

Unit 6 - Invention

Teacher Tip on Using this Unit: *This unit follows a format for classroom lessons designed to help students learn to use the English language. Each activity provides a pre-learning section which consists of rich language input followed by a learning section where students are encouraged to use the input in a meaningful way. Many of these sections will also be followed by a post-learning section where students produce something that indicates their learning in the prior section. Often, the post-learning production becomes input for the next learning section so that students continually recycle and expand the language they use in the classroom. It is important for teachers to realize that the great majority of learning will happen by doing and that as long as students are fully engaged in an activity, it is useful to continue it, repeat it, or expand it.*

Dr. Invention



Dr. Invention invented a light
that helps people see in the dark.
He also invented a merry-go-round
that spins round and round in the park.
He found a new way to catch fish in the bay
by tying a hook to a string.
He thought it was nice when he built a device
that lets you record when you sing.
Dr. Invention has many ideas.
He writes them all down in his books.
He plans to invent a triangular tent
as well as an oven that cooks.
His soda machine is a scientists dream
and his candles are strawberry scented.
I hate to inform him, but I have to warn him,
these things were already invented!

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Vocabulary Watch

*Words that may be
new:*

INVENT

**BAY
TYING
STRING
HOOK**

**INFORM
WARN**

**SPINS
SCENTED
TENT**

Teacher Tip on Stimulating Higher Order Thinking Skills:

As students read, let them come to realize for themselves, without discussion, that the things in the poem already exist. Then ask them

Why does the poet need to warn Dr. Invention?

*Guide students to realize that "invention" means to make something **new**. Dr. Invention needs to be warned because his "inventions" are not new. With advanced students, you can expand this discussion to include the difference between the meanings of words like make, build, and discover.*

How does Dr. Invention plan his inventions? *He has ideas and writes them down in his books. Once students understand that Dr. Invention has books filled with ideas. Increase vocabulary by asking students...*

What else might be in his books? *Let students have fun thinking of all the "already invented" things that Dr. Invention might be planning: chairs, pencils, balls, lunch....Use this activity to help students name **in English** the many objects around them. Elicit new words that they know only in the first language. Write down all the "inventions" on the board. Write down many choices so that these words become rich input for the next activity.*

Invent a New Poem: Notice the "beat" of Dr. Invention.

Recite the poem to the students clapping on the stressed syllables with the recitation. Help students notice that some syllables are stressed and others are said softer and must be said faster to keep the beat. English has stressed and unstressed syllables and is a stress-timed language. Students whose first language is syllable-stressed will find English easier to understand and to speak well if they notice this difference.

1 2 3 4
DOctor InVENTion inVENTed a LIGHT

 1 2 3
that HELPS people SEE in the DARK.

This line...

 1 2 3 4
He ALso inVENTed a MERRY-go ROUND

 1 2 3
that SPINS round and ROUND in the PARK.

*rhymes with
this one.*

Work with a partner. Use the "inventions" that your class thought might be in Dr. Invention's book to invent a poem of your own. Use the same beat and rhymes that Mr. Sardelli used to write "Dr. Invention."

1 2 3
DOctor InVENTion inVENTed

 1
that HELPS people

*Can you make
this line...*

 1 2
He ALso inVENTed

that

*rhyme with this
one?*

Teach your poem to another pair of students, then add your poems together. If the beat and rhyme is the same, your poems will work well together! Share with other students in the class to make the longest poem you can!

The four line poems invented by small groups become input for the next activity.

Improve Your Invention: Inventors and poets constantly improve and revise their creations. As you work with your classmates, if any part of the poem doesn't sound right, work together to improve the sound. If any two lines are about the same invention, check the board for a new word and change the invention. Help your class make the longest and the BEST poem you can!

Guide students to check their own meter and rhyme by listening to how well poems fit together as they add poems of different groups. Also, encourage them to work together to change poems that use the same inventions so that they continue to expand their productive vocabularies. Notice that the four lines of one group do not need to stay together to work, so you can encourage students to rewrite OR to choose certain lines and drop others. For example, if four groups write about pencils, make a class activity to decide which pencil lines are the best to add to the class poem. Or make a whole new poem about pencils! As long as students are engaged and using language keep the activity going. Recycling language in a meaningful way IS LEARNING. Put the class poem on the board or make a poster of it and tape onto the wall. If students need more practice in stressing certain syllables, continue practice by having students "perform" the class poem. In future, refer back to this activity to help students notice the musical quality of English.

In "Dr Invention," Mr. Sardelli says that "Dr. Invention invented a light that helps people see in the dark," but we know that Dr. Invention did not invent the light bulb because his light bulb was not new. Who do you think did invent the light bulb?

Teacher Tip on Stimulating Higher Order Thinking Skills:

Students may know the name Thomas Edison as inventor of the light bulb. If they do, surprise them by saying that he did not really invent the light bulb itself, but he did invent the first one that was practical to sell to people in large numbers. If they do not know the name, you can still tell them that the light bulb they know today was invented by Edison, but before Edison, there were many other inventors who worked on the problem of electric light. This discussion can be expanded to guide students to think about what it means for an idea to be "new." The idea of light was not new, of course. Even the idea of electric light was not new. But Edison's way of solving the problem of electric lights that did not last long enough WAS new. Advanced teachers and students may wish to research the other inventors who worked on electric light and the problems they each worked to solve.

What did people use to see in the dark before they had electric light? *They used various forms of lamps or candles.*

Why did people need something new? Why not keep using lamps? *Students may have various answers. They didn't last long, etc. Help students to realize that the invention of electric light came about in order to solve problems. Inventions solve problems. In the case of electric light, the main reason was probably safety. Workers in mines, for instance, died in explosions caused by the fire in lanterns.*

Do you know any other famous inventors? Perhaps you know who invented the printing press or the telephone. These famous inventors saw a problem, such as the need to read after dark or the need to communicate with people far away, and they thought of new ways to solve these problems. You don't need to be famous to invent things. You don't even need to be grown up. Read this story about a young boy who invented a new way to solve a problem.

Smart Boy Creates Award Winning Smart Bell

June 2011

England, UK – A British schoolboy will earn up to £250,000 (\$410,000 [20.5 lakh]) after inventing a doorbell that fools burglars into thinking somebody is at home in an empty house.



Laurence Rook, 13, from southern England, is the inventor of Smart Bell. Smart Bell looks and works like a regular doorbell, but when the doorbell is pressed by a visitor, if you don't answer, Smart Bell waits ten seconds, then dial your mobile phone. You can answer the phone and talk to the visitor standing at the front door. Laurence's invention uses existing mobile phone technology and has a built in SIM card. The Smart Bell even creates a small amount of white noise so that it does not sound like a mobile phone. It sounds like someone is inside the house talking on an intercom system.

Laurence first started working on the idea because his mom didn't like to miss deliveries when she was out. Laurence thought he could help by creating a way for his mom to talk to the postal carriers even if she was not at home.

But Laurence soon realized that his idea could solve a much more important problem. He realized it could stop burglars. "Most...burglars ring the doorbell first to see if anyone is at home, but Smart Bell has the perfect way to counteract this. If you are out and a burglar comes up to your door and rings the doorbell, after ten seconds, Smart Bell will ring through to your mobile phone and you will be able to answer." The burglar will not know the house is empty.

Laurence came up with the idea for the Smart Bell when his school invited student's to enter a contest for student inventions. Laurence drew designs to show his idea.

A family friend, Paula Ward, who is also an inventor, liked his design, and helped him to send his design to China, to a company that makes working models from designs. Laurence said, "Paula ... sent off the designs to China ... to be made into the actual product. "

Less than 12 months after the prototype was developed, Commtel and several other big companies are ready to sell Smart Bell at a cost of £40 each. Richard Drewnicki, of Commtel, says, "There is certainly a market for this kind of product. We hope it will prove popular."

Vocabulary Watch

Words that may be new:
burglar

postal carrier
white noise
counteract
intercom system
prototype

This invention fools burglars. What does "fools" mean?

Laurence invented something to solve a problem with burglars, but that wasn't the problem he was trying to solve! Number the pictures in chronological order, then use them to help you explain where Laurence FIRST got the idea for his invention?

Where did Laurence get the idea for his invention?				
Number				
Explain				

Reverse Engineering the Smart Bell Design: Laurence needed to draw the design for his invention before the company in China could make it. Read the article carefully to find out all the things that Smart Bell does. Think about all the parts that Smart Bell must have to work. Work in a group to draw a possible design for Smart Bell showing all the parts needed to make it.

Teacher Tip on Stimulating Higher Order Thinking Skills:

This exercise is designed to encourage close reading and inference skills. Allow students to begin drawing and to work collaboratively. If one group notices something and begins drawing in a part that others don't, ask them about it to draw the attention of the other students. If students miss things, gradually ask questions that will continually turn their attention to the text. You might say, for instance, "What's this part in paragraph 2? It says that it 'works like a regular doorbell.' What does that mean?"

Students will need to infer that the bell has some sort of ringer as well as the SIM card. Students may not think about how, exactly, the Smart Bell "waits ten seconds." Encourage close reading and critical thinking by asking leading questions, but give the students time to work this out for themselves. Allow the students to get creative, deciding that the Smart Bell should come in different colors, etc.

Laurence's invention solved at least two problems. Work with your group to think of at least three other problems the Smart Bell might solve.

1	
2	
3	

Compare your list to your classmates' lists. Did they think of any that you didn't? Did any students think of the same uses for the Smart Bell? Make a new list with the class that lists all the new uses for the Smart Bell.

Encourage the discussion and language necessary to sort the different lists to make a new list that includes only unique items. Do not rush this seemingly simple activity. Instead, where possible, make the list the input for another activity. If the students are participating well, you may continue the activity by helping them as a class to rank the new uses for the smart bell in some order. Be sure to choose a specific criteria for the order. For example, if the sell of the young boy's invention interests them, you might encourage students to rank the new uses according to which use they think will sell the most Smart Bells.

Read the blog post below about the Smart Bell. Did you think of other uses?

Benefits of the Smart Bell Home Security System

The benefits of the Smart Bell home security system far outweigh the cost, which is expected to be about £40 (US\$60). It can be used by many people, for a variety of reasons - so it's not something that's a waste.

The Smart Bell home security system can help people who want to

Have added security as you don't have to answer your door, even while you're in, to strangers. Answer the door from the comfort of your armchair, sending away cold callers and fraudsters.

Ideal for the older generation.

Answer the door, to let family/friends know you're on your way to answer the door... it's just taking a little more time. Ideal if you've broken a leg, are less mobile, or simply 'on the toilet'. Deter burglars by making them think you're in the house.

Speak directly to parcel deliveries and mail deliveries - giving you the chance to speak directly to the delivery driver.

Wait in for a caller, perhaps a repair man, but you still want to be able to go about your daily life and not feel trapped to sit beside the front door.

Ask a neighbour to wait in for a repairman who is expected, you can answer the doorbell/phone then tell them to wait for Mary at number 6 to come and let them in - then you can phone Mary!

I'm sure you can think of times when a Smart Bell would be useful for you - or somebody in your family! So, I think you'll agree, the Smart Bell home security system is ingenious, affordable and a great gadget to have as it can be used for more purposes than simply as a burglar deterrent!

Hats off to Laurence Rook - I'll be getting a Smart Bell the minute they're in the shops - will you?

Laurence saw a real problem and he invented a solution. List at least 5 real problems that you know about?

Here are some more famous inventions. Add three more inventions to the list. What problems did each of these inventions solve?

Antibiotics _____

Airplane _____

Radio _____

Computer. _____

Share your list with your classmates. Listen to your classmates. What inventions did they think of. Make a new list with your class of all the inventions you think are important.

Think about what makes these inventions important. Does "important" mean that something is popular? Does it mean that it saves lives or helps people? Is something more important if it helps more people? Is it more important if we depend it on everyday or if we only need it in emergencies? Think about your definition of "important." Write your idea here.

Teacher Tip on Stimulating Critical Thinking Skills:

This exercise helps to develop logic and evaluation skills. Students should be stimulated with open questions to realize that the idea of "importance" is relative. There is no "right" answer to what makes something important, but it is important to critical thinking to realize that when people say something is important, they have some criteria in mind for what that means. Allow students to think about what makes something important? What makes something more important than something else?

Look at the list of inventions that you and your classmates have made. If you could have only one of these important inventions, and all the others would disappear, which one would you save?

How did you choose? How did you decide which was "most important"? Did your classmates have other opinions?

Write a paragraph telling which invention you think is most important and why. Try to give a reason that can convince your classmates that your choice of invention is the most important.

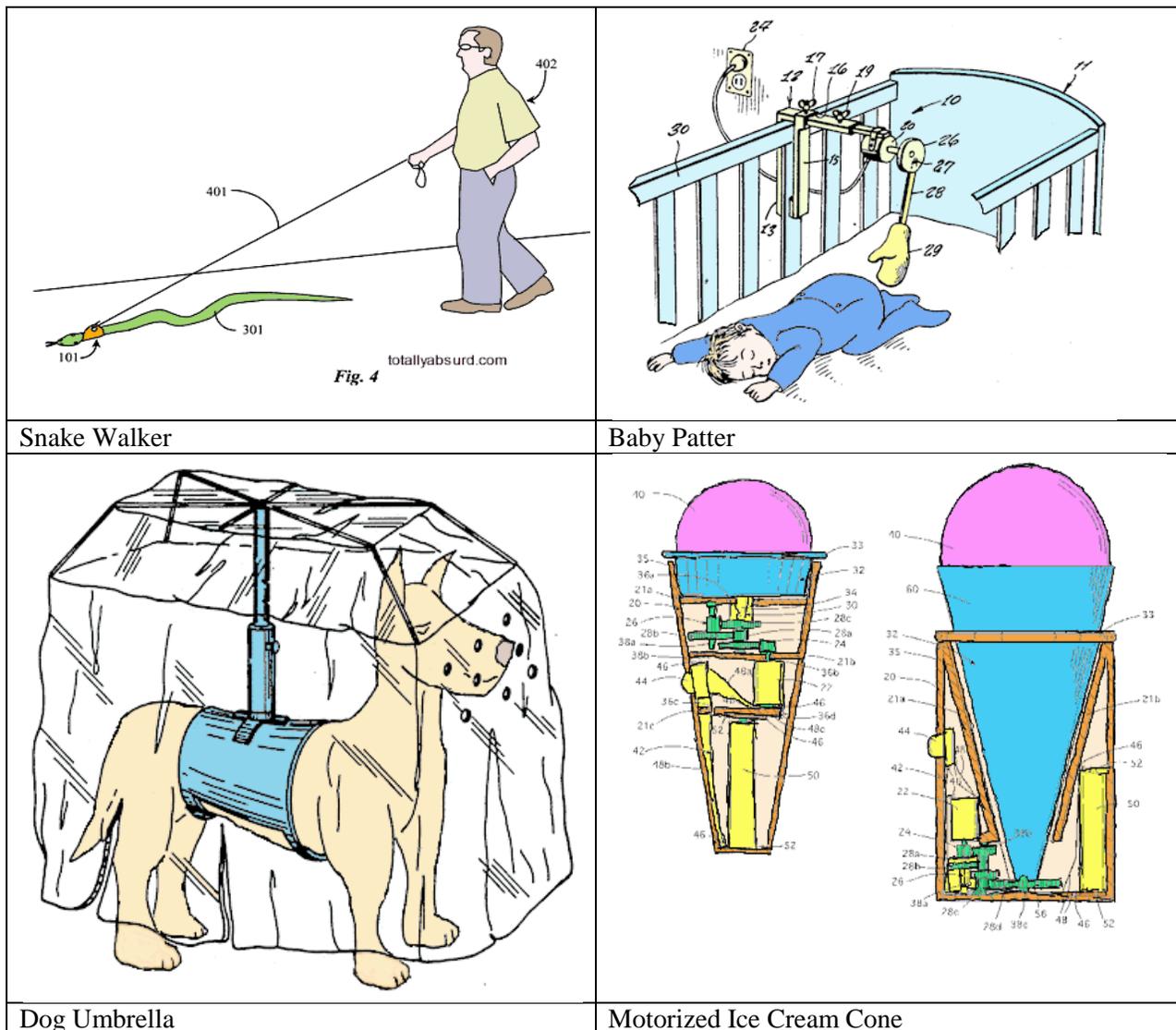
What does THAT do?

In the United States when people invent something, they want everyone to know that the idea belongs to them. They hope someday they will sell their invention the way Laurence did. They let everyone know they own their idea by registering a patent. Anybody can patent almost anything as long as the idea is their original idea. Look at some of these "patently absurd" inventions. <http://www.totallyabsurd.com/>

Choose one invention that interests you and study it carefully to see how it works. Describe the invention to your classmates. Tell what the invention does, how it works, and what problem it solves.

Teacher Tip:

Following are a few examples from the website. Many more are available. If students do not have internet access, print a selection of simple patent drawings and pass them out to groups. Let students try to figure out what each silly invention does and what problem it solves. Let groups present their invention to the class.



You can invent something right now!

Shakespeare is famous for writing important plays like Romeo and Juliet and Hamlet, but did you know that Shakespeare invented many words we still use today?

Look carefully at these words that Shakespeare invented. What do the words have in common? How do you think Shakespeare thought of them?

bedroom	leapfrog
birthplace	moonbeam
downstairs	roadway
eyeball	schoolboy
farmhouse	watchdog

**All the words are made by putting two small words together to name a new thing.
watch+dog=watchdog**

Invent a new word by putting two small words together. Write several sentences telling what your invented word means:

My word is _____ . My word is made of the words _____ and _____ .

A _____ is _____

Shakespeare was the first person to write these words, but now we use them every day and they are in our dictionaries. Look at the dictionary entry for watchdog.

watch·dog (wɔ̃ch 'dɔ̃g , -dɔ̃g)

n.

- 1. A dog trained to guard people or property.**
- 2. One who serves as a guardian or protector against waste, loss, or illegal practices.**

Write a dictionary entry for your invented word:

Dictionaries put words in alphabetical order. List all the invented words that your classmates have made. Put them in alphabetical order. Where does your word belong in your class dictionary?

Inventions Solve All Kinds of Problems: Inventions solve problems, but they don't have to always solve big important problems. Read about this invention by a young man in 6th standard who solved a very common problem - what to do when you're bored!

The Paper Video Game

from <http://bharathh.blogspot.com/2006/08/paper-video-game-something-original.html>

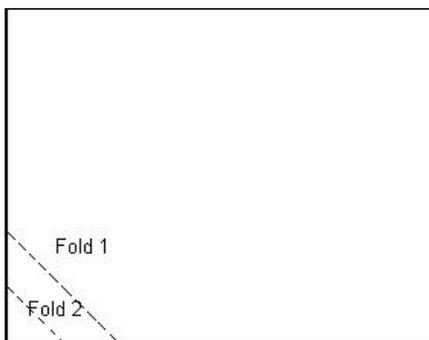
Something original for a change. My very own game! I'm sure there must be plenty of other ppl that have made something similar to this, but until they come and pull me up on this, I am the proud and sole creator of the PAPER VIDEO GAME! This is a special post for the Inventor of Games. Do check her blog out!

This was something that I had created sometime in 5th or 6th standard, when hand held video games were a craze in India. I wasn't able to get my hands on one, so well I created one with whatever resources I had plenty at the time - namely paper and pencils.

First how to create one. You need:

- * A piece of paper (ruled or otherwise)
- * Pencil and Eraser
- * A fertile imagination
- * Another tiny piece of folded paper/aluminium foil tightly curled into a small ball with a flat bottom.

STEP 1

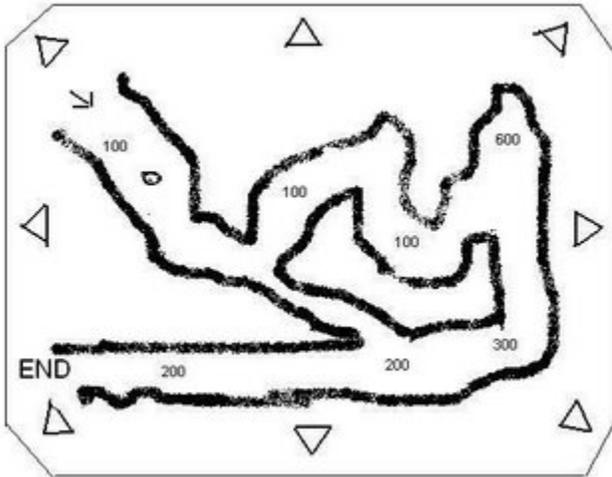


First fold the sheet of paper as illustrated. There are two folds required. This gives it a kind of springy effect. Don't press too hard to make Fold 2. Otherwise the paper loses it's springiness.

Repeat for all 4 edges of the sheet of paper.

STEP 2

Now draw your beautiful game on it. I generally created courses that my little paper/foil ball had to make across, with alternate courses and bonuses etc. Draw your controls on the paper and voila... You have your paper game like so!



STEP 3

Now place the little ball at the start and navigate it through the meandering courses with your controls. Like I mentioned earlier, making your paper/foil ball flat at the bottom gives you better control. Otherwise you tend to lose control if it is completely round.

Practice makes perfect. It is quite difficult to master this game, so a little patience is required in the beginning. But once you master the art of moving your little ball, you can never get bored at airports. :)

Teacher Tip on Stimulating Critical Thinking Skills:

The blog post can be used as an activity allowing students to make their own games if time permits. It's important for students to realize that they, too, can invent things, and these games provide practice in logic skills and in the ability to read to follow instructions. Allow the students to follow the instructions on their own to make their games. Follow it by assigning them the task of writing instructions for playing their game. If resources are available, the students, having made a "prototype" could figure out how to "mass produce" some of the class games so that they can share them with students in other classes.

Continue talking about inventions as way to solve problems in new ways. Go beyond the text with an exploration of the internet. Search for key words, kid and invent, to find dozens of great stories, slide shows, and videos telling about children all over the world who've invented things. Show your students how to search and have different students bring in and share the stories they find. Encourage your classes to think of ways they can solve the problems they see in their own communities and schools. Help them develop the language to publicize their efforts in letters, posters, and blogs. Help to create in them the thinking skills and the language skills they need to contribute to solving the problems they encounter!