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Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Unit 5: T&G Curriculum

Second Grade

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 cababilities of all students. Students who demonstrate exceptional abilities require a challenging and a differentiated curriculum. We recognize that students learn in different ways and possess 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, culutural, and cognitive needs. The cornerstone belief of the Talented and 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 experiences to increase their cognitive and affective abilities through frequent applications of creative thinking, problem solving, critical thinking, exploration, discovery, and experimentation.
- Provide a three-part model of learning activities:
  Tier 1: Whole Group Instruction in the classroom setting during a typical school day involving cross curricular involvement. (K-5)
  Tier 2: To further enhance the talents and abilities of students via the use of small group instruction in guided reading and math groupings.
- The three characteristics used for identifying students are above average ability, task commitment, and creativity.
- Discover, encourage, and 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.
- To develop and encourage students to apply higher level thinking processes to become producers of information as well as consumers of information.
- The program will enhance student's level of understanding concepts, ideas, and issues in the areas of knowledge, comprehension, application, analysis, synthesis, and evaluation.
- Intellectual architecture fueled by teacher designed lessons that build upon identified students' strengths, interests, and talents.
- This program is designed to be student driven, in which the teacher acts as an 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.
  Students are identified based on unique talents, abilities, and interests to form a talent pool.

At the K-2 levels, enrichment is intended for all students. It will be availible to encourage students and give them additional opportunities to achieve their highest potential.

The activities in this unit reflect ELA, math, science and technology endeavors which support differentiated instruction that addresses grade level needs as well as high capability needs.

New Jersey Student Learning Standards (NJSLS)

CCSS.Math.Content.2.OA.A	Represent and solve problems involving addition and subtraction.

CCSS.Math.Content.2.MD.D.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
CCSS.Math.Content.2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.
CCSS.Math.Content.2.G.A	Reason with shapes and their attributes.
CCSS.Math.Content.2.G.A.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
CCSS.ELA-Literacy.W.1.7	Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).
CCSS.ELA-Literacy.SL.1.1.a	Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
CCSS.ELA-Literacy.SL.1.1.b	Build on others’ talk in conversations by responding to the comments of others through multiple exchanges.
CCSS.ELA-Literacy.SL.1.1.c	Ask questions to clear up any confusion about the topics and texts under discussion.

Exit Skills

By the end of Unit 5, students should be able to:

- Sequence the order or events.
- Classify and categorize information.
- Identify problems and possible solutions.
- Organize data into four or more categories.
- Represent data with four or more categories using a picture graph.
- Represent data with four or more categories using a bar graph.
- Solve various types of problems using a bar graph.
- Appropriately use the words, halves, thirds, fourths, and quarters.
- Identify the characteristics of triangles, quadrilaterals, pentagons, hexagons, and cubes.
- Partition circles into two, three and four equal shares.
- Partition rectangles into two, three and four equal shares.

Enduring Understanding

- Objects can be described, compared, and classified by geometric attributes.
- Many geometric shapes can be divided into equal parts.
- Decomposing into more equal shares creates smaller shares
- Equal shares of identical wholes need not to have the same shape.
- There are many ways to analyze data.
- People work together to find ways to solve problems.

Essential Questions

- Why is problem solving important in everyday life?
- How can representing data help us to interpret it and draw conclusions?
- How are geometric properties used to solve problems in everyday life?
- Why would we partition shapes?
- What are the steps that lead to the scientific model and how can it help solve a provblem?

Learning Objectives

At the end of this unit, students will be able to:

- design and create geodesic domes using toothpicks and gummy candies.
- design and create egg catchers using the Engineering Process Model.
- construct shape towers out of paper in order to determine which one holds the most books.
- design paper robots by only using quadrilateral shapes.
- build a freestanding tower using only pipe cleaners.

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.

SCI.K-2.5.2.2.E	It takes energy to change the motion of objects. The energy change is understood in terms of forces.

Alignment to 21st Century Skills & Technology

Key SUBJECTS AND 21st CENTURY THEMES

Mastery of key subjects and 21st century themes is essential for all students in the 21stcentury.

Key subjects include:

- English, reading or language arts
- Arts
- Mathematics
- Science

21st Century/Interdisciplinary Themes

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

21st Century Skills

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- Information Literacy
- Media Literacy

Technology Infusion

- SMARTboard
- Computers
- iPads/Tablets
- Powerpoint presentations
- Videos
- MS Office 365



Differentiation

Special Education

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- multi-sensory presentation
- preferential seating
- preview of content, concepts, and vocabulary
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- student working with an assigned partner
- teacher initiated weekly assignment sheet

ELL

- 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)
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- reducing or omitting lengthy outside reading assignments
- tutoring by peers
- using computer word processing spell check and grammar check features

Intervention Strategies

- 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
- 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
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using videos, illustrations, pictures, and drawings to explain or clarify

Evidence of Student Learning-CFU's

- Admit Tickets
- Common benchmarks
- Compare & Contrast
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Outline
- Question Stems
- Red Light, Green Light
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share

Primary Resources

- Envision Mathematics
- Scott Foresman Series
- Reading A-Z
- Decodable readers
- Being A Writer
- Leveled Readers
- Running Record (DRA)
- Sadlier Resources
- Recipes for Reading (Orton Gillingham)

Ancillary Resources

www.discoveryeducation.com

www.readinga-z.com

www.watchknowlearn.com

www.mobymax.com

www.readtheory.org

www.starfall.com

www.brainpopjr.com

Sample Lesson

1. Geodesic Domes with jelly beans/gum dropshttp://growingastemclassroom.blogspot.com/2014/04/geodesic-domes-with-jelly-beans-and.html?m=1

2. Inseparable Notebooks https://www.youtube.com/watch?v=OzPaH-BZl-A&index=30&list=PLC02CFDE5690E4010

T&G Question: "Why don't the notebooks separate?"

3. Which Shape Holds More? (PDF) https://www.youtube.com/watch?v=_jGPlh7NSSQ

This engineering challenge activity uses what you already have on hand–no need to buy any supplies.

Students are going to test the strength of paper, folded in differently shaped columns, by piling books on top. This is very similar to how columns are used to support buildings and other structures.

4. Quadrilateral Robot- https://www.pinterest.com/pin/3307399703559367/ Students use only quadrilaterals to make a robot. Students will sketch out robot first and then build or create their robot. Students can use previously cut out shapes out of construction paper. Students can then write about what their robot would do.

5. Pipe Cleaner Challenge http://www.vivifystem.com/blog/2014/12/8/pipecleaner-stem-challenge

Challenge: Students will build a freestanding tower using only pipe cleaners.

1. Group students into teams of 2 - 4.
2. Pass out bundles of 15 pipe-cleaners to each group.
3. Instruct students that each engineering team is tasked to build the "tallest free-standing structure" with the materials provided. Teams will have about 10 minutes. Free-standing means the structure cannot be held, taped, wedged between desks, etc. Ask for any clarification.
4. After working for 2-4 minutes: tell students to freeze. "Your team had an unexpected budget cut, and one of your resources has been depleted. Each team member must now put one arm behind his/her back!"
5. 2-4 more minutes: freeze again. "Your engineering company realized that the loss in resources were detrimental to the product. The manager has decided to expand your operations globally to bring in more business. Your team now operates in (insert favorite country here) allowing you to use both arms again. But now you are unable to speak the same language. Continue the task without any speaking!"
6. 1-2 minute: "Business is booming, and your company has hired translators. Complete the task with all your resources! One minute left!"
7. Count down from ten and stop the activity.
8. Walk around the room and note the different shapes and designs of the towers. Determine the tallest tower and allow the team to explain their successful design.