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Introduction

This book is the product of such a long process it's hard to know where to begin to explain how it came about.

I suppose the best place is the beginning.

The British council has been helping coordinate summer school in Bulgaria for a number of years now and for the last four years the school in Varna has been dedicated to content and language integrated teaching and learning. Last year the summer school produced a book of supplementary materials and language support activities to accompany the materials. In this way English teachers were encouraged to introduce content themes into their teaching and content teachers were encouraged to pay some attention to the language of their subject.

'Share Your World: Skills for learning about Global Issues' is both an overview of the English Across the Curriculum School which took place in Varna, Bulgaria (from June 30th, 2003 to July 11th, 2003) and a collection of the materials written during the second week.

The 30 teachers who did all the hard work are listed in the editorial section of this book along with their email addresses (I am sure they would be glad to hear from you to answer any questions!). I have always believed that this kind of school works best with a mixture of nationalities, from the point of view of intercultural exchange as well as language development and not least for professional development. Our group includes colleagues from Romania, Croatia, Hungary, Macedonia, Slovakia, Bulgaria and China as well as tutors from Holland and the UK.

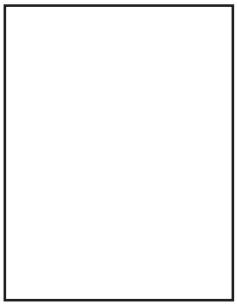
They worked with a commitment and drive that both astonished me and embarrassed me since I was often distracted by my own tiredness while others went on and on (thanks especially to colleagues for the endless ideas, the brick with which we built this book - I have to say that Eva from Hungary deserves a special mention). They gelled in their small groups to carry out their group tasks professionally and effectively, they integrated socially to make the event a very special one for me personally (Drazen and his guitar can be heard in the pages of this book). The tutors carried on with the preparation and materials collating for this book while others escaped to swim in the Black Sea or lie on the beach (Valya, our school director, as ever, a perfect host).

The book itself is a step in the materials provision for teacher training in CLIL (content and language integrated learning) of which there are sadly few. It is also a salute to the wonderful Science Across the World project which I am sure offers an approach to cross-curricular, multilingual, intercultural, ICT, CLIL education unique in the world and which I hope will grow and grow and grow. I hope this book will contribute to that growth.

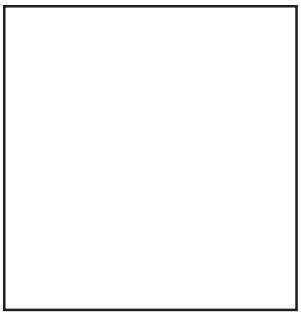
Enjoy! And share your world!

Keith Kelly,
FACT III Coordinator

THE TEAMS
AND THEIR NEWSLETTERS



"Friendship is like hot chocolate. It is good when it is warm and strong."



HOT CHOCOLATE

A traditional international recipe for hot chocolate

Take a 12-block bar of dark chocolate as bitter as hard work during a holiday. Melt it in the water of networking and sweeten with sand-brown sugar. Add a little of the cream of the profession, stir with enthusiasm and leave to simmer at summer school temperature. Pour into a singing mug, sprinkle with the cinnamon spice of party evenings and your hot chocolate is ready.

Enjoy!

You feel like sharing this delicious substance with us, don't you?
We are at your disposal whenever you like, however you like.

Mihaela_732003@
yahoo.co.uk
Mihaela

Rositapopova@abv.bg
Rossi

Chance_bg@yahoo.com
Yordanka (Danny)

Zmeitche@yahoo.co.uk
Elka

Millfay@yahoo.com
Milena

Weather forecast: The weather this week will remain mostly sunny and hot.
Min temperatures 20 … 23°C, max temperature of the sea 24 … 26°C

Your Varna Guide

Important Phone Numbers

Medical emergency	150
Fire department	160
Police	166

Foreign exchange
The Bulgarian Lev is pegged at about 1.95 per Euro.

