-Based Learning

Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge.

There are numerous resources available to teachers who are interested in learning about this method, among them the work of the Buck Institute of Education (BIE). On its web site (www.bie.org), BIE describes a set of Essential Project Design Elements, which include:

- **Key Knowledge, Understanding, and Success Skills** - The project is focused on student learning goals, including standards-based content and skills such as critical thinking/problem solving, collaboration, and self-management.
- **Challenging Problem or Question** - The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge.
- **Sustained Inquiry** - Students engage in a rigorous, extended process of asking questions, finding resources, and applying information.
- **Authenticity** - The project features real-world context, tasks and tools, quality standards, or impact – or speaks to students' personal concerns, interests, and issues in their lives.
- **Student Voice & Choice** - Students make some decisions about the project, including how they work and what they create.
- **Reflection** - Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them.
- **Critique & Revision** - Students give, receive, and use feedback to improve their process and products.
- **Public Product** - Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

The BIE site also has a **Search function** will allows teachers to look projects that have been curated by BIE and were gathered from online project libraries. http://bie.org/object/tools/project_search

Additional Readings:

"Project-Based Learning: A Short History" – article from Edutopia (2011)
http://www.edutopia.org/project-based-learning-history

"Seven Essentials for Project-Based Learning" – article from Educational Leadership
http://www.ascd.org/publications/educational_leadership/sept10/vol68/num01/Seven_Essentials_for_Project-Based_Learning.aspx

MAKING CONNECTIONS

Analogies and Synectics: Making the Familiar Strange

The purpose of a metaphor is to shatter and to increase our sense of reality by shattering and increasing our language. Paul Ricoeur, French linguist

The use of analogies nurtures originality, sharpens students' powers of observation, and promotes divergent and analytical thinking. Analogies are appropriate for all grade levels and can be applied to all content areas. Students can improve vocabulary usage and problem solving skills as well as observe unique perspectives and points-of view.

Synectics Theory

- Creativity can be increased through an understanding of metacognition.
- In creative processes, the emotional component is more important than the intellectual, the irrational more important than the rational.
- It is the emotional, irrational elements that can and must be understood in order to increase the probability of success in a problem-solving situation. Cambridge Synectics Group, 1944

Three metaphorical operations

1. *Direct analogy*
    - Simple comparison: compare novel characters, themes, systems, etc.
    - Extend thinking: compare unlike objects, ideas, etc.
2. *Personal analogy*
    - Being the thing: "I'm like a river because
    - "How does it feel? "How would an ice cream cone feel being attached to a month?" "When does a guitar feel exhausted?"
3. *Symbolic analogy*
    - Compressed conflict (oxymoron): create seemingly contradictory word pairs such as "giant shrimp"
    - What has more elasticity, honesty or friendship?

Visualization

There are a number ways in which we use the technique of visualization. Elite athletes have used the technique to simulate the sights, sounds, and feelings associated with a particular competitive event. Young readers may close their eyes and imagine the world and creatures that Max encounters in *Where the Wild Things Are.* Students in a history class may use the technique to imagine what it would have been like to be in a particular time/place from history what.

While visualization may be defined in a number of ways depending on the context in which it is used. In essence, this is a technique that involves forming mental images of something that is not actually present.

Description of Strategy:

- Mental images are evoked, controlled, and directed.
- Mental images can take the form of static pictures, active "mental movie" sequences, or original student created ideas.
- Process consists of three components: pictures and visuals, feelings and emotions, thoughts and understandings.

Mind Mapping

One popular visualization technique is Mind Mapping. Tony Buzan, the inventor of the Mind Mapping, describes a Mind Map as "a powerful graphic technique which provides a universal key to unlock the potential of the brain. It harnesses the full range of cortical skills – word, image, number, logic, rhythm, colour and spatial awareness – in a single, uniquely powerful manner."

Buzan outlines seven steps to follow when creating a Mind Map.

1. Start in the center of a blank page turned sideways, as this gives students freedom to spread out in all directions and express ideas more freely and naturally.
2. Use an image or picture for your central idea.
3. Use colors throughout to create a more vibrant Mind Map.
4. Connect main branches to the central image and connect your second- and third-level branches to the first and second levels, etc. Connecting branches enables students to associate ideas with one another and can help them understand and remember ideas more readily.
5. Make your branches CURVED rather than straight-lined.
6. Use one key word per line. Single key words give the Mind Map more power and flexibility.
7. Use images throughout – after all, images "are worth a thousand words."

A four-headed dragon is used to represent a student's understanding of different strands covered in a math class.

Source: http://www.tonybuzan.com/

POINT OF VIEW (DIFFERENT PERSPECTIVES)
Student Debates

Debate is a series of presented arguments for and against a topic or question. Individuals or teams present opposing points. Formal debates have rules and formats which include specific procedures and time guidelines. Less formally structured discussions can be a good introduction to debating.

> *It is better to debate a question without settling it than to settle a question without debating it.*
> - Joseph Joubert

Debate is a series of presented arguments for and against a topic or question. Individuals or teams present opposing points. Formal debates have rules and formats which includes specific procedures and time guidelines. Less formally structured discussions can be a good introduction to debating. Debate is an effective strategy. It supports student learning:

- Improves analytical thinking and research skills.
- Builds speaking and communication skills.
- Allows for the discussion of important, real world issues.
- Engages students in investigating complex issues and supporting them with evidence.
- Sharpens critical and active listening skills.
- Requires students to consider multiple perspectives.
- Offers students opportunities to engage in life situations of cooperative deliberation and advocacy.
- Promotes quick, on-your-feet thinking

Setting up a debate:

1. Select topic(s) or question(s)
2. Determine roles (Pro or Con)
3. Establish procedures / Rules for debate
4. Organize teams (set timeline, responsibilities, etc.)
5. Students research, write, prepare, and practice
6. Debate (according to established procedures)
7. Brings to closure (including audience vote & class discussion/evaluation)

DeBono's Six Thinking Hats: A Method for Parallel Thinking

Who is Dr. Edward DeBono?

- Rhodes Scholar, professor, and international consultant
- Author of best-selling books including Lateral Thinking, DeBono's Thinking Course, Teach Your Child How to Think, and Six Thinking Hats

What is parallel thinking?

- All ideas are accepted
- Is concerned with 'what can be' as opposed to 'what is'
- Is not interested in argument, confrontation, adversarial thinking
- Almost the exact opposite of traditional "Western thought" (a la Socrates, Aristotle, Plato); more Confucian in approach

What are the benefits of the Six Thinking Hats Method?

- Can be used with people of all ages to help focus thinking
- Provides a simple and practical framework for more productive thinking
- Can be used as a common language among problem solvers
- Saves time and helps avoid confusion by focusing on one thing at time
- Removes ego from thinking sessions
- Shows that thinking is not just a matter of proving one's intelligence or being able to win an argument

How does the method work?

- Each of the six different colored hats stands for one kind of thinking; each is equally valuable and importance
- You can put on or take off a hat, switch hats, or ask someone else to do the same
- When you wear a hat, you use only the type of thinking indicated by that hat's color

WHITE HAT	Questions and Sources: neutral, objective, facts, figures, research
RED HAT	Emotions and Feelings: anger, rage, personal motives
BLACK (or PURPLE) HAT	Caution, Judgment, and Assessment: somber, negative serious, weaknesses
YELLOW HAT	Benefits, Workability and Likelihood: sunny, positive, optimistic, strengths
GREEN HAT	Creativity, Possibilities, and Alternatives: fertile growth, new ideas
BLUE HAT	Purpose, Focus, Agenda, and Summary: cool control, organization, oversight

Other DeBono Strategies: PMI (Plus, Minus, Interesting), CAF (Consider All Factors), OPV (Others Points of View). APC (Alternatives, Possibilities, Choices)

RAFT

ROLE – AUDIENCE – FORMAT – TOPIC

RAFT activities are based on the work of Doug Buehl in Teaching Reading in the Content Areas: If Not Me Then Who? RAFT assignments however, can be structured for any content area. They provide students with opportunities for developing products for designated audiences, based on specific topics, in a defined format, from a particular point of view.

