Unit 2: Grades 3 & 4 Talented & Gifted Math

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Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Talented & Gifted Program

Grades 3 & 4

Math

Belleville Board of Education

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Unit Overview

PHILOSOPHY

The philosophy of the Talented & Gifted Program for Belleville Public Schools is to recognize the unique talents and cabilities of all students. Students who demonstrate exceptional abilities require a challenging and a differentiated curriculum. We recognize that students learn in different ways and posses different experiences and levels of understanding. Students deserve an educational environment that is challenging, stimulating, individualized, and learner driven. The curriculum has been designed to maximize students' creative, cultural, and cognitive needs. The cornerstone belief of the Talented & Gifted program is that children learn best when they are actively engaged in the quest for knowledge.

PURPOSE

The purpose of the Belleville School District Talented & Gifted Program:

- Provides students with learning experiences to increase their cognitive and affective abilities through frequent applications of creative thinking, problem solving, critical thinking, exploration, discovery, and experimentation.
- This program will provide educational opportunities and activities to every student in his/her personal learning style, to include visual-spatial, musical, naturalist, bodily kinesthetic, interpersonal,

intrapersonal, linguistic, verb-linguistic, and logical-mathematical.

- Students will be encouraged to develop and apply higher level thinking processes to become producers of information, as well as consumers of information.
- The program will enhance each student's level of understanding concepts, ideas, and issues in the areas of knowledge, comprehension, application, analysis, synthesis, and evaluation.
- The intellectual architecture of this unit will be fueled by teacher designed lessons that build upon identified students' strengths, interests, and talents.
- The program is designed to be student driven in which the teacher acts as a facilitator, guide, or resource for personal or small group inquiries and investigations.
- The three characteristics used for identifying students are above average ability, task commitment, and creativity.
- Provide a three-part model of learning activities which would include Tier One as whole group instruction in the classroom setting during the school day, Tier Two as small group instruction and planned activities in the classroom setting during the school day involving cross-curricular involvement, and Tier Three as an after school enrichment program for students in grades three through five who meet the established criteria.
- The students are identified based on unique talents, abilities, and interests to form a talent pool.

At the 3rd-4th grade levels, enrichment is intended for all students. It will be available to encourage students, and give them additional opportunities to achieve their highest potential. An after-school program in grades three through five has been designed for those students who demonstrate exceptional ability, talent, and potential. Students chosen to participate in this program will be rewuired to meet established acceptance criteria.

AFTER-SCHOOL PROGRAM GOALS

1. Provide a differentiated curriculum for students who demonstrate exceptional cabilities and potential.
2. Identify and support each student's personal style to promote academic, social, and emotional growth for potential success.
3. Provide opportunities for students to pursue long-term investigations of personal interests.
4. Provide activities that promote growth and stimulation in higher cognitive processes such interpretation, analysis, application, synthesis, and evaluation.
5. To engage students in rich academic experiences coupled with high expectations, which will afford them opportunities to make meaningful connections between their learning and the larger world.
6. Develop an understanding of their own talents and interests in order to select and pace learning experiences necessary to become more self-directed learners.

AFTER-SCHOOL PROGRAM OBJECTIVES

1. The student will participate in learning activities in which one or more of the following strategies for differentiated instruction will be employed: interest groups, independent projects, learning centers, and tiered assignments.
2. The students will be exposed to a personal interest survey to help them focus their questions for

personal or small group inquiry and investigation in grades three through five.
3. The students will participate in analysis and synthesis of information facilitated by, but not limited to, real world problem solving, mentorship, product creation, presentation, and self-evaluation.
4. Students will select topics of personal interest that they will research, engage in problem solving, and create solutions that are tied to real world application.
5. The students will use technological resources to facilitate their investigations.

GUIDELINES FOR INSTRUCTIONAL ACTIVITIES

Activities will include but not be limited to:

1. Personal interest inventories, and investigations pursuing those interests.
2. Inquiry of questions related to or arising from regular classroom studies or those proposed by the instructor.
3. Exploratory activities.
4. Student opportunities to enage in new endeavors involving questioning and investigation to secure new knowledge.
5. Those that encourage students to question, make inferences, and find evidence to support generalizations.

UNIT TWO MATH OVERVIEW

Unit Two of the T&G Enrichment Curriculum will focus on different aspects to broaden student's understanding of Math concepts. Students will work together to solve real world problems involving budgeting and planning to solve multi-step problems.

