

Project G.L.A.D.
Forest Grove School District

Light Unit

Idea Pages

I. UNIT THEME

- Light allows us to see.
- There are sources of light – natural and artificial.
- Light that is blocked makes a shadow.

II. CUE SET

- Big book: *The Important Thing about Light*
- Inquiry chart: What do we know about Light? What would we like to know?
- Shoe box activity – Shoebox with small hole poked at one end, picture glued at opposite end. Lift lid a little to allow light into box, then look through small hole, and light allows you to see the picture.
- Various songs, chants, and poems about light
- Signal words to teach vocabulary (choose a vocabulary word as a signal word to line up, etc. for the day.)

III. CLOSURE

- Process all charts, especially inquiry
- Present reports to small groups and to the class
- Make web about Light
- Field trip to O.M.S.I.

IV. CONCEPTS / UNDERSTANDINGS / CRITICAL LEARNINGS

- Light allows us to see.
- There are sources of light – natural and artificial
- You can distinguish between bright light and dim light.
- Light is reflected.
- Light is needed to make a shadow
- Certain materials stop all light, stop some light, or allow light to pass through.
- Shadows change shape and direction.
- Light travels in a straight line

V. VOCABULARY

light	source	bright	dim
reflect	energy	light bulb	flashlight
natural	artificial	shadow	block
straight	transparent	translucent	opaque
absorb			

VI. ORAL LANGUAGE / READING / WRITING SKILLS

- Use complete sentences to communicate oral and written ideas
- Demonstrate respectful listening when others are speaking
- Use capitals and correct punctuation in writing
- Use writing process
- Guess the shadow game – Pass out shadow pictures – ask students to draw and then guess what they are.
- Imaginative writing – A day (or weekend) with no light. The travels of a sunray
- Create a jump rope rhyme about light and share with the class
- Journaling- recording and writing about measuring student's shadow and the changes that occur in the shadow
- Read charts, poems, stories, and student writings
- Tell the story of the narrative input chart - Shadowland

VII. MATH / SCIENCE / SOCIAL STUDIES SKILLS / ART

- Measurement of shadow
- Sorting and classifying pictures Process grid
- Graphic organizer
- Comparative chart – natural and artificial light
- AIMS activity on sources of light – match which are light sources and which aren't.
- Safety colors – orange and yellow /used by emergency vehicles
- Light travels in straight line – demo – pointed flashlight in darkened room; laser light
- Bending light – pencil in water; prism

VIII. RESOURCES AND MATERIALS

Books in English

- *Light and Dark*, Wendy Madgwick, Steck-Vaughn, 1999
- *Theodoric's Rainbow*, Stephen Kramer, W.H. Freeman, 1995
- *Color and Light*, David Evans and Claudette Williams, Dorling Kindersley, 1993
- *Day Light, Night Light*, Franklyn M. Branley, Harper Collins, 1998
- *Seeing is Not Believing: The Science of Shadow and Light*, Barbara Taylor, Random House, 1991
- *Light*, David Burnie, Dorling Kindersley, 1999
- *Switch on the Night*, Ray Bradbury, Alfred A. Knopf, 1993
- *All About Light*, Melvin Berger, Scholastic, 1995 *The Sun is Always Shining Somewhere*, Allan Fowler, Children's Press, 1991
- *What Will Happen?*, David Drew, Celebration press, 1997
- *All the Colors of the Rainbow*, Allan Fowler, Children's Press, 1998
- *The Science Book of Light*, Neil Ardley, Harcourt Brace Jovanovich, 1991
- *Guess Whose Shadow?*, Stephen Swinburne, Boyds Mills Press, 1999

Books in Spanish

- *La tormenta*, Walter Sawyer, Richard C. Owen Publishers, 1999
- *Luz*, Maria Gordon, Wayland, 1999
- *La luz*, Colin Walker, Modern Curriculum Press, 1992

Films

Light #53196

Light: A First Film #51120

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LIGHT

Unit Planning Pages

I. CUE SET

- Important Book about light
- Inquiry chart
- Shoebox activity

II. INPUT/BEST SHOT

- Narrative input chart
- 10-2 lecture with primary languages about light
- Chant – Light Chant
- Read alouds
- Films (see attached list)
- “Yes Ma’am” chant – “Is this a light?”
- 10-2 lecture on light
- Pictorial input chart
- Science experiments dealing with light