Directions:

- The teacher assigns a RAFT task to each student based on interest and/ or learning profile.
- Students work alone to complete their task.
- Students review one another's work and make suggestions for improvement.
- When changes are made, the teacher checks each student's work for accuracy and quality.
- As students become more comfortable with the process, provide them with list of options for each component and let them "build" their own RAFT.
- Eventually students may choose a role, audience, format, and topic entirely on their own.

SAMPLE RAFT (Grade 4 Science: Life Processes – Plants)

ROLE	AUDIENCE	FORMAT	TOPIC
Inventor	Farmers	Scale models (including labels)	A series of artificial pollinating machines
A comic book creator	The owner of Marvel Comics	A comic strip	"The Adventures of Super Fern and Moss Boy"
Pollen	Someone with a pollen allergy	A friendly letter	The good things about pollen
Botanist	Members of the Plant Adaptation Award Committee (PAAC)	A collection of "plant biographies"	Nominees for the 2013 Plant Adaptation of the Year Award (PAYA)
Seed	Poster Publishing Company	An poster that includes an illustrated timeline/cycle	*From Seed to Shining Seed: the life cycle of a plant*
Mr. Potato Head	Executives at Hasbro Toy Company	A sales pitch w/detailed diagram and prototype	A new toy called Mr. Plant Head

SAMPLE RAFT (Kindergarten Science: Life Processes: Living Things)

ROLE	AUDIENCE	FORMAT	TOPIC
Carpenter	A dog	Drawing/Diagram	The carpenter's idea for a state-of-the-dog shelter
An oak tree	A group of acorns	Poster/Chart	The ways that plants and/or animals change as they grow
Student	Another Student	T-Chart	The differences between living and nonliving things
A flower	A gardener	A Plant First Aid Kid	The life needs of plants
Momma Bird	Baby Bird	Picture book	The ways that young plants and animals can be similar but not identical body
Butterfly	Snake	Trading Cards	The different types of body coverings that vertebrates* have.

Note: the vocabulary and/or syntax presented in this activity may need to be modified to make the activities more accessible for younger students, as will the language of any associated rubrics.

Socratic Seminar and Junior Great Books

Let us examine this question together, my friend, and if you can contradict anything that I say, do so, and I will be persuaded. - Socrates (469 – 399 B.C.)

A Socratic Seminar is a collaborative discussion that involves a thoughtful, open-ended dialogue. Participants share their ideas and listen respectfully to the views of others. Seminars enhance learning by developing strategies that increase student knowledge base and promote leadership and responsibility.

Advantages*:*

- Addresses complex issues and ideas
- Exposes students to a wide range of rich and varied materials
- Connects to the curriculum
- Is ambiguous, challenging, and stretches student thinking
- Leads to enduring understandings and exploration of "big ideas"
- Addresses student learning preferences, readiness, and interests
- Fosters active participation and listening
- Encourages articulate, concise language by supporting opinions with evidence
- Teaches respect for diverse ideas, people, and practice

Junior Great Books	Socratic Seminar
Created in 1962 by Junior Great Books Foundation at University of Chicago.	Begun by the Paideia Group- based on upon book, The Paideia Proposal, 1982
Begun as a program designed for higher-level learners, evolved to include teacher's editions, reading and writing activities to use with all students.	Based upon the philosophy that "the best education for the best is the best education for all." Follows the Paideia Principles.
Early editions focused mainly on writings of "Dead White Men", has evolved to include multicultural literature.	No specific designations for the appropriate seminar material. May include nonfiction writing and concepts
Uses "Shared Inquiry" method.	Leader is equal to participant
Very structured training, including certification upon completion.	Original training by the Paideia group. Others have picked up on the trend. At present there is no certification.
Heavy reliance upon core of parents and other volunteers who use it as a "supplemental" reading program.	Part of an overall teaching philosophy, the core curriculum of entire schools, "Wednesday Revolution"
Very specific directions given to "Shared Inquiry" leader.	Very fluid guidelines, emphasis on developing questions, discussion.
Questions provided, leader is encouraged to create others as well.	Anyone can run Socratic Seminar.

Socratic Seminar

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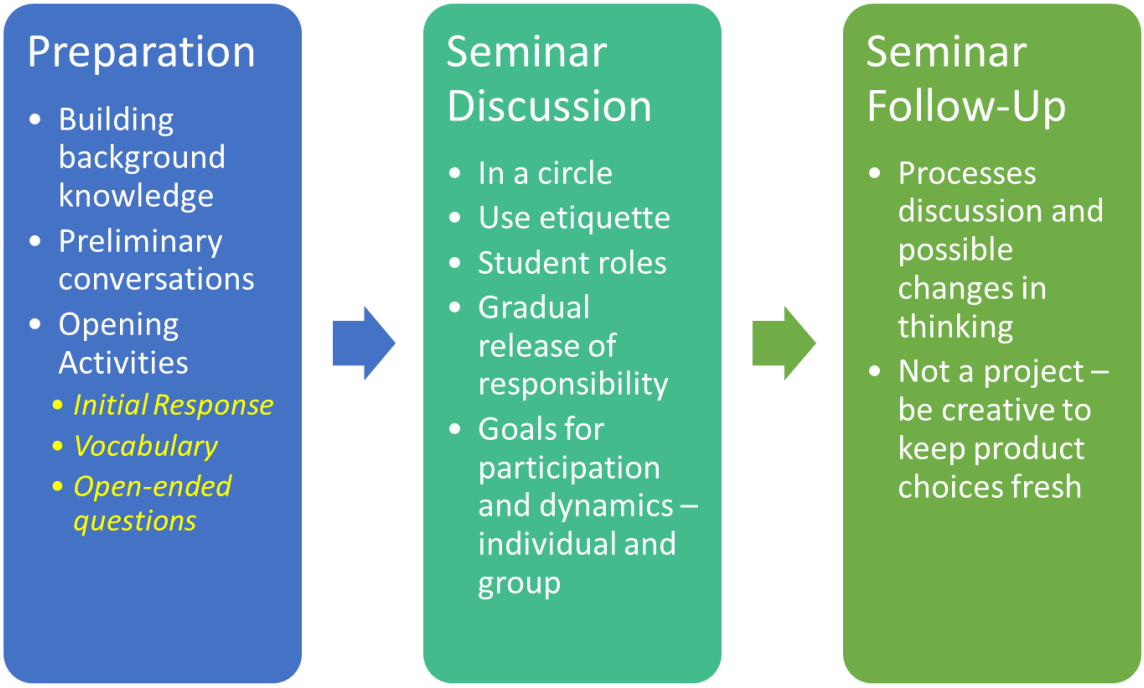
Structure

While not all teachers will structure exactly the same way, there is a basic framework that teachers often use when implementing this instructional approach. The framework is comprised of three components.



Handbook Connection: Many of the resources contained within this handbook (Jacob's Ladder, W & M Literature Units, Social Studies Alive!, Project DBQ, Taba's Concept Development Model, etc.) can serve as a springboard into a Socratic Seminar. If you are interested in learning more about this approach with your students, please talk with the RTG in your school.

Junior Great Books (available at www.greatbooks.org)

Junior Great Books Series is an anthology comprised of various outstanding stories, grouped by theme, designed to capture students' imaginations and sustain a thoughtful process of reading, writing, and discussion. Teachers can use the student anthologies with all students as part of an inquiry-based and collaborative approach to reading instruction.

