Who Measures What in Our Neighborhood?
K-1 Classroom

Measurement Learning Activities Across the Curriculum Relationship to Illinois Learning Standards

Arts and Aesthetics

*constructing (LS26A1e)

- build 3-dimensional objects (e.g., kiln, sheep barn, cash drawer, baler, etc.) with craft supplies, wire, pipe cleaner, modeling clay, cardboard, boxes and junk, food, and commercial made materials such as the following:
    - Legos
    - pattern blocks
    - Cuisinaire rods
    - place value blocks
    - wooden blocks
- measure costumes made for dramatic play
- problem solve
- representation of the measuring devices used in neighborhood
- *What's Important About Measuring* murals

*dramatizing (LS25A1b and LS26A1b)

- dramatize the nursery rhyme the *Derby Ram* and *Hot Cross Buns* after discussing the measurement that was involved in the rhyme
- practice play lines for story innovation of books, *Chicken Soup with Rice* and *The Gingerbread Boy, etc.*
- role-play firemen
- use costumes measured and created to explore creative dramatics

*memory drawing (LS26B1d)

- draw measuring and measurement tools
- draw predition of what they will see on walk around preschool classroom and neighboring offices
- draw pictures of what their question is about to help them remember their project questions (e.g., questions for on-site experts, etc.)
- draw predictions of what expert will say about measurement
- use rulers to draw pictures

*observational drawing

- draw measurement tools (balance scales, measuring spoons, measuring cups, spring scale, thermometer, clock, watch, sectional maps, rulers, tape measure, calibrated weight, incubator) (Time 1 drawings)

- draw measurement field trip sites (Time 1 drawings)
- draw people measuring (children, sheep, wool, feed, oil in car, snow, rain, wind, chicks, wells, kiln temperature, fire hoses, fire ladders, fire gauges,, and counting money)
- revisit observational drawings and elaborate, edit, and revise to make Time 2 observational drawings of measurement tools, and measurement field trip sites

*painting (LS26A1e)

- paint measurement pictures
- paint fire truck, kiln, sheep barn, money counter, cash drawer, coil, water thermometer, sheep fence, sheep gate, and bag of wool made with boxes & junk
- paint mural for culminating display
- revisit observational drawings to add detail or information and color with water colors

*relating art to literature

- draw pictures and write responses to *Gingerbread Boy, A Little Pigeon Toad,* and *Why Did the Chicken Cross the Road? etc.*

*representations (LS26A1e)

- create measurement pictures on the computer with Kid-Pix
- create "measurement" mural
- draw pictures to imitate artistic style of visual artist whose paintings relate to measurement
- make two-dimensional drawings of kiln, pottery, weather instruments, fire trucks, money, clocks, thermometers, sheep, sheep barn, car gauges and a variety of pictures that they drew throughout the investigation
- represent top view, side view, back view and inside view of scales

*responding to music (LS25A1c, LS26A1c, and LS26B1c)

- listen for fast/slow, high/low, soft/loud and musical patterns
- listen to sounds at measurement field site and reproduce sounds with instruments
- move creating a simple creative dance and draw after listening to classical music
- write a poem with words to describe sounds of measurement tools (e.g., clocks ticking)

*singing, movement and dance (LS25A1a and LS26A1a)

- Create a simple dance
- sing *Chicken Soup with Rice, Miss Mary Mack, Over in the Meadow, There's a Hole in the Bucket*
- tap and clap to the beat

*viewing visual art exemplars (LS25A1d)

- discuss art prints that feature measurement and analyze elements of art - line, shape, color and texture

Language and Literacy

*analyzing (LS5B1a)

- analyze information gathered through field studies (field notes, data tabulation, video of expert interviews, photographs, etc.)

*classifying

- classify memory drawings
- classify questions that children asked to pursue study groups
- sort and classify ideas for Student Measurement Topic Web 1 and Student Measurement Topic Web 2.

*comparing

- compare and articulate differences in definitions
    - weight, height, width
    - 1 - 10 scale, spring scale, balance scale
    - Farenheit and Celcius
    - oil gauge, gas gauge, battery gauge, heat gauge, air gauge
    - speedometer, odometer, thermometer, barameter, anemometer
    - foot, feet, yard, meter, centimeter, inch, pounds per square inch
    - egg, shell, membrane, albuman, yolk, embryo
    - chick, chicken, hen, rooster
    - clock, watch, sun - dial, digital, analog, day light savings time
    - diameter, circumference, area
- compare different kinds of chicks
- compare different kinds of rulers
- compare different kinds of scales

*critical thinking (LS5A1a)

- decide on what to present for culminating event
- decide what to include in mural for culminating event
- predict, hypothesize, or theorize the answers to their questions
- support own opinions when responding to questions such as the following:
    - Why do people measure?
    - What is measurement?
    - What is important about measurement?
    - Why is it important to measure?