Museums and Places of Interest
Varna Archeological Museum … the oldest gold treasure
Roman Thermi Museum
Varna Naval Museum
Ethnographical Museum
Dolphinarium
Aladja Monastery
Aquarium
Aqua-Park at the Golden Sands

The week of our Summer School coincides with the International Music Festival •Varna SummerŽ

Such a beautiful beach and opportunities for cheap fish and beer you won•t find anywhere*ƒ*

See a beautiful place
Enjoy your favourite drink
and IMPORTANT:
learn something useful

Anni
Maria
Vanya
Renata

ZIVJELI!

NOROC! CHEERS!

Í À Ç Ä Ð Â Å!

TEQUILLAS

A RECIPE FOR TIRED TEACHERS

Ingredients: 1 lemon slice, salt, 1 shot Tequila

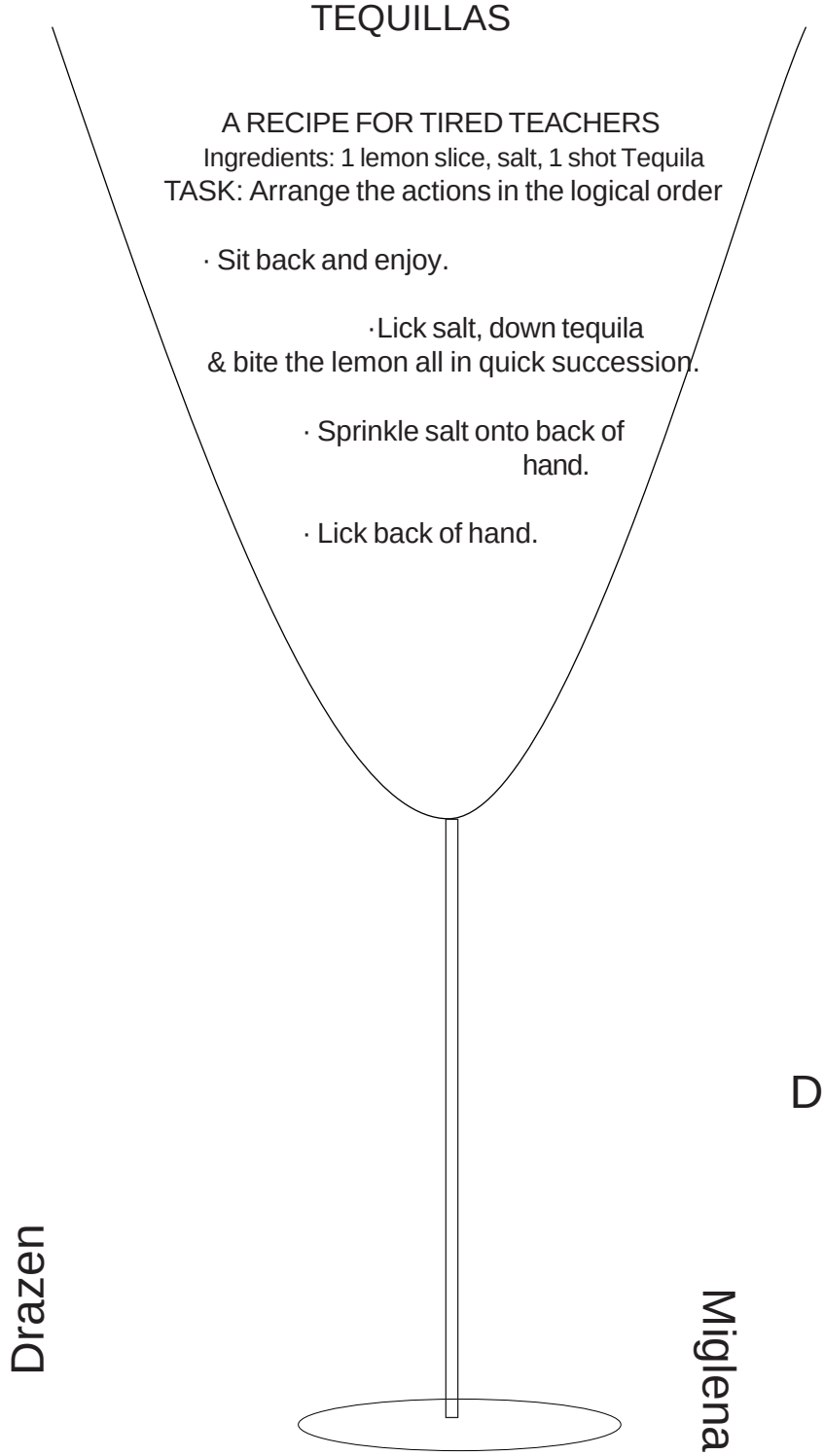
TASK: Arrange the actions in the logical order

· Sit back and enjoy.