III. GUIDED ORAL PRACTICE

- T graph on cooperation
- Poetry, chanting, modeling, highlighting
- Daily oral processing of all charts
- Picture file cards
- Process grid
- Graphic organizer
- Three step interview about light
- Comparative input chart
- Narrative input chart
- Students retell story using narrative input chart
- Choral reading of Light

IV. INDEPENDENT PRACTICE/READING/WRITING/ACTIVITIES

- Sentence strip book – Light is.....
- Pop-up riddle book
- Found poetry – choose words from charts, copy, compose new poem
- Students pretend that they are a sunray. What kind of adventures would they have trying to travel through a translucent object, an opaque object, and finally a transparent object. ? Write a short story showing how they would feel, and how they would deal with these obstacles in their path. What would be some of their adventures as they travel to earth?
- Writer’s workshop with mini-lessons, word web
- Write about what would happen if you had no light for a whole day or

weekend.

- Use words from pictorial input chart in sentences
- Write a story using words from the pictorial input chart

Individual Choices:

- Focused reading
- Library books on light
- Strip books
- Read the wall
- Ear to ear reading
- Expert groups
- Poetry
- Journal writing

V. EXTENDED/CORRECTIVE ACTIVITIES FOR INTEGRATION

- Students make their own big book about light
- Write a play about light
- Write a poem about light
- Measurement of changes in shadow of body at different times of day
- Picture cards to help students visualize the concepts
- Students dramatize concepts on which their understanding was weak.
- Students create puppet show to illustrate their learning. Put on show for the class or other classes
- Write and illustrate a story from a shadow's point of view
- Find pictures of light sources from magazines and group them according to natural or artificial light
- Compose a "Bugaloo" poem on light
- Add to the poem "Yes, Ma'am"
- Color pictures on pictorial input chart
- Play shadow tag

VI. CLOSURE / EVALUATION

Formative Assessments

- Much of this is informal and some of the guided experiences can be used as a type of assessment also.
- Revisit the inquiry chart (regularly)
- Students do individual quick writes indicating all they know about light
- Students individually make a web (light in the center.) The students write or draw all they have learned about light.
- Students choose a fact about light and write a report and share with classmates.
- Given picture cards of light sources, students will group them according to natural or artificial light.

Closure

- Evaluate/reflect in journals/share
- Field trip to O.M.S.I. if there is an exhibit on light

Project G.L.A.D.
Forest Grove School District
LIGHT
State Benchmarks/Frameworks

Science: Program Goal

- 1-13 Model
- 2-01 Observation
- 2-02 Communication
- 2-03 Using numbers
- 2-04 Classifying
- 2-05 Measuring
- 2-08 Interpreting data
- 3-01 Inquiry
- 5-01 Characteristics
- 7-01 Relationships

Math: Strand

- 1-01, 1-05, 106 Calculation and number sense
- 5-01, 5-02 Measurement
- 8-02 Variety of tables/charts/graphs

Language Arts: Program Goal

- Meaning of words
- Comprehension (Summary, sequence, cause and effect, facts, main idea)
- Connect real world application
- Demonstrate written language skills
- Writing process
- Convey clear idea using language and organization appropriate to audience and purpose

Math Problem and Writing Exercises

Measurement:

1. With a partner, measure your shadow at 1 or 2 hour intervals. Observe how the length and direction of your shadows change. Calculate the difference in inches after each time period.

Writing:

1. Write in a learning log how the measurement of your shadow (above) changes, and why.
2. Write a story about a ray of light being sent to earth, but which encounters in its travels – a translucent object, an opaque object, and finally a transparent object. How does the sun ray feel? How does the sunray deal with these obstacles in its path? What are some of its adventures as it travels to earth?
3. Write a story about what would happen if you had no light for a whole day or a weekend.
4. Write an imaginative story about animals. Share your story -using animal shadows on the overhead to illustrate your story.

Narrative Input Chart: teacher directions

Divide large chart paper into three sections. In first section paste magazine pictures of objects or/and people and showing their shadows made from the sun shining from the East. Middle section – paste magazine pictures showing shadows with sun shining directly or almost directly overhead. In last section – paste magazine pictures showing shadows with sun shining from the West.

Use cut –out picture of a boy and girl walking together. Cut out or construct a large sun. You will be moving the boy and girl on their walk as you tell the story, and also moving the large sun along the top of the chart to demonstrate the sun's position at different times of the day.