*developing oral language (LS4A1a and LS4B1b)

- brainstorm what they remember about measurement
- categorize and label to form a topic web or graph
- design survey questions and ways to show results of surveys - example - Do you measure in your house? What?
- discuss in group meetings (whole class, small group, or one-to-one)
    - measurement project "opening event"

    - question of the day
    - responses to different versions of *The Gingerbread Boy*, tunes for *Miss Mary Mack*, and *Chicken Soup with Rice*, and art exemplars
- interview experts
- listen in large group discussions, small group, one to one, and to experts
- report progress on representations, experiments, research, etc.

*formulating questions (LS4A1b and LS5A1a)
- develop researchable questions
- ponder questions at the end of the project

*integrating new vocabulary
- brainstorm words they know about the topic before and after studying (Topic Web 1 and Topic Web 2)
- use new vocabulary words in conversation

*making lists
- jobs related to measuring
- kinds of measurement tools in our school
- make lists of what they might see
- make lists of what they would like to research
- questions, predictions, and findings
- questions to be asked on parent questionnaire
- vocabulary
- what kinds of things are measured
- what they had learned who to thank
- what they might do
- what they would need for their representations, models, etc.
- who to thank

*planning
- draw a design for representation
- develop power point presentation
- follow phases of writing, pre-write and discuss ideas for "Gingerbread Boy innovation" stories
- write web for chick and egg knowledge
- write web for measurement report

*presenting (LS4B1a)
- explain measurement posters, models, experiments, representations and stories to the neighboring classroom and parents at the culminating event
- share personal measurement story with the class
- share progress on representations with the class
- share stories, and poems written about measurement with the class

*reading (LS5A1b)

- choose measurement, chicken, or joke books for Independent Reading time
- dictate a project experience story (after a field trip, after talking with an expert)
- make a book out of experience story
- read about fire safety from an Internet search
- read child authored stories
    - adapted stories
    - "Gingerbread Boy" innovation
    - poems
    - jokes and homophones

- read nursery rhymes booklets - *Are you Sleeping, Wee Willie Winkie,* etc.
- use experience story for reading

*reflecting

- brainstorm "What I Now Know"
- edit stories for publication
- respond to the literature through writing or discussion
- self - evaluate
    - what I have learned about the project
    - progress to complete any part of the project
    - PowerPoint presentation
- think about and write or tell "what I learned" after field visits

*using references and resources (LS5A1b)

*writing (LS5C1a)

- book log entries of the title, author, date and comments about books read
- describe the sound of newly hatched chicks
- label parts of an egg
- plan representations and presentations for culminating event
- record field trip and expert findings
- write measurement questions
- write invitations for culminating event
- write memory stories about measurement
- write number stories about the project
- write or dictate a self-evaluation of measurement project
- write stories that integrate new knowledge about measurement
- write poetry that integrates measurement
- write power point presentation
- write predictions of what they will find out on field trip or from experts
- write reports on what they have learned
- write stories about various aspects of the topic
- "Gingerbread Boy " stories
- Riddles – Jokes and Homophones

- write survey questions
- write thank you letters to the experts
- write web of what they know about chick and eggs

Investigative Skills-Science

*exploring (LS11B1c)

- explore questions such as the following:
  - What is Measurement?
  - How do you measure really light things?
  - What do chicks need to develop in the egg?
- take apart and explore inside a tape measure
- Look and explore with a spring scale that has a see-through cover
- Look and explore inside a clock
- Look and explore inside a computer

*experimenting (LS11A1c, LS11A1f, LS11B1b, and LS11B1d)

- answer questions such as the following:
  - Will beaten egg yolk fluff up more than beaten egg white?
  - Do fertilized eggs weigh more or less than grocery store eggs?

*investigating (LS11A1b)

- How do you measure in music?
- Do you need to measure when making ceramic pots?
- What is wind chill?
- What is day light savings time?
- Why are some eggs brown and some eggs white?