A **typical instructional unit** is comprised of a series of Activity Sessions.

Session 1: Pre-Reading Activity *(5 min)* and First Reading *(30 – 40 minutes)* *Pre-reading Activity* - Students explore a concept relevant to the story they will be reading *First Reading* - Students explore a concept relevant to the story they will be reading
Session 2: Second Reading *(30 – 40 minutes)* Students read along as the story is reread, engaging in activities that help them explore the story more deeply
Session 3: *Shared Inquiry Discussion* *(30 – 40 minutes)* Students explore the story's meaning by discussing an interpretive question.
Session 4 Options: *Written and Creative Response* *(Times Vary)* Students write a brief expository essay or a piece of creative writing based on the story, or explore the story through another creative form.
Additional Sessions: Curriculum Connections and/or Unit-Wrap Up *(Times Vary)* *Curriculum Connections* - Students engage in suggested activities that connect the story to the rest of your curriculum. *Unit Wrap-Up* - Students complete the unit with a theme connection, multiple-choice test, portfolio assessment, or reflection on discussion.

Additional Resources:

The Teacher's Editions include:

- A unit overview for each story, planning details. and a big-picture snapshot of the unit
- A unit guide that walks you through each day's lesson
- Annotated reading selections with notes, icons, and highlights that correspond to activity instructions
- A Teacher Resources section for each unit that contains a range of additional support materials.

Video Tutorials:

If you are interested in learning more about these different instructional components, Video Tutorials are available for viewings at: http://www.greatbooks.org/great-books-k-12-programs/video-tutorials/

Your RTG:

Talk with the RTG in your building should you have further questions about how this resource might work with the framework of your language arts program.

The **Junior Great Books** anthologies incorporates a process of Shared Inquiry as students explore a variety of high-quality literature and engage in student-centered discussion. Talk with your RTG or visit the Great Books web page, particularly its section about Resources and Alignments, to learn more about how you may be able use this program to supplement your language arts workshop model.

Resources and Alignments: http://www.greatbooks.org/great-books-k-12-programs/resources/

Structured Academic Controversy (SAC)

The Structured Academic Controversy technique was developed by cooperative learning researchers David and Roger Johnson of the University of Minnesota as a way to provide structure and focus to classroom discussions. Unlike debates where students typically to "win" the discussion, SAC is meant to help students better understand alternate perspectives.
Working in pairs and then coming together in four-person teams, students explore a question by reading about and then presenting contrasting positions. Afterwards, they engage in discussion to reach consensus.

Teachers prepare by choosing an historical question that lends itself to contrasting viewpoints. Teachers will then find and select two or three documents that could be used to support each side, using primary and secondary sources that are available in print or online. Lastly, teachers will have to consider timing, preparation of materials, and grouping strategies prior to getting students started.

Once preparation is complete, SAC makes use of five basic steps and various graphic organizers to assist students as they move through the process.

1. Students are organized into four-person teams comprised of two sets of partners.
2. Each pair of partners reviews the materials that represent the two different positions related to the issue. Each pair analyzes documents and prepares their position.
3. The four-person teams come together and share their positions with one another.
4. Instead of refuting the other position, each team repeats what they have heard from the presenting pair. Only once the presenting team feels that its position has been represented accurately do the teams switch roles.
5. After both sides shared their ideas, the groups begin a conversation that is aimed at reaching consensus about the issue. If consensus cannot be achieved, the team clarifies their differences of opinion.

Additional information and resources about SAC can be found on the Teaching History website:
http://teachinghistory.org/teaching-materials/teaching-guides/21731

QUESTIONING

Bloom's Taxonomy

Bloom's taxonomy is a hierarchical model that includes six main levels of thinking. Each level of the taxonomy describes progressively higher level thinking skills. Initially the levels were described as nouns (knowledge, comprehension, application, analysis, synthesis, evaluation) but have been revised as verbs (remember, understand, apply, analyze, evaluate, create) to reflect the idea that thinking is an active process.

CATEGORY	DEFINITION	TRIGGER WORDS	POSSIBLE PRODUCTS
CREATING	Re-form individual parts to make a new whole.	Compose, design, invent, create, construct, hypothesize, forecast, rearrange parts, imagine.	Lesson plan, song, poem, story, invention.
EVALUATING	Judge value of something. Support judgment.	Judge, evaluate, give opinion, viewpoint, prioritize, recommend, critique.	Rating, prioritized list, decision, editorial, debate, critique, defense, and verdict.
ANALYZING	Understand how parts relate to a whole. Understand structure and motive. Note fallacies.	Investigate, classify, categorize, compare, contrast, solve	Survey, questionnaire, plan, solution, report, prospectus.
APPLYING	Transfer knowledge learned in one situation to another.	Demonstrate, cook, use guides, maps or charts, build.	Recipe, model, artwork, crafts, demonstration.
UNDERSTANDING	Demonstrate basic understanding of concepts and curriculum. Translate into other words.	Restate, give examples, explain, summarize, translate, show, symbolize, edit.	Drawing, diagram, response to question, revision.
REMEMBERING	Ability to remember something previously learned.	Tell, recite, list, memorize, remember, define, locate.	Workbook pages, quiz, test, exam, vocabulary, facts in isolation.

Questioning for Understanding:

Varying questioning strategies is an effective way to differentiate instruction. Following are structures that can be used to formulate and guide the questioning process.

General strategies for asking effective questions

- Pace questions and use Wait Time.
- Establish ground rules.
- Use Think-Pair-Share and other collaborative structures.
- Vary the way students are identified to respond: every student, volunteers, peer selection, random, name card rotation, targeted students, etc.
- Pose both short and long term questions; limit the number of questions asked.
- Encourage multiple responses; probe for depth and clarity; paraphrase to check for accuracy.
- Redirect questions and advocate for multiple points of view.

Facets of Understanding: Grant Wiggins & Jay McTighe (Understanding by Design)

Wiggins' and McTighe's ***Facets of Understanding*** "were conceived as six equal and suggestive indicators of understanding, and thus are used to develop, select, or critique assessment tasks and prompts." [1] The Six Facets of Understanding provide students with opportunities to demonstrate that they can:

- **explain** concepts, principles, and/or processes
- **interpret** by making sense data, text, and experience
- **apply** what the know in new and complex contexts
- **demonstrate perspective** by seeing "big picture" and other points of view
- **display empathy** by perceiving sensitively and walking in someone else's shows
- **have self-knowledge** by showing meta-cognitive awareness, using habits of mind, and being reflective.

Richard Paul's Questioning Model

In *The Thinker's Guide to The Art of Socratic Questioning* (2007) authors Linda Elber and Richard Paul offer a set of guidelines[2] to aid in the formulation of questions. One can deepen understanding an dchallenge assumptions by asking:

1. Questions about Goals and Purposes
2. Questions about Questions
3. Questions about Information, data, and experience
4. Questions about Inferences & Conclusions
5. Questions about Concepts and Ideas
6. Questions about Assumptions
7. Questions about implications and consequences
8. Questions about Viewpoints and Perspectives

Resources:

- *Active Questioning*, *Thinking is The Key*, and *Questioning Makes the Difference* by Nancy Johnson
- *Cooperative Learning and Higher Level Thinking* by Chuck Wiederhold

Sources:

1 McTighe, Jay, and Grant Wiggins. "UNDERSTANDING BY DESIGN® FRAMEWORK.". Ascd.org. Web. 9 Aug. 2016. http://www.ascd.org/ASCD/pdf/siteASCD/publications/UbD_WhitePaper0312.pdf

2 Paul, Richard, and Linda Elder. *The Thinker's Guide to the Art of Socratic Questioning. Dillon Beach, CA: Foundation for Critical Thinking, 2006. Print.*

Question Formulation Technique (QFT)

www.rightquestion.org

The Question Formulation Technique (QFT) is a simple step-by-step, rigorous process that facilitates the asking of many questions. The process includes the following steps:

1. **A Question Focus (QFocus)** - A stimulus; a springboard you will use to ask questions. The QFocus can be a topic, image, phrase or situation that will serve as the "focus" for generating questions. An effective QFocus should be clear, should provoke and stimulate new lines of thinking and should not be a question.