Enduring Understandings

- To compare two numbers, one must compare the digits in each place, starting with the largest place.
- Missing numbers in a math sentence can be found using addition, subtraction, multiplication, and division
- A symbol can represent an unknown and can be located in any position in the equation.
- Objects, drawings, and equations can be used to solve problems.
- Estimation is a tool used to get an approximate answer.
- Proficiency with basic facts aids estimation and computation of larger and smaller numbers.

Essential Questions

1. Why is it important to become an independent thinker?

2. How would the world be different if there weren't any problem solvers?

3. Why isn't there just one approach to solving a problem?

4. Why is collaboration necessary for effective problem solving?

Exit Skills

By the end of Unit 2, 3rd and 4th grade students will:

- Use math manipulatives effectively
- Be able to draw pictures to display multiplication problems
- Collaborate to share ideas of how to solve multi-step real world math problems
- Explain their own mathematical thoughts and demonstrate how they solved a problem

New Jersey Student Learning Standards (NJSLS)

MA.4.OA.A.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

MA.3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
MA.3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
MA.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
MA.3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
MA.4.NF.A	Extend understanding of fraction equivalence and ordering.
MA.3.NF.A.3	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
MA.3.MD.A.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
MA.3.MD.C	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
MA.4.MD.A.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Interdisciplinary Connections

The T&G Curriculum areas of divergent thinking, convergent thinking, visual/spatial perceptions, interpretive thinking, and problem solving are integrated with Language Arts, Math, Science, and other content areas.

Learning Objectives

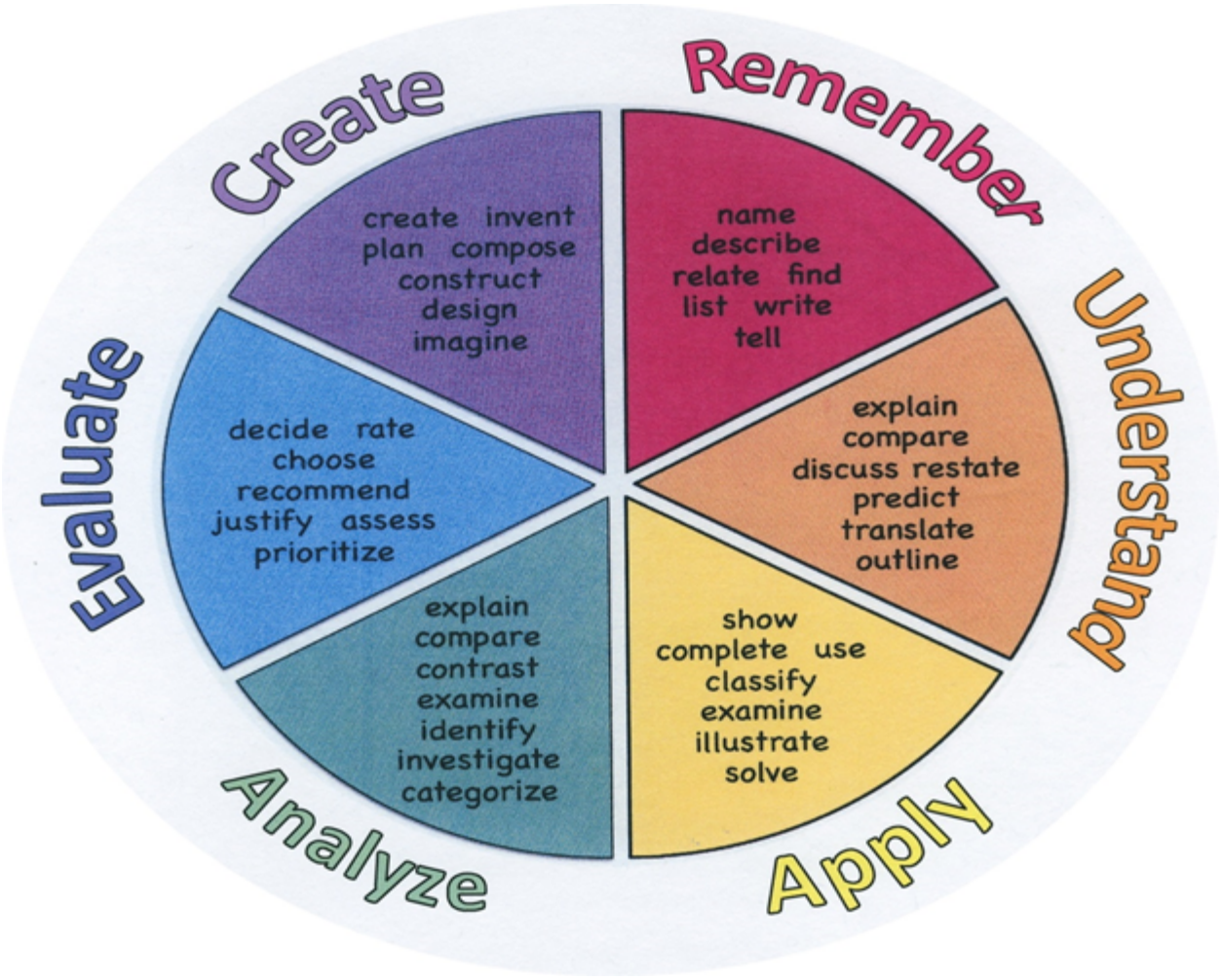
Students will be able to...

