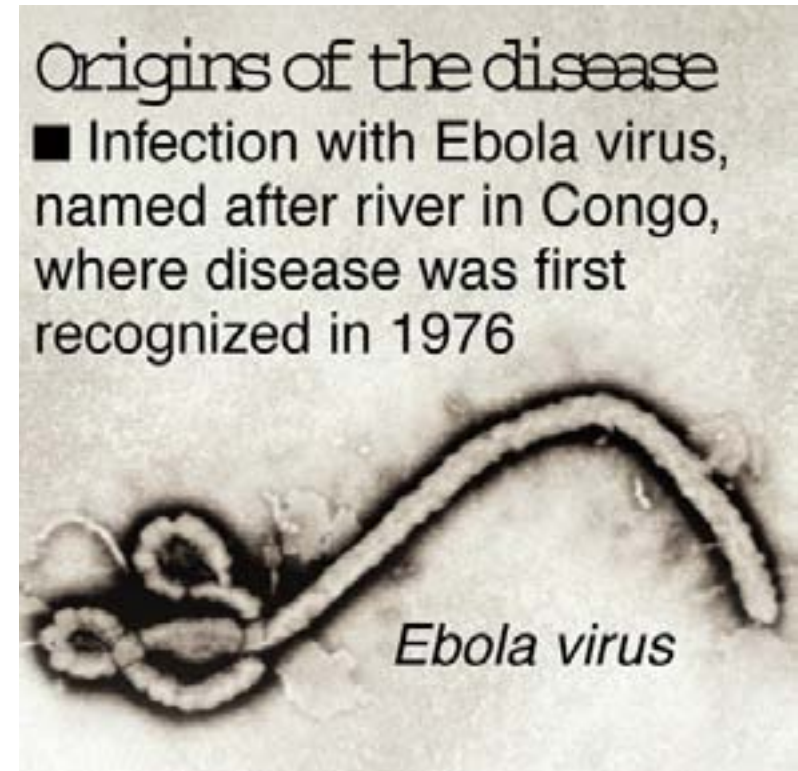


# Ebolanomics - Why there is no vaccine. Information Gap Activity

Health officials want to reduce the prescription of antibiotics so that microbes learn to resist them more slowly. We need to have new antibiotics in reserve to use when older ones cease to be effective. However, the number of new antibiotics becoming available is reducing. Drug companies want to sell a lot of their drugs, but health officials want to limit sales.



Three different texts on the economics of drug production.

# Ebolanomics - Why there is no vaccine.

Here is a new information gap activity. This activity was sourced from an article by James Surowiecki in the 25th August 2014 edition of the New Yorker. You may already have used Push and Pull which was also sourced from another article by this author who has been writing for many years about finance and its impact on our lives.

Last updated 4th September 2014

Webaddress: [www.collaborativelearning.org/ebolanomics.pdf](http://www.collaborativelearning.org/ebolanomics.pdf)

## COLLABORATIVE LEARNING PROJECT

Project Director: Stuart Scott

Supporting a cooperative network of teaching professionals throughout the European Union to develop and disseminate accessible teaching materials 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 across all phases and subjects. We hope they will inspire you to use similar strategies in other topics and curriculum areas. We run teacher workshops, swapshops and conferences throughout the European Union. The project publishes a catalogue of activities plus lists in selected subject areas, and a newsletter available by post or internet: "PAPERCLIP".

\*These activities were 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 mixed classes where children in need of language or learning support are integrated. They are well suited for the development of speaking and listening. They provide teachers opportunities for assessment of speaking and listening and other formative assessment.

\*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 mother tongue 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 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.

# Collaborative Reading Materials with an information gap.

There are three different texts with a sample common question sheet with a small space for notes. The principle here is that readers will be unable to complete the questions by simply using the information in their version, but will have to collaborate with other readers, asking questions and eliciting information, possibly arguing and negotiating. There is also an opportunity to draw on their own previous knowledge or seek out other information.

We have outlined the following procedure, but you can reorganise things in a variety of ways. You can possibly arrange to pair slower readers with faster ones etc. You could start with threes rather than pairs etc.

The class works first in pairs. Partners have copies of the same text. Five pairs have Sheet A, five Sheet B etc. I hand out coloured cards to organise pair, and if you want or select pairs you can always deal the cards from the bottom of the pack. Pairs can read the text silently first, and then to each other, and then work together to answer as many questions as they can.

The pairs then split up and move into colour groups of six where two participants have Sheet A, two Sheet B etc. They can then go on to complete the questions by interrogating each other. You might prefer to organise pupils in threes.

If you are thinking about producing your own information gaps, you may find it easier if you try this method. Find a suitable whole single text containing the information you wish to teach. Formulate a series of questions for the text. Produce three or four texts where the factual and inferential information is shared between them. Some overlapping of information is fine. If they work well please send them to us for inclusion on the network.

When pupils have completed the task they are in a good position to select new different questions for a new grid.