2. **The Rules for Producing Questions** - Each of the four rules supports a behavior that facilitates effective question formulation. § Ask as many questions as you can § Do not stop to discuss, judge, or answer any questions § Write down every question exactly as it is stated § Change any statement into a question.

3. **Producing Questions** - You will use the Question Focus (QFocus) to formulate as many questions as you can. Ask all kinds of questions about the topic, phrase, image, situation, etc. presented.

4. **Categorizing Questions** - Once you have a list of questions, the next step is to learn about two different types of questions you might have on your list: closed-ended questions– questions that can be answered with a "yes" or "no" or with one word - and open-ended questions –questions that require and explanation.

5. **Prioritizing Questions** - You might have a lot of questions on your list. It will be easier to work with the questions if some priorities are established. You will now choose three questions based on actions you want to take. For example, three most important questions, three questions you would like to address first, three questions you want to explore further, etc.

6. **Next Steps** - Your questions can now be put into action. You might already have criteria on what to do with the questions. For example, you may use the questions to do research, develop a project, use the

questions as a guide, etc.

7. **Reflection** - This is the last step in the process. It is now time to reflect on the work you have done: what you have learned and how you can use it. The reflection helps internalize the process, its value and how to apply it further.

Resources:
Make Just One Change: Teach Students to Ask Their Own Questions
by Dan Rothstein and Luz Santana
www.rightquestion.org

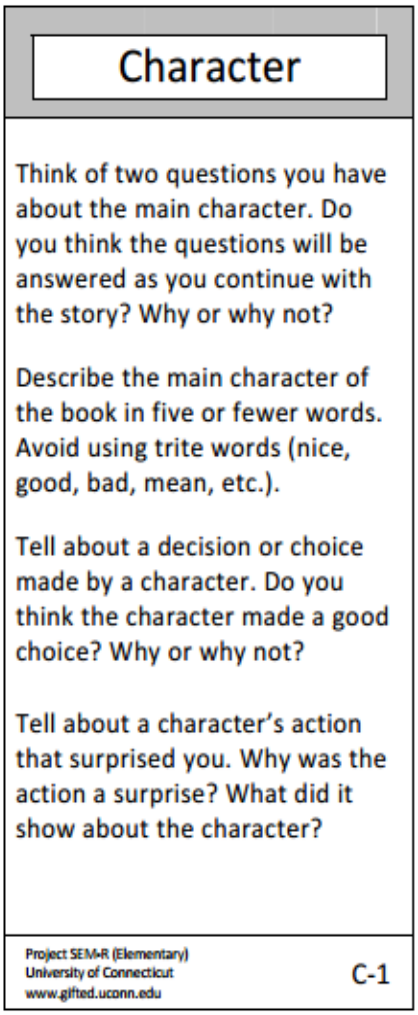
SEM-R Questions

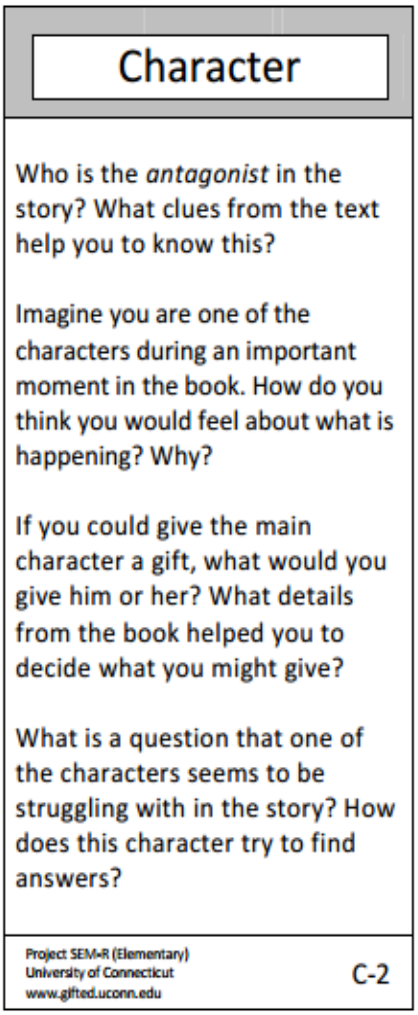
The Schoolwide Enrichment Model Reading Framework (SEM-R) is an enrichment-based reading program designed to:

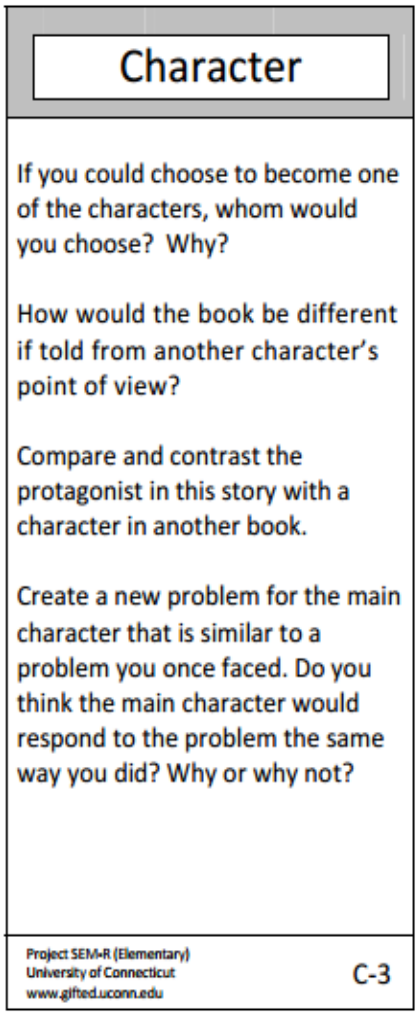
- Stimulate interest in and enjoyment of reading
- Promote and develop higher reading achievement
- Improve self-regulation and automaticity in reading
- Encourage students to select high-interest books that are slightly to moderately above their current reading levels
- Create independent, lifelong readers

Teachers who are using the SEM-R framework use Supported Independent Reading (SIR) time to meet individually with students. During those meetings, they can provide instruction in strategy use as well as higher-order questions to help students think critically, creatively, and/or conceptually.

To assist teachers during the individual conferences, the SEM-R framework includes a set of questioning "bookmarks" that are organized around various literary elements, genres, or concepts. A sample is show below.







Teachers can review and download/print a full set of the bookmarks here:
http://gifted.uconn.edu/wp-content/uploads/sites/961/2015/07/semr_elementary_school_bookmarks.pdf

Morphological Matrix

A Morphological Matrix is a creative thinking tool that allows students to generating a large number of unique or highly unusual options. Students develop the matrix using a set of three to five dimensions, or parameters. Students will then identify possible attributes each parameter might have, and then exploring random combinations of attributes, mixing and matching as they go.

The **Center for Creative Learning** provides a series of steps for using this tool.

1. State the task clearly, and identify the parameters that you will use in the matrix.
2. Select the first parameter, and enter it as the heading of the first column in the matrix.
3. Generate many, varied, and unusual attributes for that parameter, listing them in the rows under the column heading.
4. Repeat steps 2 and 3 for each parameter. List the attributes for each of the parameters in its own separate column in the Matrix.
5. Randomly select combinations, choosing one attribute from each of the parameters.