- Use math manipulatives effectively
- Illustrate pictures to display multiplication problems
- Collaborate to share ideas of how to solve multi-step real world math problems
- Explain their own mathematical thoughts and demonstrate how they solved a problem

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose Describe	Classify Defend	Choose Dramatize	Categorize Classify	Appraise Judge	Combine Compose

Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



Suggested Activities & Best Practices

- While working in small groups, students can use a budget to plan a school field trip
- Design a park using geometric shapes and patterns that is drawn to scale using an online platform
- Create a party planning scenario in which students will have to arrange guests in a seating chart that meets different criteria. Have students design their work to present to a larger group setting

Assessment Evidence - Checking for Understanding (CFU)

First in Math's analysis and progress of students (Formative)

Multimedia Presentation (Alternative)

Teacher Observation Checklist (Formative)

Project Reports (Summative)

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys

- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

Envision Math Series

First in Math

IXL

Ancillary Resources

starfall.com

ixl.com

Prodigy game

Technology Infusion

G Suite (Docs, Sheets, Jamboard) to write, edit, comment and create different works for presentation.

Chromebooks/Tablets/iPads for students to independently work for projects

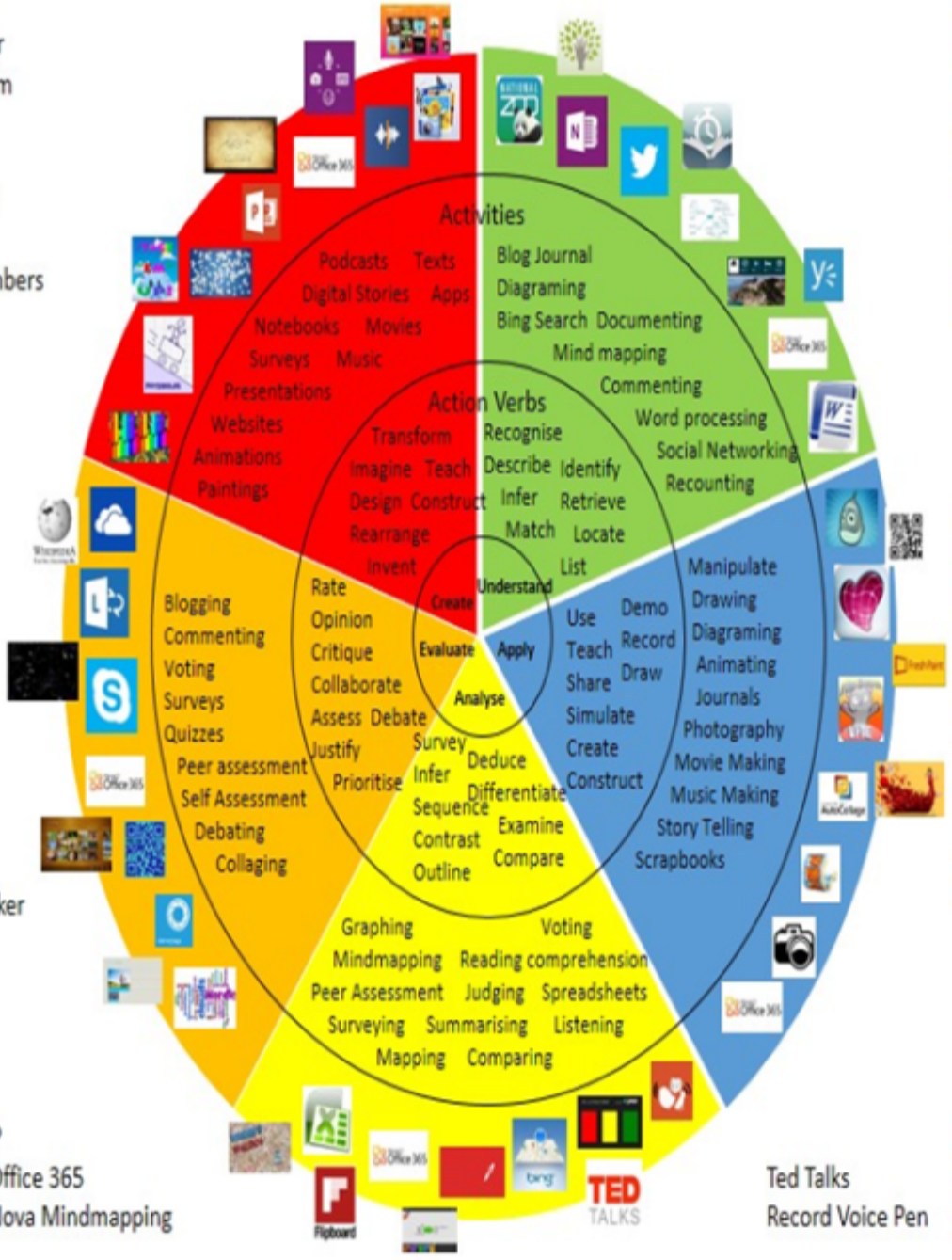
SmartTV to present videos or notes in lieu of a white/chalkboard.

First in Math to practice mental math with lessons and math games in a web based format.

Win 8.1 Apps/Tools Pedagogy Wheel

Podcasts
Photostory 3
Kid Story Builder
Music Maker Jam
Paint A Story
Office 365
MS PowerPoint
Stack 'Em Up
NqSquared Numbers
Physamajig
Xylophone 8

Wikipedia
Skydrive
Lync
SkyMap
Skype
Office 365
Puzzle Touch
Easy QR
Memorylage
Life Moments
Word Cloud Maker



Where's Waldo?
MS Excel Office 365
Flipboard Nova Mindmapping

Ted Talks
Record Voice Pen

Originally taken from http://www.coetail.com/vzimmer/files/2013/02/iPadagogy-Wheel.001.jpg
And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

Alignment to 21st Century Skills & Technology

