

*"Intelligence and Character is the goal of true education."
- Martin Luther King, Jr.*

Super Pal Universe Fall 2007 Theme Curriculum

ENERGY EFFICIENCY

Do you want to learn responsible with energy use? This plan has no work sheets, only activities, because the best way to learn to conserve is to do it!

Let us know if you did it! We want to hear from you! Be an encouragement to others to be responsible and conserve!

Texans are learning to conserve. We have wonderful program called "Watt Watchers of Texas". Their goal is to save energy in Texas schools, and they have lots of fun ideas for you to try out at home too! They work in cooperation with the State Energy Conservation Office. We encourage you to visit their web site at www.wattwatchers.com for lots of fun information and ideas.

Teachers, if you are thinking big and want to make a huge difference in your school and the Austin community, the State Energy Conservation Office offers workshops for teachers. Check out their site at seco.cpa.state.tx.us You could save your school thousands of dollars!

Here is an example of one of the great activities on the Watt Watchers Site with a few of our ideas added on

Try it out; film yourself doing it; write a song about it; draw a picture; take a photo; send it to us; post it on the web site, but most of all, HAVE FUN!

A TALE OF TWO LIGHT BULBS

Efficiency Demonstration

Equipment:

A table lamp

A 75 watt incandescent light bulb

A Compact Fluorescent Bulb (a 75-watt equivalent (measures in lumens)

A Watch with a second hand

Paper and a pencil

Lessons:

- Ways to find energy savings through better technology.
- The need to examine life costs to find the best deal.

Try It Out and Do The Math!

Many people think the wattage of a light bulb indicates how much light it produces. It is true that higher wattage bulbs produce more light. But in fact, light is measured in “lumens”, not watts. “Watts” is a measure of power, and “watt hours” is a measure of energy. Fluorescent bulbs use much less energy to create the same amount of lumens as an incandescent bulb. That is why an 18 watt fluorescent bulb is as bright as a 75 watt incandescent bulb.

The amount of energy wasted by the basic incandescent light bulb is amazing. Only 10% of the energy used by the bulb is needed to produce light. The remaining 90% of the energy consumed produces wasted heat energy. This is obvious only moments after the bulb has been turned on. It is too hot to touch or hold in your hand.

Make sure your lamp is turned off. Screw in the incandescent bulb into lamp socket. Get a piece of paper ready and a pencil. Get your watch ready. When you turn on the lamp, time how long it is before the bulb gets hot. Gently touch it every three seconds. Be careful when you touch the incandescent bulb!! Hot! Hot! How long did it take before this bulb began wasting energy?

Now, do this again with the fluorescent bulb.

We hope after doing this experiment, you will leave that fluorescent bulb in that lamp!

The compact fluorescent bulb uses smarter technology to turn most of the energy consumed into light with little energy wasted. The fluorescent bulb in contrast is only slightly warm to touch.

When shopping for a new light bulb, most consumers would not consider the fluorescent bulb because of initial cost. The incandescent bulb may cost \$0.75 or less where the equivalent fluorescent bulb may retail for \$5.

BUT - Do The Math!

Let's figure out which bulb is the cheapest.

On a piece of paper, make two columns, one for each bulb. Remember that each bulb produces the same amount of light.

Bulb	75 Watt Incandescent Bulb	Fluorescent
Cost:	\$0.75	\$5.00
Energy Used:	75 Watts	18 Watts
Average Life:	750 hours	10,000 hours

Here's your first step: Calculate the cost of regular bulbs necessary to last 10,000 hours.

Can you do the math?
How do you figure this out?
Don't look at this part if you don't want help!

Well, first we divide 10,000 hours by 750 hours to find out how many incandescent bulbs we would need. So, on your paper, write 10,000 divided by 750.

Write your total. This is how many bulbs you need to get 10,000 hours of light. Now we are going to multiply our number of bulbs by the cost of the bulbs. Write the number of bulbs and multiply it by \$0.75. Now you know your cost to purchase enough incandescent bulbs for 10,000 hours of light.

Now, you can compare the cost of the two kinds of bulbs for 10,000 hours of light. Which bulb is the best deal?
If this savings alone does not convince you, check out the energy savings below!

Do The Math!

What bulb uses the least amount of energy (kilowatt hours) in 10,000 hours of use? Is it worth it to switch? How much money would you save?

For 10,000 hours of light, it takes 13 incandescent bulbs. (We figured that out in the problem above!) So you will have to buy 13 incandescent bulbs at \$.75 each.

1,000 watts = 1 Kilowatt (KW) and your electric company bases its charges on the number of kilowatt hours used. Watts or Kilowatts is a measure of how much power is being used, but energy is power times the amount of time it is used. So, for example, if you used 10KW for 2 hours, you would have used 20Kilowatt-hours of energy.

The compact fluorescent bulb consumes 18 watts for 10,000 hours of light, or

180,000 watt-hours of energy. This is the same as 180 Kilowatt-hours. The incandescent bulbs consume 75 watts for 10,000 hours of light, or 750,000 watt-hours of energy. This is the same as 750 Kilowatt-hours.

If your costs are \$0.10 per kilowatt-hour, then figure it out.

Incandescent bulb: 750 kilowatt hours X \$0.10 = ?

Fluorescent bulb: 180 kilowatt hours X \$0.10 = ?

How many energy dollars can you save in 10,000 hours of use?