6. Write each combination and explore it. You might ask, "What is this combination? What would we have or get if we combined these attributes?"
7. Explore several possible combinations.
8. Focus your thinking by choosing one of the combinations to use, apply, or examine in greater detail

A portion of a Morphological Matrix is shown below. This matrix was used as part of a story-writing activity. *The link for the full matrix is included below.*

	Character	***Place***	***Goal***	***Obstacle***
1	*President*	*Library*	*Fame*	*Wicked Witch*
2	*Little Girl*	*On a bus*	*World Peace*	*Snowstorm*
3	*Jet Pilot*	*Kitchen*	*Win a Prize*	*Flat Tire*
4	*Rock Star*	*Ski Slope*	*Solve a Mystery*	*Lack of money*

Additional Resources:

Center for Creative Learning: *contains link to matrix as well as an overview, description, and purpose of this tool.*

- https://creativethinktank.wikispaces.com/file/view/GenTool-Morph.pdf

Story Starters Scrambler from Scholastic, Inc. *– an online matrix that is very kid friendly*

http://www.scholastic.com/teachers/story-starters/writing-prompts/

Additional Instructional Strategies

This section provides information about various instructional strategies that can be employed to deliver the content, processes, and products of the curriculum. An overview of the strategy, along with an example, is provided. This is not an exhaustive list, but it does offer a number of means of differentiating to meet the needs of your most able learners. Speak with your RTG should you have any questions about these or other strategies referenced in the handbook.

The strategies described in this section include, in alphabetical order:

- Anchor activities
- Curriculum Compacting
- Cubing
- Four Square
- Graphic Organizers
- Group Investigations
- Independent Research
- Interactive Notebooks
- Interest Centers
- I-SEARCH
- Jigsaw
- Journal/Book Talk Prompts
- Learning Contracts
- Marzano's Instructional Strategies
- Think-Tac-Toe/Four Square
- Tiered Assignments

Characteristics and Traits of Gifted Students

When discussing the characteristics and traits of gifted students, it may be helpful to consider the current federal definition of giftedness, as written in the 1972 Marland Report to Congress: *Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities.*

In spite of this federal definition, one is likely to find a wide range of beliefs about the concepts of giftedness, intelligence, and talent within a school or district. This is one of many reasons that may explain why there is not a universally accepted definition of giftedness.

This section focuses on characteristics and traits of gifted students, beginning with some myths about the characteristics and traits often associated with gifted learners. The list below appears on the NAGC web site and was developed from a longer list of myths explored in a special of *Gifted Child Quarterly (GCQ)* in the Fall of 2009.

Myths about Gifted Students

Myth	Gifted Students Don't Need Help; They'll Do Fine On Their Own
Truth	Would you send a start athlete to train for the Olympics without a coach? Gifted students need guidance from well-trained teachers who challenge and support them in order to fully develop their abilities. Many gifted students may be so far ahead of their same-age peers that they know more than half of the grade-level curriculum before the school year begins. Their resulting boredom and frustration can lead to low achievement, despondency, or unhealthy work habits. The role of the teacher is crucial for spotting and nurturing talents in school.
Myth	Teachers Challenge All the Students, So Gifted Kids Will Be Fine In the Regular Classroom
Truth	Although teachers try to challenge all students, they are frequently unfamiliar with the needs of gifted children and do not know how to best serve them in the classroom. A national study conducted by the Fordham Institute found that 58% of teachers have received no professional development focused on teaching academically advanced students in the past few years and 73% of teachers agreed that "Too often, the brightest students are bored and under-challenged in school – we're not giving them a sufficient chance to thrive. This report confirms what many families have known: not all teachers are able to recognize and support gifted learners.[1]
Myth	Gifted Students Make Everyone Else In the Class Smarter By Providing a Role Model or a Challenge
Truth	Average or below-average students do not look to the gifted students in the class as role models. Watching or relying on someone who is expected to succeed does little to increase a struggling student's sense of self-confidence.[2] Similarly, gifted students benefit from classroom interactions with peers at similar performance levels and become bored, frustrated, and unmotivated when placed in classrooms with low or average-ability students.
Myth	All Children Are Gifted

Truth	All children have strengths and positive attributes, but not all children are gifted in the educational sense of the word. The label "gifted" in a school setting means that when compared to others his or her age or grade, a child has an advanced capacity to learn and apply what is learned in one or more subject areas, or in the performing or fine arts. This advanced capacity requires modification to the regular curriculum to ensure these children are challenged and learn new material. Gifted does not connote good or better; it is a term that allows students to be identified for services that meet their unique learning needs.
Myth	Acceleration Placement Options Are Socially Harmful For Gifted Students
Truth	Academically gifted students often feel bored or out of place with their age peers and naturally gravitate towards older students who are more similar as "intellectual peers." Studies have shown that many students are happier with older students who share their interest than they are with children the same age.[3] Therefore, acceleration placement options such as early entrance to Kindergarten, grade skipping, or early exit should be considered for these students.
Myth	Gifted Education Programs Are Elitist
Truth	Gifted education programs are meant to help all high-ability students. Gifted learners are found in all cultures, ethnic background, and socioeconomic groups. However, many of these students are denied the opportunity to maximize their potential because of the way in which programs and services are funded, and/or flawed identification practices. For example, reliance on a single test score for gifted education services may exclude selection of students with different cultural experiences and opportunities. Additionally, with no federal money and few states providing an adequate funding stream, most gifted programs and services are dependent solely on local funds and parent demand. This means that in spite of the need, often only higher-income school districts are able to provide services, giving the appearance of elitism.
Myth	That Student Can't Be Gifted, He Is Receiving Poor Grades
Truth	Underachievement describes a discrepancy between a student's performance and his actual ability. The roots of this problem differ, based on each child's experiences. Gifted students may become bored or frustrated in an unchallenging classroom situation causing them to lose interest, learn bad study habits, or distrust the school environment. Other students may mask their abilities to try to fit in socially with their same-age peers and still others may have a learning disability that masks their giftedness. No matter the cause, it is imperative that a caring and perceptive adult help gifted learners break the cycle of underachievement in order to achieve their full potential.
Myth	Gifted Students Are Happy, Popular, and Well Adjusted In School

Truth	Many gifted students flourish in their community and school environment. However, some gifted children differ in terms of their emotional and moral intensity, sensitivity to expectations and feelings, perfectionism, and deep concerns about societal problems. Others do not share interests with their classmates, resulting in isolation or being unfavorably as a "nerd." Because of these difficulties, the school experience is one to be endured rather than celebrated.
Myth	This Child Can't Be Gifted, He Has a Disability
Truth	Some gifted students also have learning or other disabilities. These "twice-exceptional" students often go undetected in regular classrooms because their disability and gifts mask each other, making them appear "average." Other twice-exceptional students are identified as having a learning disability and as a result, not considered for gifted services. In both cases, it is important to focus on the students' abilities and allow them to have challenging curricula in addition to receiving help for their learning disability.[4]
Myth	Our District Has a Gifted and Talented Program: We Have AP Courses
Truth	While AP classes offer rigorous, advanced coursework, they are not a gifted education program. The AP program is designed as college-level classes taught by high school teachers for students willing to work hard. The program is limited in its service to gifted and talented students in two major areas: First AP is limited by the subjects offered, which in most districts is only a small handful. Second it is limited in that, typically, it is offered only in high school and is generally available only for 11th and 12th grade students. The College Board acknowledges that AP courses are for any student who is academically prepared and motivated to take a college-level course.
Myth	Gifted Education Requires an Abundance of Resources
Truth	Offering gifted education services does not need to break the bank. A fully developed gifted education program can look overwhelming in its scope and complexity. However, beginning a program requires little more than an acknowledgement by district and community personnel that gifted students need something different, a commitment to provide appropriate curriculum and instruction, and teacher training in identification and gifted education strategies.