*observing (LS11A1a and LS11A1e)

- dissect and describe parts of tape measure
- observe spring scales
- observe doctors scales
- observe incubator
- observe thermometer
- observe money
- observe clocks and timers
- observe measuring cups and spoons

*predicting (LS11B1a)

- predict materials used in measurement devices before dissection
- predict possible answers to questions formulated before talking to an expert
- predict prior to conducting experiments
- predict purpose of parts of measurement equipment
- predict what kinds of measurement devices are in our school and CRC

- predict what measuring is going on in the neighborhood

*reporting (LS11B1e)
- report the process and results of their experiments
- report what small investigating group found on field site visit

Numeration and Problem Solving

*counting (LS6A1b, LS6D1, LS10B1b)
- count and compare the following:
    - duration or time to run an obstacle course
    - money
    - number of cups or fractions of cups when cooking
    - number of inches, centimeters, pounds, ounces etc. used in measuring
    - number of measuring tools in our school and school building
    - number of non standard units in measuring length and weight
    - tally what they see on their field trips

*estimating

- amount of something (rice, etc.) that would fit into a container
- length, height and width of objects before measuring
- number of days to an event, e.g., hatch a chick
- weight of objects before weighing

*measuring (LS7A1a, LS7A1b, LS7A1d)
- measure distance of obstacle course using a trundle wheel.
- measure the height and depth of the rain puddles, snow drifts, etc.
- measure length of carpet, room, window sill, table tops, chicks and each other, icicles, etc.
- measure number of days until chicks hatch
- measure the following items converting nonstandard measurement to standard measurement by comparing Cuisinaire links, Cuisinaire rods, inches and centimeters
    - carpet
    - window sill
    - length, width, height of room
- measure the temperature of incubator and brooder box
- measure the temperature outside to communicate whether or not students would have an inside or outside recess.
- sheep barn, fire truck, sheep gate, money counter, cash drawer, coil, baler
- use measurement to build representations
- wall quilt about measurement
- weight of classmates, eggs, chicks, pennies, noodles, beans, keys, buttons etc.

*organizing, analyzing, and communicating data (LS10A1a, LS10B1b, and LS10B1c)

- develop bar graphs displaying the results of the survey sent to parents
- develop bar graphs representing data from field trips (e.g., what we saw on walking tour of CRC building, height and weight growth of chicks)
- develop 1-10 rating scale for pets and dessert
- develop pie graphs displaying the results of one of the survey questions sent to parents

*problem-solving (LS6B1, LS6C1a, LS7C1, LS7B1a)

- area of classroom and brooder box
- average height of students in a small group
- calculate distance across the USA

*predicting answers to questions such as the following: (LS10A1b)

- How deep is the snow out in the playground?
- How many people with out stretched arms fit across the USA?
- How much salt will taste good in gingerbread?
- What temperature is the incubator set to hatch chicks?

*surveying (LS10B1a)

- How many scales do you have in your house?
- Do you measure in your house? What?
- How many thermometers do you have in you house?
- Which measuring tools do you have in your house?
-

*using geometry

- analyze geometric relationships
  - 2-dimensional shapes to 3-dimensional shapes
  - drawings of representation to clay models
  - drawings of representation to boxes and junk model

Social, Emotional Growth and Dispositions

*communicating

- engage in group discussion
- frame questions skillfully
- listen to others
- negotiate roles, turn-taking, problems to solve
- report progress of investigations at group meetings
- share research
- use new vocabulary

*cooperating and collaborating while working with others

- prepare displays
- present final reports

- study collaboratively in teams

*empathizing with others and their needs
- appreciate work of peers noting evidence of effort, care and originality
- share friends, materials, space and time
- share praise and appreciation of peers

*enjoying
- cooking and measuring ingredients
- measuring
- talking to experts from different fields of study
- taking care of the chicks
- working with friends on representations

*gaining confidence in abilities to do the following:
- investigate
- make presentations to an audience
- more closely observe people communicating
- remember experiences of measurements
- represent measurement in drawings
- use a variety of mediums to express their ideas

*helping peers
- clean up joint project
- discuss for better understanding
- problem solve
- represent

*initiating
- choose appropriate materials
- experiment
- predict and manage time
- research to answer questions

*persevering

*persisting at a task

*problem solving

*risk taking
- state disagreements in conversations or at group meetings
- support own opinions
- verbalize estimations, predictions, and hypotheses