

An ICE SCULPTURE FAIR
Integrated Elementary STEM Project

The ITEEA Teaching Technology and
Engineering “STEM Showcase”

Washington, DC

March 2, 2016 4:00 p.m.-5:30 p.m.

Exhibit Hall Table #

STEM PROJECT:

ICE SCULPTURE FAIR

STEM PROJECT:

ENGINEERING BUILDING DAY

Standards Addressed:

K-2-ETS1-1 and K-PS2-1

Engineering Design:

engage, explore, explain, elaborate, evaluate

Model of Instruction: 5-E Presentation

Kathleen B. Horstmeyer

Presidential Awardee, 1996

khors3500@aol.com

Rubrics are distributed with each activity.
Assessments include a variety of activities
used with Ice Sculptures.

Kathleen B. Horstmeyer
Presidential Awardee, 1996
khors3500@aol.com

AN ICE SCULPTURE FAIR

My ICE SCULPTURE FAIR is held at the completion of the theme. The exact date depends on availability of space within our building! There are many ways to hold science fairs with your students. The following pages explain the procedure and organization that works for me. All students participate in the science fairs! Students focus on a structure to be constructed for the Ice Sculpture Fair. Super Star Awards and ribbons are placed at each presentation. Students receive award certificates during our class celebration.

Students wear goggles, aprons and white lab jackets (which they have created from Dad's old white shirts). They design and illustrate

STEM symbols on these jackets with their permanent markers. There are numerous opportunities for students to participate in hands-on experiments and investigations. First semester is devoted to observations and writing details about what we have observed. Questioning and probing are naturally woven into all curiosity. Presentations are occurring within our classroom and building throughout the school year. Students are prepared to participate in their presentations and are extremely anxious to share their exciting results with the school community!

Much time is spent on discussion of investigation topics before material is disseminated to parents. Students are required to prepare an outline of their ice sculpture before starting their STEM

project. The students share this outline with classmates. During this presentation, classmates question and suggest ideas when clarity is needed.

Rubrics are included in the students' Ice Sculpture Fair folders.

The Ice Sculpture fairs provide a wonderful assessment of student understanding of the science process, the scientific method and STEM. This project integrates science, math, technology, language, engineering, music, and art allowing every child the opportunity to be successful while having fun and truly enjoying themselves.

Objectives:

- * Students will demonstrate understanding of the freezing point.**
- * Students will investigate ways to build the ice sculpture structure.**
- * Students will learn to read a thermometer while investigating the ice sculpture structure.**
- * Students will understand how water turns into a solid during the freezing process.**
- * Students will demonstrate learnings through integration of science, math, technology, engineering, language arts, music and art.**

ICE SCULPTURE FAIR RUBRIC

4. OUTSTANDING

Ice Sculpture Project presentation ready before 9:00 A.M.

Ice Sculpture Project follows safety protective measures, a covering for the table, deep pan to hold meltings, poster board which stands on its own, poster, ice sculpture, ice song, poem, ice book, pre-design, and the ice log journal.

Ice Sculpture poster requires the graph, pre-design of the ice sculpture, ice palace sheet and poem.

Ice Sculpture Presenter orally communicates his/her sculpture construction, graph, pre-design, poem.

Voice is clear and expressive

Presents project to other students and adults without fooling or playing.

3. GOOD

Everything for a 4, minus two items.

Visible items must include the ice sculpture, safety measures and poster.

2. FAIR

Everything for a 3, minus three items.

1. NO EFFORT

**Kathleen B. Horstmeyer
Presidential Awardee
1996
khors3500@aol.com**

Kathleen B. Horstmeyer khors3500@aol.com

ICE SCULPTURE DAY

Date:

Location:

Time:

PREPARATIONS:

KEEP AN ICE LOG JOURNAL.

TAKE PHOTOS!

THINK about your Ice Sculpture.

COLLECT containers.

PRE-DESIGN your Ice Sculpture on graph paper and/or using computer technology.

COLOR your pre-design.

FILL your **CONTAINERS** with **WATER!** Adding food coloring enhances your Ice Sculpture!

Hold a Family Conference. Reserve freezer space.

FREEZE your containers!

PREDICT time it will take water to freeze!

CREATE a **GRAPH** to be displayed with your Ice Sculpture. Your graph must demonstrate representation of your ice sculpture (number of shapes, containers, colors etc.)

CREATE a **POEM** about your Ice Sculpture! Type it on the computer! Display on poster.

CREATE AN ICE SONG about your ice sculpture! Type it on the computer! Display one copy on

your poster and give another copy to your teacher. Record your ice song and play it softly at your station!

School Preparations:

Design Poster including placement of items to be displayed (graph, poem, song, title of poster, your name, creative additions).

Complete Ice Hard Covered Book in school.