[1] Farkas, S. & Duffet, A. (2008). Results from a national teacher survey. In Thomas B. Fordham Institute, Highachievement students in the era of NCLB (p. 78). Washington, DC: Author. http://www.edexcellence.net/publications/high-achieving-students-in.html

[2] *Fiedler, E.D., Lange, R. E., Winebrenner, S. (1993). In search of reality: Unraveling the myths about tracking, ability grouping, and the gifted. Roper Review, (16), 4-7.*

[3] *Colangelo, N., Assouline, S. G., & Gross, M.U.M. (2004). A nation deceived: How schools hold back America's brightest students. Iowa City: University of Iowa.*

[4] *Olenchak. F. R., & Reis, S. M. (2002) Gifted students with learning disabilities. In M. Neihart, S. M. Reis, N. Robinson, and S. Moon (Eds.), The Social and Emotional Development of Gifted Children (pp. 177-192). Waco TX: Prufrock Press.*

The Gifted Behaviors and Commentary Form (GBC) & Connection to Critical and Creative Thinking Strategies

Each school year, school teams work together to discuss students of high ability and/or potential as part of the Screening Process to determine eligibility for gifted and talented services. A key component of those dialogues is related to gifted behaviors and characteristics. To assist school teams in those conversations, APS uses a document called the Gifted Behaviors and Commentary Form (GBC).

The GBC:

- Was developed by using various examples from school systems in Virginia and in other states
- Uses current research on behaviors that demonstrate academic strengths
- Includes indicators that recognize and value cultural differences
- Aligns with National Association for Gifted Children (NAGC) Standards
- Is used to screen students for gifted services

The GBC:

serves as a dynamic document that allows school teams as they take a holistic case study approach to identifying students of high-ability or potential. The GBC gives teachers a way to document observable behaviors over time, especially behaviors exhibited when students have had opportunities for critical and creative thinking.

The GBC

was designed in part to help eliminate the gap in identification of historically underrepresented populations. Input from various offices (ESOL/HILT, Minority Achievement, & Special Education) ensures the inclusion of characteristics of giftedness that will assist in identifying talent and/or potential among:

- Students from diverse cultures
- Students from poverty
- Twice Exceptional (2e) learners
- English Learners (ELs)

The GBC as part of the Gifted Screening Process

The GBC consists of 4 categories:

- Exceptional Ability to Learn
- Exceptional Application of Knowledge
- Exceptional Creative/Productive Thinking
- Exceptional Motivation to Succeed

Each category is assigned a rating based on how often behaviors are observed:

- Rarely
- Occasionally
- Frequently
- Consistently

The GBC rating and commentary should complement each other. For example, if the GBC on Exceptional Ability to Learn category is given as "Consistently," then commentary/specific examples should be robust. The commentary/specific examples should also be drawn from a combination of curricular resources and critical and creative thinking strategies referenced in this handbook.

Addressing the Social and Emotional Needs of Gifted Children

This section is meant to help teachers address and support the social and emotional needs of our most advanced learners. In the pages that follow, you will find information that provide both an overview **(bold/in the box)** as well as more specific information (included in the bulleted sections beneath) about social/emotional needs of gifted students.

For additional information, you may want to explore the website www.sengifted.org, whose stated mission is to "empower families and communities to guide gifted and talented individuals to reach their goals: intellectually, physically, emotionally, socially, and spiritually."

Gifted individuals have distinct social and emotional characteristics that correlate to their cognitive characteristics. These affective characteristics have both positive and negative implications and translate into genuine needs that must be addressed by schools and families to facilitate healthy development of gifted individuals.

- Typical affective characteristics demonstrated by the gifted population (with their cognitive correlates in parentheses) are:
  - insightfulness (exceptional reasoning ability)
  - need to understand (intellectual curiosity)
  - need for mental stimulation (rapid learning rate)
  - perfectionism (facility with abstraction)
  - need for precision/logic (complex thought process)
  - excellent sense of humor (vivid imagination)
  - sensitivity/empathy (early moral concern)
  - intensity(passion for learning)
  - perseverance (powers of concentration)
  - acute self-awareness (analytical thinking)
  - nonconformity (divergent thinking/creativity)
  - questioning of rules/authority (keen sense of justice)
  - tendency toward introversion (capacity for reflection) (Silverman, 1993)

- Although these affective characteristics can be strengths of the gifted individual, potential problems may also be associated with them. For example:
  - Gifted individuals tend to emphasize truth, equity, and fair play but harbor deep worries about humanitarian concerns.
  - They demonstrate sensitivity, empathy, and a desire to be accepted by others but are sensitive to criticism or peer rejection.
  - They have a strong sense of humor but peers may misunderstand their humor. Gifted students may then assume the role of "class clown" for attention.

- Gifted individuals have high expectations for themselves and others but can be intolerant, perfectionistic, and may become depressed.
- They are independent and reliant on self but may reject parent or peer input and exercise nonconformity.

Gifted programming tends to focus on the gifted child's cognitive needs, while affective needs are frequently ignored or misunderstood. Because of the link between affective and cognitive characteristics, unaddressed affective needs can have a negative impact on the child's cognitive development, self-concept and self-esteem, attitudes toward learning and socialization, and overall success. (Webb, 1994)

Gifted individuals are aware that they are different from their age peers. However, they don't always understand what "giftedness" means as part of their identity. Gifted individuals don't necessarily want to emphasize their "giftedness" and don't enjoy being used as examples (Webb, 2001).

- It is important to spend time throughout the year facilitating explicit conversations about what being "gifted" means, including the struggles and successes that gifted students can expect to face and about how "giftedness" translates as part of their identity.
- Delisle and Galbraith (2002) suggest focusing on the following topics:
  - Understanding and accepting what it means to be gifted
  - Evaluating one's life relative to different measures of success
  - Recognizing the differences between "better at" and "better than"
  - Coping with the frustration of having too many options
  - Overcoming the barriers of others' expectations
  - Understanding the concept of asynchronous development
  - Becoming an advocate for one's own self-interests
  - Understanding the role of socialization
- Delisle and Galbraith (2002) go on to suggest several strategies through which to address these topics:
  - Questionnaires and surveys to allow students to tell you about themselves and understand that they can communicate with you on a personal level
  - Journaling and reading journals of other famous diarists (Anne Frank, Zlata Filipovic, Franz Kafka)
  - Using bibliotherapy ("the use of books to help people solve problems…[by introducing] them to fictional peers and mentors") (A list of book recommendations for gifted students can be found in the Attachments Section of the Reading guide.)
  - Weekly conferences during which the teacher can provide direction, connect with students, and demonstrate genuine concern for and attention towards their thoughts and worries
  - Growth contracts
  - Helping students establish peer alliances
- Consider sharing the National Association for Gifted Children's "Bill of Rights" with students, parents, and staff who work with gifted children. http://www.nagc.org/index.aspx?id=1180&terms=bill+of+rights

Gifted individuals aren't necessarily as stable and mature emotionally as they are bright (Webb, 2001). Many gifted individuals struggle with asynchronous development, whether that be developing at two different cognitive rates (strong math skills, weak writing skills) or developing at two different

cognitive and affective rates (strong math skills, weak social skills). Gifted individuals can't succeed without help, and they don't have everything going their way (Webb, 2001).