# Ebolanomics Text A

## Ebola virus disease

Ebola, which first appeared in outbreaks in Sudan and DR Congo in 1976, is a severe and often fatal disease with no known specific treatment or vaccine. It has since killed more than 1,500 people in parts of Africa.

### SOURCE

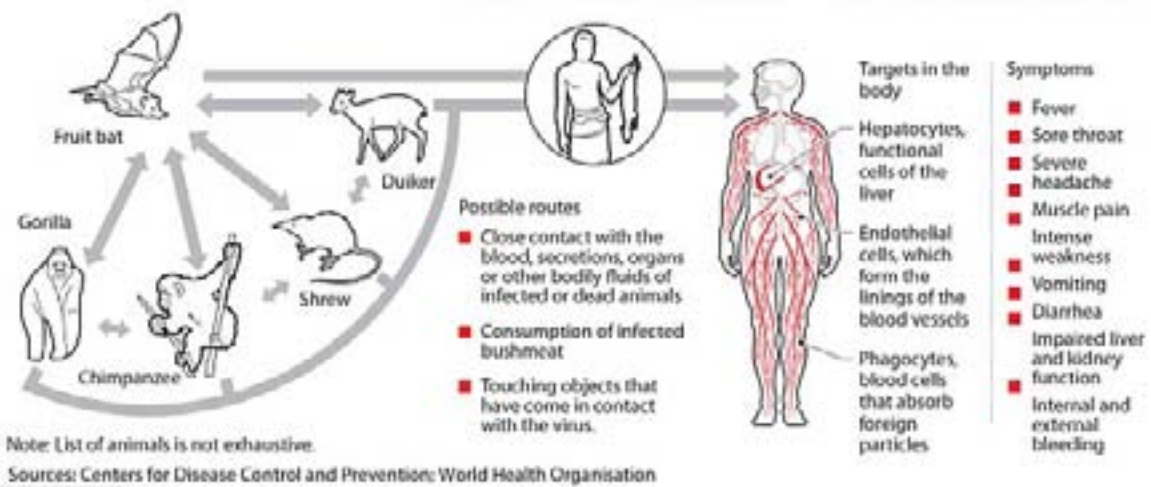
In Africa, particular species of fruit bats are considered possible natural hosts for Ebola virus.

### TRANSMISSION

Infected bats are thought to transmit the disease to humans, or indirectly through other animals which are hunted for their meat.

### DAMAGE

Incubation period is from two to 21 days. Death from the disease is often caused by multiple organ failure and tissue death.



Although we have known about the deadly haemorrhagic fever Ebola for more than thirty five years, no drug has been developed to treat it. The current outbreak is worse than any so far and it is still spreading as more people are carrying the disease into other countries. The World Health Organisation have identified other 'neglected tropical diseases' such as dengue and Chagas disease. Malaria and tuberculosis still kill two million people a year but very few drugs have been developed to treat them.

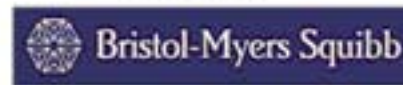
These diseases are not a high priority for pharmaceutical companies because they are not likely to make them a profit. Research and development costs a lot before a drug comes on the market. They want to sell drugs which wealthy people will buy and ones which they will need to continue to buy regularly. Statins which reduce cholesterol are an example.

## Ebolanomics Text B



GE Healthcare

SOLVAY



Microbes are very clever at changing in order to continue to reproduce. They find ways of becoming resistant to antibiotics. Health officials want to reduce the prescription of antibiotics so that microbes learn to resist them more slowly. We need to have new antibiotics in reserve to use when older ones cease to be effective. However, the number of new antibiotics becoming available is reducing. Drug companies want to sell a lot of their drugs, but health officials want to limit sales.

Governments have come up with a solution. They are thinking about offering prizes for new drugs. They would make a payment to the drug company and in exchange the company would give up the right to sell the product. In this way the company would make a profit without all the expense of advertising and selling the drug.

## Ebolanomics Text C



In the seventeenth hundreds the British government offered a prize for the first person to develop a way of measuring longitude at sea. Just recently this way of stimulating research has become more popular. Prizes have been offered for filters to produce safe drinking water and for innovative ideas for space travel. This is called 'pull' funding.

The current administration in the United States is offering over a hundred and fifty prizes for a range of technology breakthroughs. Economists on the left and the right like the idea. They are cost effective because you only pay if the product works. They are well suited to encourage investment in public goods such as antibiotics or vaccines. Here everyone benefits if everyone uses a vaccine. They encourage companies to start research in areas where they would not otherwise make a profit.

# Ebolanomics - Question sheet with space for answers.

1. What is Ebola?	2. Why isn't there an effective treatment for Ebola?	3. Name some tropical diseases.	4. Ebola is infectious. What does this mean?
5. Why are drugs expensive?	6. Where do drug companies invest their research money?	7. How does pull funding work?	8. Why have antibiotics become less effective?
9. Why does it cost a lot of money to develop a vaccine?	10. What was one of the first examples of pull funding?	11. Why do left wing economists like pull funding?	12. What are public goods ?