SHADOWLAND

Once upon a time there was a little girl named Becki, and a little boy named Ryan. They were brother and sister. They enjoyed playing together. One sunny day Becki tried to get Ryan to go hiking with her, but he refused to go. He seemed very frightened, but she continued to coax him to go with her. He still would not go so she tried to find out what was bothering him, but he wouldn't tell her.

Then one beautiful sunny day Becki again begged Ryan to go with her into a near-by woods for a hike. Again Ryan said that he did not want to go with her. She tried pulling him along with her, but he started to cry. Becki knew that something was really upsetting Ryan so they sat down and talked.

Ryan reluctantly told Becki that he was afraid of shadows, and there were lots of scary shadows in the woods. Becki did not laugh at her brother because she knew that he really was very frightened. She also knew that he didn't need to be afraid as shadows could be explained.

Becki told Ryan that shadows are formed by an object blocking the sun's light. Ryan asked Becki why shadows seem to move and be in different places at different times of the day. It was then that Becki decided to take Ryan on a walk around the neighborhood to observe shadows.

Ryan and Becki put on their backpacks and started off on their walk. Ryan was still nervous about the shadows around him so he made sure that he stayed close behind his sister. They started off early in the morning, (Move Becki and Ryan along bottom of chart in section 1) and soon came to different objects and people casting shadows. The children looked up in the sky and saw that the sun was in the East shining down. (Place sun in proper location at the top hand corner of section I on the chart.)

Ryan noticed that the shadows seem to remain still unless the object or person moved. But then he remembered that sometimes shadows seem to go away or almost disappear so he asked his sister what caused this change.

Becki said that they needed to continue their walk. So they walked on their way. (Move Becki and Ryan along the bottom of the chart to section 2).

Later they looked up and noticed that the sun was directly overhead and that it was noon. (Place the sun directly overhead of the second section on the chart.) Ryan looked around him at the objects and people, and saw that the shadows were almost gone or very small. He wondered now if the position of the sun in the sky caused the shadows to change. But he wasn't sure, so he asked Becki if they could keep walking. So they trudged on. (Move Becki and Ryan along the bottom of the chart to the third section.)

Now it was afternoon and the sun was in the West shining down from the sky. (Place sun at the top of section 3 in the right hand corner.) Ryan noticed that the shadows were now in a different position than they were in the morning or at noontime. He now understood that the shadows were made from people or objects blocking the rays from the sun, and that shadows change position as the earth rotates, causing the sun to shine down from a different angle. Ryan let out a loud holler, as now he knew what caused shadows and why they appeared to move, and he no longer was afraid of them.

"Let's go for a hike in the woods, Becki", Ryan exclaimed. So Becki and Ryan immediately headed into the woods for a day of fun with no fear of the shadows that they would meet there, and they both lived happily ever after! (Move Becki and Ryan off the chart.)

Comparative Input Chart

ARE YOU LIGHT WISE?

A bulletin board or comparison chart could be made to help students distinguish between light sources and light reflectors. The chart or bulletin board should be divided into two sections with Light Sources on one side and Light Reflectors on the other side. Students could cut out or draw and color pictures illustrating the two sections and put them up on the board or chart under their correct heading.

Light – Sentence strip book

Light comes from the sun.

Light travels in a straight line.

Light when blocked, casts a shadow.

Light bounces.

Light reflects.

Light is needed for plants and animals to grow.

Light allows us to see.

Light comes from natural and artificial sources.

Light causes shadows to change shape and direction.

Chants:

Is this a Light?

by Ramona Matzke

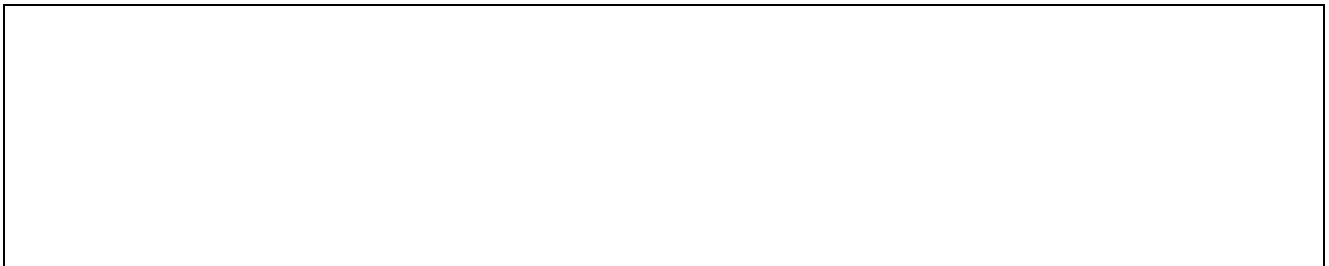
Is this a light?	Yes, Ma'am!
Is this a light?	Yes, Ma'am!
Well what does it do?	It helps us see.
Well what does it do?	It switches on and off.