- A gifted child can "appear to be many ages at once. He may be eight (his chronological age) when riding a bicycle, twelve when playing chess, fifteen when studying algebra, ten when collecting fossils, and two when asked to share his chocolate chip cookie with his sister" (Tolan, 2007).
- Some children may be able to "see in their 'mind's eye' what they want to do, construct, or draw; however, motor skills do not allow them to achieve the goal. Intense frustration and emotional outbursts may result" (Webb, 1994). Other children may "understand how to solve social conflicts and interact cooperatively, but not know how to translate their understanding into concrete behavior" (Roedell, 1990).
- Asynchronous development is frustrating and confusing for students, parents, and teachers alike who often assume that students labeled as "gifted" will be able to accomplish most tasks easily and will behave and socialize as maturely as they think and speak.
- However, "it is vital to remember that giftedness (in childhood and beyond) is an internal reality, mental processing that is outside of norms. Achievement, as important as it is, is merely an expression of that mental processing" (Tolan, 2007). We must help students and their parents come to terms with asynchronous development and provide flexible learning environments in which to allow their strengths to flourish and to support development of their areas of weakness.
- As important as it is to advocate for these children, however, it is more important to teach them to advocate for themselves and to speak up when they need help.

It is important that gifted individuals have access to a variety of peer groups because the gifted child "can appear to be many ages at once" (Tolan, 2007). Their chronological age, social, physical, emotional, and intellectual development may all be at different levels (Webb, 2001). Research has demonstrated the benefits of grouping gifted students with intellectual peers and of using acceleration when appropriate.

- Gifted individuals need both age and intellectual peers and not being access to both can be stressful and confusing. "Gifted children need several peer groups because their interests are so varied…The conflict between fitting in and being an individual may be quite stressful…The child often has a dilemma – conform to the expectations for the average child or be seen as a nonconformist…The gifted child, sensitive to others' discomfort, may then try to hide abilities" (Webb, 1994).
- "Tannenbaum (1983) reported that his studies found that social/emotional development is more highly correlated with mental age rather than chronological age. Schools, however, usually determine the peer group by chronological age. Hence gifted children feel that they are different. It is therefore often necessary for gifted students to have access to early entry, classes that are vertically or compositely grouped, and to have subject and year level acceleration. In this way, gifted students have the opportunity to interact with an appropriate group and to learn the skills of socialization" (Southern & Ferguson, 1996).
- "A major component of early socialization involves a child's feelings that she or he is accepted by others—teachers and children alike. If the teacher does not validate a gifted child's advanced abilities and intellectual interests by making them part of the ongoing curriculum, the child experiences no feelings of acceptance from the teachers. If, as is highly likely, this child makes the additional discovery that she or he is quite different from most classmates and that communication is extremely difficult because of differences in vocabulary and modes of expression, then the child misses peer acceptance as well" (Roedell, 1990).

- In a recent Australian study, Gross (2001) found that children's conceptions of friendship go through stages and become more complex with age. However, she found that mental age, more so than chronological age, dictates children's progress through these stages. "A strong relationship was found between children's levels of intellectual ability and their conceptions of friendship. At ages when their age peers of average ability were looking simply for play partners, gifted children were beginning to look for close, stable, and trusting friendships…It is at this level of schooling that gifted children are most likely to have difficulty in finding other children who have similar expectations of friendship" (Gross in Neihart, Reis, Robinson, & Moon, 2002).
- "Gifted children require different and more flexible educational experiences…Seven flexibly paced education options, relatively easy to implement in most school settings (Cox, Daniel & Boston, 1985) are: early entrance; grade skipping; advanced level courses; compacted courses; continuous progress in the regular classroom; concurrent enrollment in advanced classes; and credit by examination. These options are based on competence and demonstrated ability, rather than on arbitrary age groupings" (Webb, 1994).
- "Acceleration in any of its forms can often diminish its [tedium and repetition] effects, provided that the student's cognitive functioning, personal characteristics, learning preferences, and interests are taken into account" (Rogers in Neihart, Reis, Robinson, & Moon, 2002).

The perfectionistic tendencies of gifted individuals can result in a fear of failure that interferes with achievement and can potentially lead to underachievement. Gifted individuals also struggle with multipotentiality (being able to do many things well), especially when it comes to doing open-ended projects (choosing what option to do) or choosing a career path later in adolescence.

- Because gifted individuals struggle with asynchronous development, they tend to set expectations for themselves based on their mental age rather than their physical age. "The ability to see how one might ideally perform, combined with emotional intensity, leads many gifted children to unrealistically high expectations of themselves. In high ability children, perhaps 15 – 20% may be hindered significantly by perfectionism at some point in their academic careers, even later in life" (Webb, 1994).
- Although perfectionism "can be used in a positive way to achieve excellence…it can [also] be used in a negative way…" (Silverman, 1993).
- Gifted individuals need to be explicitly taught the difference between striving for perfection and striving for excellence. As Delisle and Galbraith (2002) explain, "Perfectionism means thinking *less* of yourself because you earned a B+ instead of an A. The Pursuit of Excellence means thinking *more* of yourself for trying something new. Perfectionism means being hard on yourself because you aren't equally talented in all sports. The Pursuit of Excellence means choosing some things you know you'll be good at – and others you know will be good for you or just plain fun. Perfectionism means beating yourself up because you lost the student council election. The Pursuit of Excellence means congratulating yourself because you were nominated, and deciding to run again next year – if that's what you want."
- "Perfectionism means that you can *never* fail, you *always* need approval, and if you come in second, you're a loser. The pursuit of excellence means taking risks, trying new things, growing, changing - and sometimes failing" (Delisle and Galbraith, 2002).

- Schuler (in Neihart, Reis, Robinson, & Moon, 2002) also attributes perfectionism among gifted individuals to the fact that they often "have older friends and set their goals accordingly." She also suggests that "when students find the work they are expected to do to be unchallenging, they may strive for perfect performance instead of mastery. Artificial rewards, such as grades, become the only satisfaction possible," further highlighting the link between affective and cognitive development.
- To counteract perfectionism, Clinkenbeard (2000) suggests encouraging children to pursue learning goals instead of performance goals. Independent study projects, an emphasis on thinking and research skills, self-evaluation, de-emphasizing competition, and studying the biographies of famous individuals who have loved their work help students to focus on the process of learning instead of the end product.

Stress is a particularly important issue to address when working with gifted individuals. Coping strategies and stress management techniques must be explicitly taught in a proactive, rather than reactive, approach, and symptoms of extreme stress must be monitored in order to prevent larger issues like depression from occurring.

- Factors contributing to stress include:
  - The pressure to excel accompanied by concerns about feeling different and self-doubt
  - The need to "prove" giftedness
  - Unrealistic or unclear expectations from adults or peers
  - Striving to live up to self-expectations
- Factors contributing to stress include:
  - The pressure to excel accompanied by concerns about feeling different and self-doubt
  - The need to "prove" giftedness
  - Unrealistic or unclear expectations from adults or peers
  - Separation from peers which provides fewer opportunities to relieve stress
  - Decision-making (hard for complex thinkers who can argue both sides of any question)
  - Unproductive study habits, especially as work gets harder

(Kaplan, 1990)

- Depression is defined by Webb (1994) as "being angry at oneself or at a situation in which one has little or no control. Sometimes educational misplacement causes the gifted youngster to feel caught in a slow motion world. Depression may result because the child feels caught in an unchangeable situation." Extreme stress due to asynchronous development, perfectionism, social isolation, and sensitivity can lead to depression (Neihart in Neihart, Reis, Robinson, & Moon, 2002).
- Kaplan (1990) has several suggestions for how gifted children can cope with stress:
  - Change, confront, and talk about the source of the stress
  - Shift your perspective
  - Learn skills and attitudes that make tasks easier and more successful
  - Take time for enjoyable activities
  - Exercise regularly and eat well
- Kaplan (1990) also suggests that parents and teachers:
  - Help students understand and cope with intellectual, social, and emotional needs during each developmental stage
  - Help students develop a realistic self-concept

- Show patience, acceptance, and encouragement, and take their concerns seriously
- Encourage flexibility
- Be available for guidance and advice

Gifted individuals require a stimulating and safe learning environment that supports cognitive development and social/emotional well-being.