·Lick salt, down tequila & bite the lemon all in quick succession.

· Sprinkle salt onto back of hand.

· Lick back of hand.



Dodo

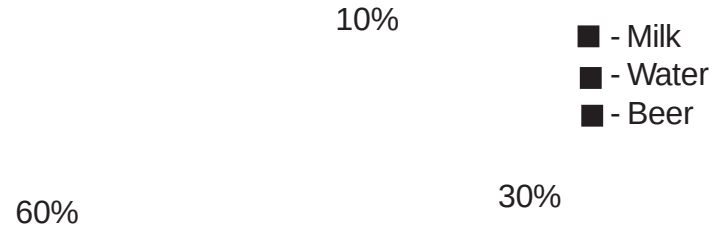
Drazen

Miglena

Nusha

Denitsa

Possible proportions of the newest drink produced by TAMIBEES TM



There was an international degustacia.
Here are the most frequent impressions:

It looks like boza It sounds like sake

Try the drink and express yourself entering a competition for profit at:
factbg@yahoo.com

Instructions for preparing an ELTeCS bid proposal

I would like to encourage you to get in touch with me should you have any questions concerning the bidding process. I am also available for giving you a pre-evaluation of your bids with suggestions on how to improve it (if needed) for the final submission.

If you have an event or project that is due to start in April and stress this in your application we may be able to consider your bid at an earlier date so that you know if funding is secured in plenty of time.

What are ELTeCS bids?
In order to promote regional networking ELTeCS supports events, exchanges, visits and publications that contribute to sharing ideas and experience with other ELTeCS members.

Unless exceptional circumstances are explained, we would normally be looking for bids to meet the following CRITERIA:

REGIONALITY
More than two countries should normally be involved in a project. Activities which will predominantly benefit one country should be funded by in-country resources.

SUSTAINABILITY
Activities have to contribute towards establishing, maintaining and developing professional contacts between individuals or institutions in the region. ELTeCS does not support participation at conferences and one off events.

INNOVATIONS
ELTeCS welcomes new, innovative ideas and encourages members to submit bids contributing to using innovative methods in their ELT projects.

IMPACT
The bids should clearly specify what will have been achieved by the end of the event or a project. An element of evaluation, i.e. how the results will be measured, should be included in this part.

MATCHING FUNDS
Matching funds are expected from other sources, e.g.local sponsors either in cash or in kind. The maximum grant ELTeCS provides is GBP 2000.

If you want to submit a bid for the bids exercise, you must, please, use the ELTeCS bids form that you can download from the ELTeCS web site, at:

http://www.britishcouncil.org/english/eltecs/eltbids.htm

We can also email the form to you or send it by post.

Best wishes,
Tamas Kiss
e-mail: schoolex@axelero.hu
e-mail2: kisstom@lycos.com

ELTeCS PROJECT BID PROPOSAL FORM

Title:

Objectives:
(What will have been achieved by the end of the event or project)

Rationale:
(Please use not more than 500 words to give the background and rationale of the project)

Team members:
(Please put down the names of institutions and individuals involved in the projects as well as management roles and responsibilities of members of the team)

Partners:

Date:

Costs:
a) Local

b) ELCeCS funds

c) Other sources of funding

Impact:

Name: Date:

ELTeCS PROJECT BID PROPOSAL

Title: Teaching Science and Language - Developing Training for Teachers

Objectives:(What will have been achieved by the end of the event or project)

A series of 5 teacher training Packs on Language and Science will have been written.
A calendar of regional local in-country teacher training events in language and science teaching will have been agreed.
Key professionals in CLIL Teacher Training will have been brought together from the region and identified as a coordinating group for the FACT Network. This will contribute to the sustainability of the FACT Network as a whole.