Is this the sun?	Yes, Ma'am!
Is this the sun?	Yes, Ma'am!
What does it do?	It shines on the earth.
What does it do?	It helps things grow.

Is this a shadow?	Yes, Ma'am!
Is this a shadow?	Yes, Ma'am!
Well, how do you know?	It's a darkened shape.
Well, how do you know?	You can't see detail.

Is this a reflection?	Yes, Ma'am!
Is this a reflection?	Yes, Ma'am!
What does it do?	It bounces light off.
What does it do?	It lets you see yourself.

Should we all learn about light?	Yes, Ma'am!
Should we all learn about light?	Yes, Ma'am!
Why is it important?	We need it to see.
Why is it important?	We need it to live.



I Can Spell Sun

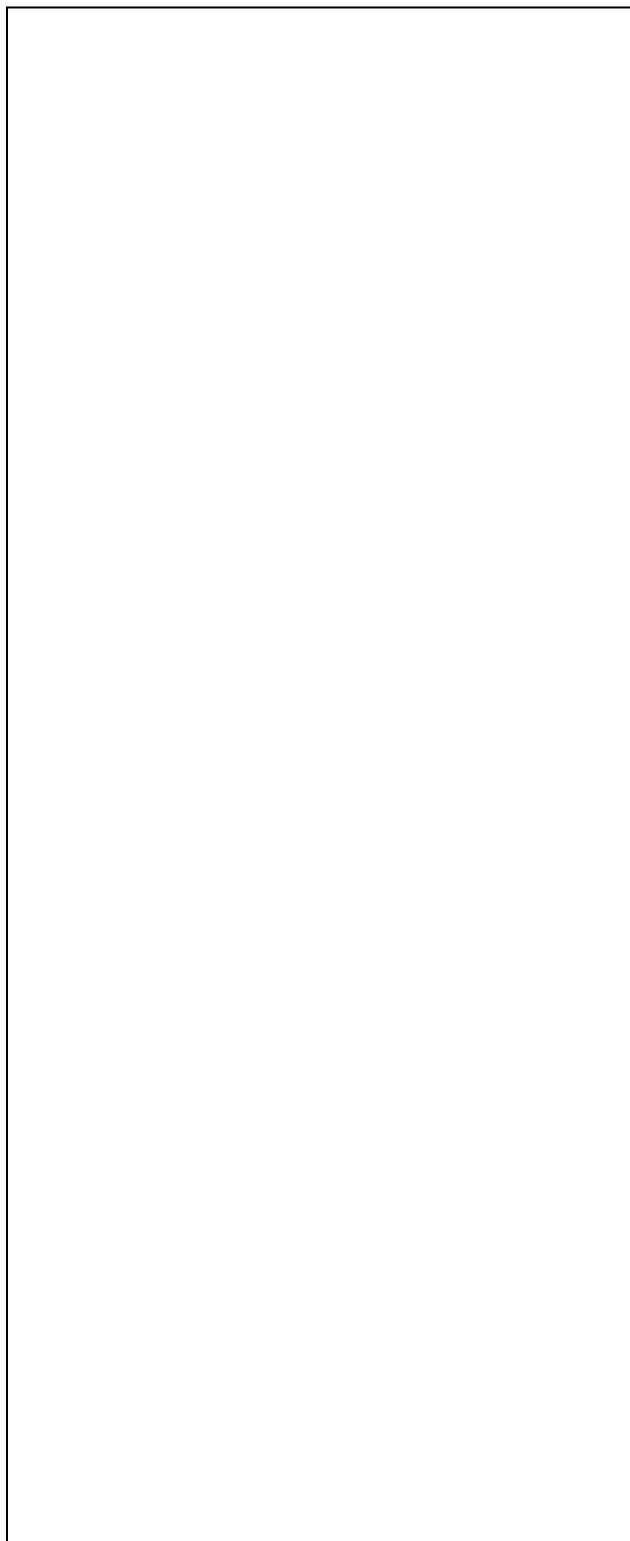
by Ramona Matzke

I can spell sun,
S-U-N.
I can spell see,
S-E-E.
I can spell heat,
H-E-A-T.
But I can't spell reflection.