- Delisle and Galbraith (2002) suggest the importance of "Invitational Education," created by William Purkey and John Novak. It relies on four principles:
  - People are able, valuable, and responsible and should be treated accordingly.
  - Teaching should be a cooperative venture.
  - People possess untapped potential.
  - This potential can become realized in an environment that respects individual differences and preferences."
- Suggestions for implementing "Invitational Education" include:
  - Provide posttests as pretests in order to better assess and accordingly meet and validate a student's current level of achievement, thus avoiding the stress and negative feelings associated with boredom and unchallenging curriculum.
  - Providing "Instead of" Enrichment, not "In Addition to" Enrichment, which is also an effective way to validate a student's current level of achievement and to avoid stress and boredom.
  - Post less-than-perfect papers to emphasize that "less than perfection is more than acceptable".
  - Institute a "BUG Roll" in addition to or in place of an Honor Roll. BUG is an acronym for "Bringing Up Grades" and rewards effort.
  - Establish a Planning Council that makes recommendations to the teacher about changes in the classroom environment. This helps to transform a classroom from a "factory" to a "family."

    (Delisle and Galbraith, 2002)

- Other suggestions that come from Smutny (2000) and deGuia (2004) include:
  - A room that invites inquiry (pictures, books, music, and art)
  - Thematic instruction
  - Wide range of materials (keeping in mind the wide range of abilities found among gifted students and their asynchronous development)
  - Activity centers for self-initiated projects
  - Flexible seating arrangements and grouping strategies
  - Learning centers and tiered activities

There are distinct social/emotional issues that gifted girls, gifted minorities, and twice-exceptional students face.

Gifted Girls

- Gurian (2001) notes a "gradual loss of self-esteem in girls as they progress through school…some gifted girls come to believe that competition in academics should be avoided in order to preserve relationships even if it means underusing their talents…Since gifted girls are usually more socially adept

than gifted boys, they pick up on social cues and know how to fit in. In order to please others, gifted girls tend to play down their talents, often preferring to help others rather than tackle new learning."

- Gurian (2001) also found a startling trend about gifted girls and standardized testing and class selection. She found that many girls stop enrolling in gifted programming in the later part of high school, which contributes to a risk of underachievement in math and science. Ultimately, taking fewer math and science courses can impact what career choices are made later on. Additionally, Gurian (2001) asserts that standardized tests "reward bold, quick answers and a willingness to take risks, characteristics more typical of boys than girls."
- To address the special needs of gifted girls, Gurian (2001) suggests that educators:
    - Push for early identification
    - Encourage girls to select courses in advanced math and science
    - Use multiple measures of assessment
    - Encourage girls to "take credit" for their successes and talents and provide specific praise about their work
    - Provide resources about the accomplishments of women
- Gurian (2001) suggests that parents:
    - Help their girls make friends with other gifted girls who have similar interests
    - Provide role models of women in traditional and nontraditional careers
    - Encourage independence and risk-taking
    - Avoid sex-role stereotyping

Gifted Minority Students

- Gifted minority students struggle with all of the same issues typical of gifted children, but their experiences are complicated by other factors including prejudice, different values and expectations, struggles with fitting in, and socioeconomic status.
- Suggestions for teachers of gifted minority students include:
    - Communicate high expectations
    - Demonstrate sensitivity to their experiences and beliefs
    - Create a multicultural learning environment
    - Help establish connections with role models and mentors
    - Reach out to families
    - Provide a variety of learning options
    - Listen to students' concerns, fears, and beliefs

  (Cropper, 1998 and Ford, 1996 in Stepanek, 2000)

Twice-Exceptional Students

- "Physical disabilities can prompt social and emotional difficulties…Gifted children with disabilities tend to evaluate themselves more on what they are unable to do than on their substantial abilities" (Whitmore & Maker, 1984 in Webb, 1994).
- Suggestions for working with twice-exceptional students include:
    - "Be aware of the powerful role of language…and develop alternate modes for thinking and communicating"
    - Give students options that capitalize on their strengths and preferred ways of learning

- Provide for individual pacing in the areas of giftedness and disability while continuing to provide challenging activities and assisting students with strengthening their self-concept
  (Willard-Holt in Delisle and Galbraith, 2002)

There are many techniques and options to consider when engaging in preventative counseling for gifted individuals. It is essential that teachers of gifted students work with guidance counselors to develop an appropriate counseling plan. Many counselors do not have extensive backgrounds in gifted education or the specific needs of gifted individuals, so it is important to share resources and information about current research regarding best practices.

- Mahoney (1995) suggests that counselors of gifted individuals should:
  - know their own giftedness
  - have a strong theoretical base and knowledge of the characteristics of gifted children
  - be aware of the resources available for gifted children
  - be creative in the approach to counseling
  - remember that gifted children have exceptional abilities
  - ask for help and model interdependence
  - be mindful that gifted children often demonstrate deviant behavior and be conscious of their real feelings
  - be an advocate
  - be themselves.

- Mahoney (1995) suggests that counselors should deliver lessons about:
  - Identifying giftedness
  - Forming a gifted identity
  - Addressing denial of giftedness
  - Developing ways to foster differences rather than being distressed by then
  - Facing asynchrony
- Silverman (1993) adds the importance of addressing:
  - Feeling different
  - Lack of understanding from others
  - Fear of failure
  - Perfectionism
  - Depression
- Reis and Moon (in Neihart, Reis, Robinson, & Moon, 2002) suggest the techniques of:
  - Role-playing and simulation
  - Videotherapy, cinematherapy, and bibliotherapy
  - Mentorships and college and career guidance
  - Journal writing
- Individual and small group counseling is recommended for children who struggle with any of the above issues, but you might also encourage your guidance counselor to tailor his/her monthly or quarterly lesson to address some of special issues gifted children face in a whole class setting.

- Reis and Moon (in Neihart, Reis, Robinson, & Moon, 2002) also suggest the importance of family counseling and therapy, parent education programs, and parent workshops on accepting differences and nurturing creativity.

Families play a key role in the cognitive and affective development of gifted children, and communication between schools and families is key. Parent education is of vital importance.

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- Reis and Moon (in Neihart, Reis, Robinson, & Moon, 2002) also suggest the importance of family counseling and therapy, parent education programs, and parent workshops on accepting differences and nurturing creativity.
- “When problems occur, it is not because parents consciously decide to create difficulties for gifted children. It is because parents lack information about gifted children, or lack support for appropriate

parenting, or are attempting to cope with their own unresolved problems (which may stem from their experiences with being gifted)" (Webb, 1994).

- However, "about 80% of the parent population can identify their children's giftedness by ages four or five" (Smutny, 2000). It is important to elicit parents' reflections about their children at the beginning of the year and to continue to share insights throughout year.
- "Teaching, not matter how excellent or supportive, can seldom counteract inappropriate parenting. Supportive family environments, on the other hand, can counteract unhappy school experiences. Parents need information if they are to nurture well and to be wise advocates for their children…Problems are best prevented by involving parents when children are young" (Webb, 1994).
- "Parents of gifted children typically have few opportunities to talk with other parents of gifted children. Discussion groups provide opportunities to 'swap parenting recipes' and child-rearing experiences. Such experiences provide perspective as well as specific information" (Webb and DeVries, 1993 in Webb, 1994).
- "The key to raising gifted children is respect; respect for their uniqueness, respect for their opinions and ideas, respect for their dreams" (Silverman, 1992). Parents must also be willing to meet with teachers, help to supplement or locate materials, and to be an advocate for their child and their child's education (Silverman, 1992).
- "One of the most supportive activities a parent can engage in is to help a child find a true friend and make the effort required to permit the friendship to flower" (Roedell, 1990).
- "Giftedness is a family affair. There are far-reaching implications of this phenomenon for every member of the family" (Silverman, 1993).