STEAM

Students in Grades 1-3 are provided with a year-long STEAM experience as part of "special" area programming. STEAM is an acronym for **S**cience, **T**echnology, **E**ngineering, the **A**rts, and **M**athematics. It is not a program, but a philosophical approach to learning that integrates knowledge from the various disciplines. It is taught through project-based experiences that also emphasize the 21st century skills of collaboration, cooperation and communication. The STEAM experience is divided into four 9-week segments, with each focusing on a common grade level theme such as "Earth", "Sound" and "Air & Weather", and how the design process is applied within the various disciplines.

• In the Arts portion of STEAM, students will use their skills and concepts learned in visual art and music to reinforce, express, practice and demonstrate knowledge and skills in other academic areas such as science, math or literacy. Examples of topics include: how patterns occur in music, using drama to demonstrate solutions to math problems, how patterns and symmetry are important in design, and the important role that length, width and depth play in sculptural form. As the STEAM program evolves this year, increased emphasis will be placed on strengthening connections between the Arts and the other STEAM components via the over-arching themes.

• As part of the STEAM program, students are engaged in project based engineering activities. As in all STEAM classes, students experience the engineering design process (ask, imagine, plan, create, improve and share) to solve a problem. Activities in the engineering class are extensions/reinforcements of the science and engineering standards for each grade and are based on the common grade level themes. First graders design sails and windmills, second graders explore the properties of sound to design musical instruments and third graders engineer model buildings that are earthquake resistant.

• In the Technology segment of STEAM, students will be introduced to computer programming and robotics via sites such as Botlogic, Code.org, and MIT's Scratch. In the process they will be developing the basic computer and navigation skills needed to support general computer use as well as their programming activities. They explore programing through the use of robotic devices (BeeBots, Lego WeDos, and MakeyMakey) to make hands-on connection with these concepts. Through this experience, students will be exposed to a new literacy, have opportunities to develop their critical and logical thinking skills, and will begin to develop an understanding of the relationship between programming and the technologies that are part of their everyday lives.

8/17

Social & Emotional Learning

The Needham Public Schools are engaged in improving social and emotional learning (SEL) for all students. SEL is the process through which children develop skills for decision-making, communication, cooperation, conflict resolution, problem solving, and developing healthy relationships for work and play. The school system has adopted The ***Responsive Classroom*** program as the basis for its K-5 social and emotional learning. It is based on principals of child development, explicit teaching of social as well as academic skills and the facilitation of positive community membership. The program increases social skills and academic engagement, establishes positive classroom climate, increases learner investment and independence, and decreases disruptive behaviors.

At **Grade One,** students will:
- Identify feelings of others
- Label positive and negative emotions
- Recognize and resist inappropriate behaviors (impulse control)
- Generate several solutions to a problem
- Seek help when appropriate
- Behave cooperatively and considerately in a group
- Learn self-management skills

NEEDHAM PUBLIC SCHOOLS

GRADE 1

CURRICULUM SUMMARY

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Superintendent of Schools**

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Mathematics
• Represent and solve problems involving addition and subtraction
• Understand and apply properties of operations and the relationship between addition and subtraction
• Add and subtract within 20
• Work with addition and subtraction equations
• Extend the counting sequence
• Understand place value
• Use place value understanding and properties of operations to add and subtract
• Measure lengths indirectly and by iterating length units
• Tell and write time
• Represent and interpret data
• Work with money
• Reason with shapes and their attributes
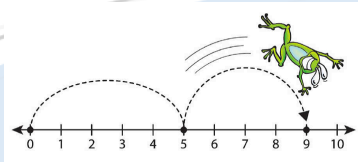
Science
Students explore the big ideas of life, physical, and earth science through an inquiry-based, hands on approach. Students study:
  • Observing Weather, Seasonal
    Changes & Physical Properties of Air
    (Earth & Physical Science)
  • Life Cycle of Plants & Animals (Life
    Science)
Live animals, outdoor field trips and special programs provided by the Science Center serve to enhance the hands-on experience.

Social Studies
Students learn about geography and engage in inquiry-based social studies as they study the following units:
  • Self and Society
  • Calendar/Holidays
  • Maps/Directions

Spanish Language & Culture
• Understand and produce memorized vocabulary and formulaic expressions related to the following themes: common greetings, the calendar, seasons, weather, colors, numbers, shapes, school, fruits, family, the body, farm animals, and insects
• Respond to simple questions and produce simple expressions
• Demonstrate comprehension by following basic classroom instructions
• Demonstrate awareness, curiosity and appreciation for different cultures

Reading
• Show an interest in books through questions and discussion
• Participate in book discussion with partners, small groups, and whole class
• Read books at independent level
• Begin to read, recognize and understand characteristics of various genres
• Recognize high frequency words
• Recognize story elements (character, setting, plot) in simple texts
• Read independently
• Retell a story in sequence using beginning, middle and end
• Read to acquire information
• Use comprehension strategies while reading to make meaning
• Increase knowledge of word structure and vocabulary

Writing
• Use stages of the writing process including, drafting, revising, editing and publishing
• Use oral story telling to plan writing
• Use pictures and sentences to tell a story across multiple pages
• Experiment with writing in different genres and for different purposes
• Use mentor text to learn crafting techniques
• Write with voice
• Use phonetic spelling
• Use the word wall and other spelling resources
• Spell grade level high frequency words correctly
• Use capital letters to begin sentences
• Use ending punctuation
• Experiment with punctuating dialogue
Handwriting
• Write legibly

Art
• Use line to create different patterns
• Mix and identify primary and secondary colors
• Experiment with paints
• Explore and create texture
• Create a collage
• Construct three-dimensional forms

Music
• Recognize loud/soft and fast/slow qualities in music
• Demonstrate a steady beat to given music
• Demonstrate understanding of melody and melodic direction
• Listen to, move to, and sing folk, multicultural, and patriotic songs
• Begin to read rhythmic notation
• Demonstrate difference of high and low

Physical Education
• Use proper form to throw underhand
• Demonstrate ability to catch a self-tossed object
• Demonstrate ability to skip using proper form
• Demonstrate the ability to forward roll
• Demonstrate ability to dribble a ball alternating hands
• Demonstrate ability to dribble a ball with feet

Library & Digital Learning
• Know the book check in/check out procedures and circulation rules
• Work cooperatively with others when using technology
• Identify parts of the book collection by proper name
• Identify particular authors and illustrators
• Practice active listening skills during read aloud lessons
• Present information orally with print or electronic illustrations
• Use electronic drawing tools independently
• Import graphics from a clip art library
• Type simple sentences with assistance
• Access information from a web site with assistance
• Learn definitions and examples of cyber-bullying
• Begin to become aware of safety rules for computer use

A community and school partnership that creates excited learners, inspires excellence, fosters integrity