I can spell light,
L-I-G-H-T.
I can spell night,
N-I-G-H-T.
I can spell bright,
B-R-I-G-H-T.
But I can't spell reflection.

I can spell dim,
D-I-M.
I can spell dark,
D-A-R-K
I can spell shadow
S-H-A-D-O-W
But I can't spell reflection

I can spell energy
E-N-E-R-G-Y
I can spell source
S-O-U-R-C-E
I can spell bounce
B-O-U-N-C-E
But I can't spell reflection



Yes I can!

Yes I can!

R-E-F L-E-C T-I-O-N

Reflection!

A large, empty rectangular box with a thin black border, occupying the lower half of the page. It is intended for a student to write their reflection.

Light

by Ramona Matzke

In the sky I'm a big light,
You can't see me when it's night.
I help with all the things that grow,
This is something you should know.

I'm the sun.
I'm the sun.
I'm the S-U-N.

I mostly travel in a line,
I help to make you feel just fine.
When I shine down there's a shadow,
This is something you should know.

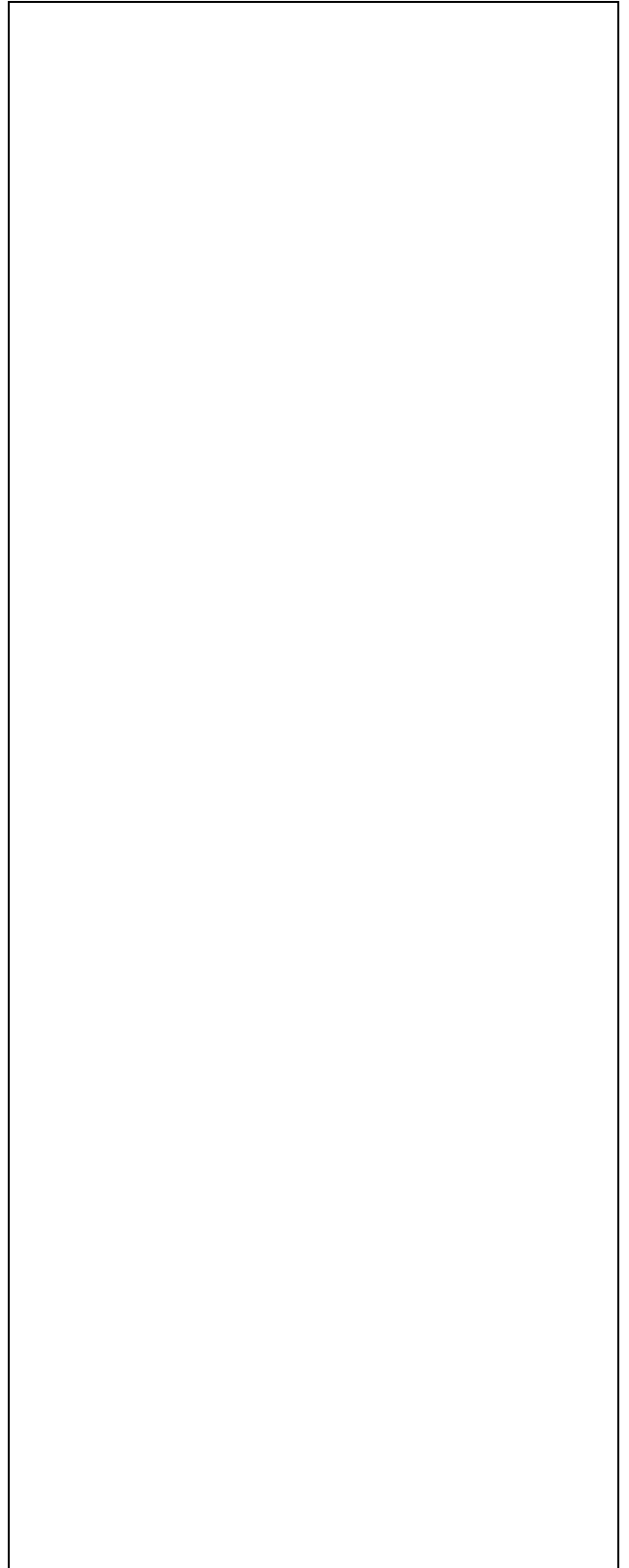
I'm the sun.
I'm the sun.
I'm the S-U-N.

