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Grade Span			ICLE Application Model			
K-4	5-8 X	9-12	A	B	C	D X

Instructional Focus:

Science as Inquiry

Students demonstrate knowledge and skills necessary to perform scientific inquiry.

Habits of Mind

Students develop habits of mind including curiosity, open-mindedness and persistence.

Science in Personal and Social Perspectives

Students apply scientific principles to personal and social issues.

Writing

Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Reading

Students read a variety of grade level materials, applying strategies appropriate to various situations

Performance Task

- The lesson will begin with a discussion of the extent of the solid waste problem, current issues and solutions.
- Discussion will also follow regarding reducing waste, reusing items and recycling. The main focus of the lesson will be on the realities of recycling and that recycling doesn't completely eliminate the problem.
- Major Points
 - Solid Waste is a serious issue. Many printing inks, for instance, contain heavy metals that remain in the waste stream and can find their way into our waterways.
 - Recycling alone doesn't solve the problem. This is a multi-faceted problem that requires a varied approach. We must recycle, reduce and reuse.
 - Solving the problem will require new technology, new laws and enforcement of existing ones, and a commitment from communities and individuals.
- Next we will make paper using recycled paper and new paper. The important point to note in this process is that the ink, which is a serious pollutant, is left behind. How do we deal with this?
- The papermaking process will entail tearing up pieces of newspaper to fill about 1/3 of a 5-gallon bucket. Add water and stir (an electric mixer works great for this.) A pulp will develop which can spread over a piece of screen with paper towel or rags under it. Place another piece of screen on top and roll over this "sandwich". You can now set your paper aside to dry. Here's the point at which you will make note of how much ink is left in the bucket and stuck to all of your tools. Needless to say, you want to cover your desktop with craft paper and the mixer and rolling pin should be old ones that you don't mind sacrificing.
- This leads into an assignment where the students research possible solutions to this problem. They should be asked to do research and then write a brief paper describing their proposed solution to the problem.

Materials Needed

- Newspaper, white paper, a plastic bucket, a mixer, a rolling pin, a screen, craft paper

ICLE Essential Skills

Plan and apply real or hypothetical models and constructions to facilitate investigation and learning and the solution to practical problems. <i>(Not Ranked s115)</i>
Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment. (s6)
Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation. (s10)
Identify and comprehend the concepts involving the earth's water, i.e., ground water (infiltration, permeability, porosity, and capillarity), surface water (runoff), and pollution (sources, types, concentration, and long range effects). (s17)
Gather information from a variety of sources, including electronic sources, and summarize, analyze, and evaluate its use for a report. (ela 3)
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Scoring Guide:

Score each of the following characteristics on a scale of 4 to 0, where 4 = surpasses expectations; 3 = high quality performance; 2 = satisfactory quality performance; 1 = minimum quality performance; 0 = does not meet expectations.

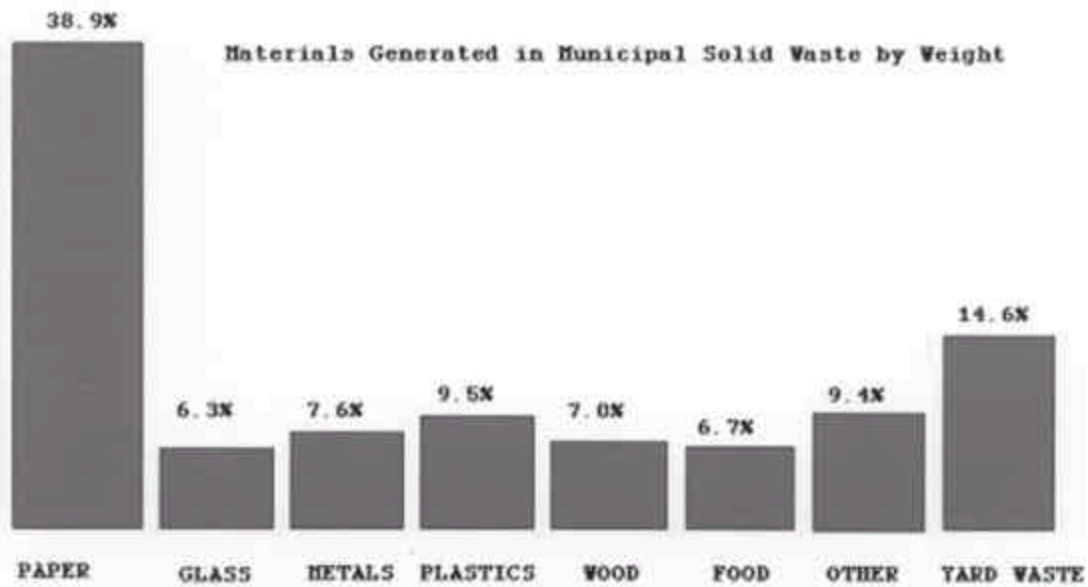
CHARACTERISTIC	CRITERIA	SCORE
<ul style="list-style-type: none"> Application 	<ul style="list-style-type: none"> Applies information gained from lab demonstration to proposed solution. 	_____
<ul style="list-style-type: none"> Design 	<ul style="list-style-type: none"> A design is presented that is plausible based on the research and experimentation 	_____
<ul style="list-style-type: none"> Research 	<ul style="list-style-type: none"> Appropriate research is presented to support the proposal. (Text based and electronic research may be used.) 	_____
<ul style="list-style-type: none"> Written Report 	<ul style="list-style-type: none"> The report is technically correct with regard to grammar, punctuation and spelling. The report clearly and accurately describes the proposed solution. 	_____

Keywords

English Language Arts	Mathematics	Science
Reading Research	Algebra	Earth Science Pollution Water Environment
Writing Technical Writing Expository	Geometry	Life Science
Communications	Statistics	Chemistry
Literature	Calculus	Physics
Other	Trigonometry	Other Scientific Inquiry Models/Constructions
	Other	

Solid Waste

The Paper Problem



Source: "Characterization of Municipal Solid Waste Management: 1995 Update." U.S. EPA