Home Preparations:

Complete Organized Poster at home.

Ice Sculpture Creation

ICE Sculpture EXHIBIT must include:

- 1. POSTER**
- 2. GRAPH**
- 3. PRE-DESIGN**
- 4. ICE Sculpture SHEET**
- 5. POEM, SONG, LOG JOURNAL**
- 6. ICE Sculpture Creation**

**BRING TO SCHOOL! Container is required while building and displaying your Ice Sculpture
CONTAINER SHOULD BE DEEP ENOUGH TO
HOLD THE MELTINGS! PARENTS, PLEASE
GUIDE YOUR CHILD WHILE HE/SHE
TRANSPORTS THE ICE Sculpture to the Ice
Sculpture Exhibit! BUILDING of ICE Sculpture
MUST TAKE PLACE:**

Date _____ BEFORE 9 A.M.

ICE SCULPTURE SHEET

My ice sculpture has _____ containers.

These shapes were used to build it:

- 1.
- 2.
- 3.
- 4.

I predict it will take _____
to freeze my containers filled with water.

I learned it actually took _____
to freeze my containers filled with water.

I predict removing frozen containers from the
freezer will _____.

I actually had to remove the freezer containers
by _____.

Building my ice sculpture involved the following
steps:

If I were to build an ice sculpture again, I would do
the following:

I learned that building the ice sculpture was

PARENTS...PLEASE MAKE ARRANGEMENTS FOR
ICE SCULPTURE PROJECT TO BE REMOVED
FROM THE CAFETERIA AT 10:30 A.M.
POSTERS WILL REMAIN IN SCHOOL.
POSTERS should be placed in our hallway.

ASSESSMENT METHODS

Student Interviews

A student interview includes a planned sequence of questions, similar to a job interview. In contrast, a student conference suggests that a discussion with both student and teacher sharing ideas takes place.

Portfolios

A formal or informal collection of student work. A portfolio may be in many forms from photographs depicting student growth and understanding to a specialized electronic journal showing work completed over a period of time.

Project/Product(s)

These may take many forms and are limited by time, resources, and imagination.

Performance Task

Involves presenting students with a technological task or project and then observing, interviewing, and looking at their solutions and products to assess what they actually know and can do.

Demonstrations/Presentations

Students explain and communicate their understanding of key ideas, concepts, and principles and abilities of processes, techniques, and skills.

Informal Observations/Discussions/ Conferences

Quite observations of students either individually or in groups for the

purpose of assessing and gathering information on their understanding of concepts, disposition to learning, abilities, and working in groups.

Academic Prompts

Open-ended statements or questions students may address either in writing or vocally. Examples of academic prompts may be questions such as: What is the technological problem we are trying to solve? Is that the only possible answer? What do you need to do next? Or, statements such as: How would you explain _____ to an adult who doesn't understand? How would you explain _____ to a younger student who doesn't understand? Reflect on your participation in class today and complete the following: I was surprised that I _____; I discovered

that I _____; The most important thing I learned today is _____; I still have trouble with _____; Something I would really like to know is _____.

Other Evidence

Observations, work samples, dialogues

Student Self-Reflection/Assessment

Often academic prompts are used to encourage students to look closely at their learning. Ask students to write about their effectiveness in a small group with questions such as, When I worked with my group, I was pleased with ____; After working with this group, I now can improve by ____; or When we work together again, we need to _____.

Computerized Assessment

Sometimes commercial packages are used for computerized assessment. In addition, the computerized assessment may be self-developed and used as a tool to collect student attitudes, ideas, and concerns about technology. For example, students could complete a formal questionnaire or add comments to general statements such as the following:

I usually give up when...

I was surprised that I ...

Sometimes I don't know what to do when I start a project....

I would rather work alone than in a group because....

Put a mark on the scale of where you believe you are

1-----2-----3-----4-----5-----6-----7-----8-----9-----10

1. - I am not good with technologies.

10. I am good with technologies.

Checklists

These could be in forms from a simple listing to a formal progress report.

Concept Mapping

This assessment method allows teachers to gather data on students' misconceptions. This is sometimes referred to as webbing.

Performance Assessment

This involves identifying the desired skills and abilities students will need and then checking for their level of performance.

Paper and Pencil Tests

These are quizzes and tests.

Individual and Group Work

Rubric

A rubric is based on the identified criteria taken from the content standards. Points or words are assigned to each phrase or level of accomplishment. This method gives feedback to the student about their work in key categories, and it can be used to communicate student performance to parents and administrators. The rubric example is designed to assess what and how well students understand the standards addressed in an activity.

Rubrics are distributed with each activity. Assessments include a variety of activities used with “Engineering Building Day” and “Ice Sculpture Day.”

**Kathleen B. Horstmeyer
Presidential Awardee
1996
khors3500@aol.com**