Look in the mirror and you will see
A reflection of yourself there'll be.
Light bounces off the mirrored glass,
That's something you should learn in class.

I'm the sun.
I'm the sun.
I'm the S-U-N.

Sometimes I bounce, sometimes reflect,
Sometimes absorbed by an object.
I always try and do my part,
To help keep you out of the dark.

I'm the sun.
I'm the sun.
I'm the S-U-N.



Light Bugaloo

by Ramona Matzke

I'm a big bright light and I'm here to say,
"I light up your world and help you play."

The sun's the strongest light,
It sits high in the sky,
It helps plants grow,
And warms the earth nearby.

Reflect, absorb, energize too,
Doing the light the earth bugaloo.

It's an energy source,
That much is true.
Without the sun's light,
There isn't much we could do.

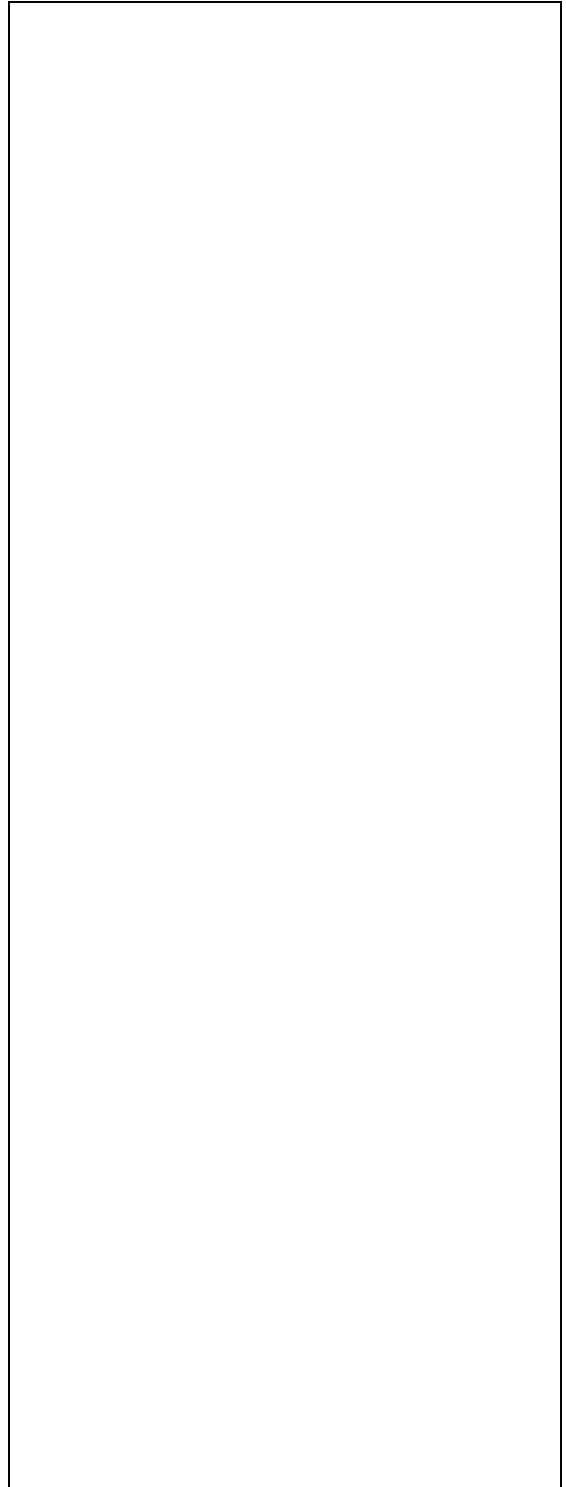
Reflect, absorb, energize too,
Doing the light the earth bugaloo.

Other lights are found
In many different places,
Lightbulbs, flashlights,
And even fireplaces.

Reflect, absorb, energize too,
Doing the light the earth bugaloo.

Light can warm like a fire,
Light can shine like the sun,
Light can glow like a candle,
Light throws shadows that are fun.

Reflect, absorb, energize too,
Doing the light the earth bugaloo.



Light Here, Light There

By Ramona Matzke

Light here, light there,
Light, light, everywhere.

Lightbulbs lighting,
Flashlights flashing,
Sunlight shining,
Candle light glowing.

Light here, light there,
Light, light, everywhere.

Lights casting shadows,
Lights reflecting images,
Lights helping us see,
Lights helping us live.

Light here, light there,
Light, light, everywhere.
Light! Light! Light!