Brainteaser:

How many light bulbs do you have in your house? How much money could you save in 10,000 hours if you changed all of them?

Wow! That is a lot of money! We want to know how much! Send your totals to us and we can figure out how much all the Super Pals working together can save. Wouldn't that be a huge number?

Not to mention that the less electricity that is generated, the less pollution we have. In commercial buildings, (schools) there are additional savings beyond those we've already talked about, because fluorescent bulbs are changed less frequently saving labor costs.

Links about energy conservation:

wattwatchers.org

austinyellowbike.org

[austinenergy.com/energy 20%efficiency](http://austinenergy.com/energy20%efficiency)

austinutilities.com/etopics.html

enviromedia.com

seco.cpa.state.tx.us (State Energy Conservation Office)

NOBIS EST (It is up to us.)

Change is up to us. Let's join together to helping the world be a better place. Here at Super Pals, we believe it is up to us to make a difference.

A great website about making a difference is [HYPERLINK "http://www.charactercounts.org/" www.charactercounts.org](http://www.charactercounts.org/) . Michael Josephson started this site. Here is a poem that made him famous:

What Will Matter?

Ready or not, some day it will all come to an end.
There will be no more sunrises, no minutes, hours or days.
All the things you collected, whether treasured or forgotten
will pass to someone else.
Your wealth, fame and temporal power will shrivel to irrelevance.
It will not matter what you owned or what you were owed.
Your grudges, resentments, frustrations
and jealousies will finally disappear.
So too, your hopes, ambitions, plans and to-do lists will expire.
The wins and losses that once seemed so important will fade away.
It won't matter where you came from
or what side of the tracks you lived on at the end.
It won't matter whether you were beautiful or brilliant.
Even your gender and skin color will be irrelevant.
So what will matter?
How will the value of your days be measured?
What will matter is not what you bought
but what you built, not what you got but what you gave.
What will matter is not your success
but your significance.
What will matter is not what you learned
but what you taught.
What will matter is every act of integrity,
compassion, courage, or sacrifice
that enriched, empowered or encouraged others
to emulate your example.
What will matter is not your competence
but your character.
What will matter is not how many people you knew,
but how many will feel a lasting loss when your gone.
What will matter is not your memories
but the memories that live in those who loved you.
What will matter is how long you will be remembered,
by whom and for what.
Living a life that matters doesn't happen by accident.
It's not a matter of circumstance but of choice.
Choose to live a life that matters.

Part of living a life that matter is being responsible.

What is a definition of responsibility? Mr. Josephson thinks it has four parts:

Duty-Know and Do your duty. Acknowledge and meet your legal and moral obligations.

Accountability-Think about consequences on yourself and others before you act. Think long term. Don't look the other way when you can make the difference. Don't make excuses. Don't blame others.

Pursue Excellence-Be prepared. Persevere. Be diligent. Make what you do worth of pride. Don't give up. Don't quit trying.

Self Control-Take charge of your life. Set realistic goals.

Do you want to know more about being responsible? Here are some links to great web sites to encourage you to build your character:

charactercounts.org
goodcharacter.com
character.org
bigmouthpresentations.com
goleaps.com
austinisd.org/academics/sss/ce

Do you like to read? There are lots of great books on responsibility. HYPERLINK "<http://www.charactercounts.org/booklist.php>" www.charactercounts.org/booklist.php lists lots of great books. Here are a few of our favorites:

Byars, B., Night Swimmers
Byars, B., Summer of the Swans
Doty, J, If Wishes were Horses
Eige, L, Kidnapping of Mister Huey
First, J, Move Over, Beethoven
Gerson, C., How I Put My Mother Through College
Hunt, I., William, A Novel
Lawrence, L., Dram Road
Mc Hugh, E., Karen and Vicki, Karen's Sister, Raising a Mother Isn't Easy
Moeri, L., Downwind
Myers, W., Young Landlords
Peck, R. Father Figure: A Novel
Shyer, M. Welcome Home, Jellybean
Speare, E. Sign of the Beaver
Voight, C Dicey's, Song Homecoming

Energy Library - Books for (and recommended by) Students

Title

Author

Publisher

ISBN Number

Year Published

100 Inventions That Shaped World History

Bill Yenne

Bluewood Books, San Francisco, CA

0-912517-02-6

1993

101 Things Every Kid Should Know About Science

Samantha Beres

Lowell House Junvenile, Los Angeles, CA

1-56565-916-3

1998

15 Simple Things Californians Can Do to Recycle

The Earthworks Group & California Dept. of Conservation's Division of Recycling

Earthwork Press, Berkeley, CA

1-879682-06-06

1991

25 Simple Things Kids Can Do to Save Energy

The Earthworks Group & Pacific Gas and Electric Company

Earthwork Press, Berkeley, CA

None - printed by PG&E

1992

30 Simple Energy Things You Can Do to Save the Earth

The Earthworks Group & Pacific Gas and Electric Company

Earthwork Press, Berkeley, CA

None - printed by PG&E

1990

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30 Simple Energy Things You Can Do to Save the Earth

The Earthworks Group & Pacific Gas and Electric Company

Earthwork Press, Berkeley, CA

None - printed by PG&E

1990

50 Simple Things You Can Do to Save the Earth

The Earthworks Group

Earthwork Press, Berkeley, CA

0-929634-0603

1989