TECH.8.1.5.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.5.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media
TECH.8.1.5.E.CS3	Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.
TECH.8.1.5.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

Differentiation

T&G students will be identified through multiple measurable assessments (DRA, Envision, teacher recommendation, etc.).

Tier 1- At this tier, ALL students are serviced. Enrichment opportunities will be offered through various

classroom experiences.

Tier 2 - At this tier, flexible groups are formed based on concept mastery. Extended learning opportunities will be offered in order for students to transfer complex thinking processess to a higher level. This could be accomplished through small group instruction/projects/centers within the whole class environment.

Tier 3- At this tier, identified students in Language Arts and/or Mathmatics will be engaged in culminating activities in an after school enrichment program. This guide addresses identified T&G students enrolled in this program.

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups

- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

Guidelines for students with IEP's and 504's will be followed.

Work will be checked frequently to check for student's understanding.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes

- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

Translation devices will be used if the need arises for students to communicate if there is a language barrier.

Tutoring by peers to guide in understanding of topics.

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers

- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

At Risk

Tutoring by peers will be used.

Students may correct errors when they occur.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

Provide enrichment articles and assignments

Allow students to complete independent study assignments

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results

- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Using the template below, please develop a **Sample Lesson** for the first unit only.

Unit Name:

NJSLS:

Interdisciplinary Connection:

Statement of Objective:

Anticipatory Set/Do Now:

Learning Activity:

Student Assessment/CFU's:

Materials:

21st Century Themes and Skills:

Differentiation/Modifications:

Integration of Technology: