

THE BREATHING SYSTEM

This activity was developed by Chris Laine, Pauline Hoyle and Stuart Scott in the early eighties and published as Talking Science by the Inner London Education Authority. It has now been rescued from the archive and is redone in a more user friendly style. You might want to divide the information paragraphs into four pieces and make an information gap. You need to enlarge the board to A3 and then the cards will fit it.

Last updated 19th October 2010

Webaddress: <http://www.collaborativelearning.org/breathingsystem.pdf>

COLLABORATIVE LEARNING PROJECT

Project Director: Stuart Scott

We support a network of teaching professionals to develop and disseminate accessible talk-for-learning activities in all subject areas and for all ages.

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BRIEF SUMMARY OF BASIC PRINCIPLES BEHIND OUR TEACHING ACTIVITIES:

The project is a teacher network, and a non-profit making educational trust. Our main aim is to develop and disseminate classroom tested examples of effective group strategies that promote talk across all phases and subjects. We hope they will inspire you to develop and use similar strategies in other topics and curriculum areas. We want to encourage you to change them and adapt them to your classroom and students. We run teacher workshops, swapshops and conferences throughout the European Union. The project posts online many activities in all subject areas. An online newsletter is also updated regularly.

*These activities are influenced by current thinking about the role of language in learning. They are designed to help children learn through talk and active learning in small groups. They work best in non selective classes where children in need of language or learning support are integrated. They are well suited for the development of oracy. They provide teachers opportunities for assessment of talk.

*They support differentiation by placing a high value on what children can offer to each other on a particular topic, and also give children the chance to respect each other's views and formulate shared opinions which they can disseminate to peers. By helping them to take ideas and abstract concepts, discuss, paraphrase and move them about physically, they help to develop thinking skills.

*They give children the opportunity to participate in their own words and language in their own time without pressure. Many activities can be tried out in pupils' first languages and afterwards in English. A growing number of activities are available in more than one language, not translated, but mixed, so that you may need more than one language to complete the activity.

*They encourage study skills in context, and should therefore be used with a range of appropriate information books which are preferably within reach in the classroom.

*They are generally adaptable over a wide age range because children can bring their own knowledge to an activity and refer to books at an appropriate level. The activities work like catalysts.

*All project activities were planned and developed by teachers working together, and the main reason they are disseminated is to encourage teachers to work more effectively with each other inside and outside the classroom. They have made it possible for mainstream and language and learning support teachers to share an equal role in curriculum delivery. They should be adapted to local conditions. In order to help us keep pace with curriculum changes, please send any new or revised activities back to the project, so that we can add them to our lists of materials.

THE BREATHING SYSTEM TEXTS

When we breathe, air can enter the body either through the nose or mouth. It is better to breathe through your nose because the structure of the nose allows the air to become warm, moist and filtered before it gets to the lungs. The hairs and mucus in the nose filter the air by trapping bacteria, dirt and dust. There are also lots of blood capillaries inside the nose which help to warm the air as it passes through.

Down the windpipe

At the back of the nose and throat the air enters the windpipe or trachea. At the top of the windpipe there is a bulge called the voicebox or larynx. This has cords in it which vibrate as the air passes over them. These allow us to talk and make other sounds. The rest of the windpipe is 12 cms long. It has C-shaped rings of cartilage. These strengthen it, so that it can stay open all the time to let air pass from the mouth and nose to the lungs. There are also hairs to filter the air.

Into the lungs

The trachea or windpipe divides at the bottom into two short tubes. Each tube is called a bronchus and it takes air into the lungs. Like the windpipe, each bronchus has hairs to filter the air, and cartilage rings for support. Inside each lung the bronchus divides into many smaller tubes called bronchioles. The bronchioles take the air to all parts of the lung. At the end of each bronchiole there are many tiny air sacs. Each air sac is made up of thin membranes called alveoli. The alveoli are surrounded by blood vessels. Each alveolus lets gas exchange take place. This means that the oxygen moves from the air in the alveolus into the blood. At the same time carbon dioxide moves from the blood to the air in the alveolus.

Surrounding the lungs

The lungs are covered by a thin, shiny, slippery membrane or skin. This is called the pleural membrane and it makes a liquid which stops damage to the lungs if they rub against the rib cage. The rib cage is made of many bones called ribs which surround and protect the lungs and heart. Under the lungs is a large sheet of muscle called the diaphragm. This stretches across the body and helps breathing in and out.

THE BREATHING SYSTEM GROUP INSTRUCTIONS

Work in groups of three or four.

Put the breathing system board where all can see it.

Share out the part and function cards so that everyone has some of each.

Work together to try to label each part.

Then try to match the functions to the parts and put the function cards in the correct places.

Check your ideas by reading the Breathing System Texts.

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THE BREATHING SYSTEM

PARTS

FUNCTIONS

1.

3.

2.

1.

2.

3.

5.

4.

4.

5.

6.

6.

7.

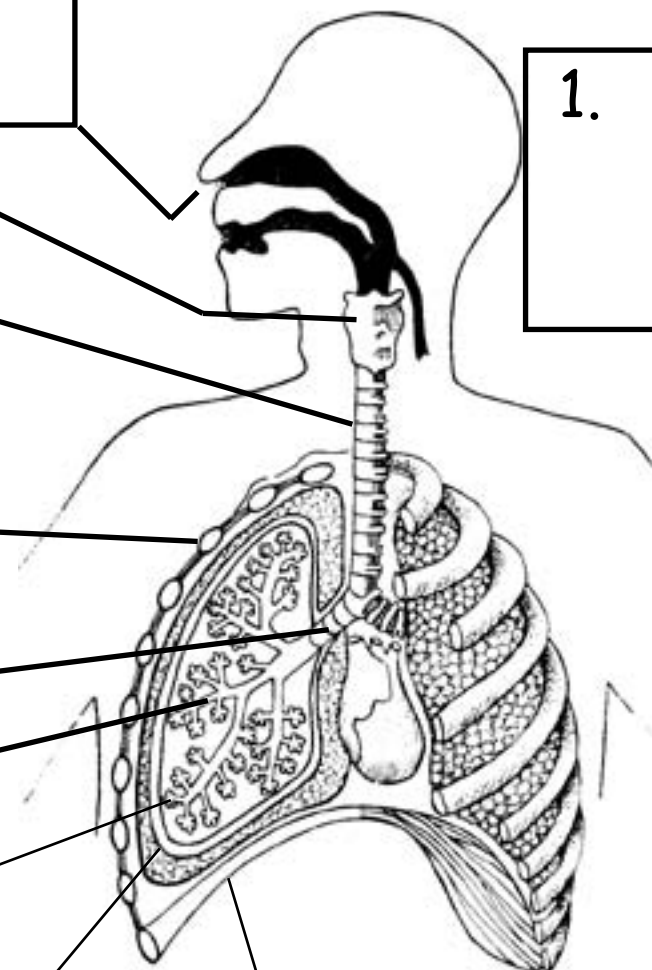
7.

8.

8.

9.

9.



Part and functions cards

PART bronchus	PART trachea (windpipe)	PART bronchioles
PART larynx	PART diaphragm	PART air sacs (made up from alveoli)
PART ribs	PART nose	PART pleural membranes

FUNCTION This stays open all the time to allow the air to get from the mouth and nose to the lungs.	FUNCTION These allow gaseous exchange to take place so that oxygen moves from the air into the blood and carbon dioxide moves from the blood to the air in the alveoli.	FUNCTION These produce a liquid to reduce damage by friction as the lungs rub against the ribs during breathing.
FUNCTION This cleans and warms the air as it passes through.	FUNCTION This moves to help with breathing in and out.	FUNCTION This helps to make sounds bigger when air passes through it.
FUNCTION This transports air from the trachea to the lungs. Its hairs trap dust and dirt.	FUNCTION These take air to all parts of the lungs.	FUNCTION These surround and protect the lungs and heart.