Rationale: (Please use not more than 500 words to give the background and rationale of the project)

There is no formal course of training for CLIL in the region apart from the 90-hour module for integrated content and language teaching at three institutions in Bulgaria. There is training available in Western Europe but not in this region.

A number of institutions in the region do train teachers in specific disciplines in a foreign language in the region but do not provide an integrated methodology for content and language, which has been identified as necessary by many colleagues in this sphere (University of Jyuvaskula, Finland, Nottingham University, UK, Vienna board of Education, Austria). Other institutions offer training in a discipline and offer a language alongside. Again, this does not prepare teachers for teaching through the medium of a foreign language.

CLIL (Content and Language Integrated Learning) is growing in this region and there is a distinct need for the foundation set up by the FACT Network to develop into teacher training and CLIL course materials. Having worked on teaching and learning materials and networking and having written a course for pre- and in-service training in Bulgaria, the FACT Network is already in an ideal position to prepare and pilot Teacher Training materials for the region. These innovative materials along with SAW support will enable colleagues to provide quality CLIL training after the meeting back in their own contexts.

The Science and Language Training workshop will take up the second week of the Varna Summer School and will block on to a first week dedicated to the FACT Region and the Science Across the World Programme. This will enable the participants to draft a plan of action for the near future of the FACT Network. One of the main areas of this draft plan will be •Science and Language Teacher Training in the Region• - the focus of week two of the summer school.

The workshop of week two will build on the course written in Bulgaria and exploiting the quality materials of the SAW programme will provide appropriate training materials for colleagues to take away and use in their own contexts. The workshop will use SAW materials and topics as focus for preparing seminar packs in CLIL areas, for example, •Using the SAW topic •What do you eat?• for Developing Communication in the CLIL ClassroomŽ.

In this way, the Science and Language Workshop will develop the SAW programme in the region as well as provide essential, and thus far unavailable, training for CLIL. It will also consolidate the FACT Network coordinating team.

Team members:
(Please put down the names of institutions and individuals involved in the projects as well as management roles and responsibilities of members of the team)

Keith Kelly, British Council, Bulgaria (workshop manager, coordinate workshop content)
Valya Angelova, Peter Beron TT Institute, Varna, (host institution, tutor, arrange accommodation, local travel, rooms and facilities in the institute)
Stefka Kitanova, FACT Network, Sofia (workshop tutor, teach on the workshop, arrange collation, publication and distribution of training packs)
Daniella Gancheva, Department for Teacher Information and Development, Sofia (workshop tutor)
Elka Goranova, English Across the Curriculum SIG, BETA Bulgaria (workshop tutor)
Kostadin Paev, SW University, Blagoevgrad (workshop tutor)
Lyubov Dombeva EAC SIG financial secretary (workshop tutor)

John Clegg, freelance SAW consultant (workshop consultant and training materials evaluation)
Nigel Heslop, SAW tutor (teach on the workshop, oversee local training workshops)
Lida Schoen, SAW tutor (teach on the workshop, oversee local training workshops)

Partners:
Ministry of Education, Bulgaria (host institution, recognition of attendance and content, financial support for visiting tutor accommodation)
BC Bulgaria (organization and coordination of the workshop, technical support … computers, xerox, printer, projectors)
FACT BG (Stefka Kitanova, communication with local network and identification of participants)
Marion Hughes, BC Romania - (3 people travel and subsistence - confirmed)
Jasna Jemersic, BC Croatia - (2 people travel and subsistence… to be confirmed)
Tim Philips, BC Macedonia - (3 people travel and subsistence - confirmed)
Nigel Bellingham, BC Hungary … (3 people travel and subsistence … confirmed up to £600)
Marianne Cutler, Director SAW … (prviding tutors and materials and follow-up coordination)
Danica Laukova, Bilingual school Bratislava … (input preparation of ELTeCS bid)

Date: 7-13 July 2003 (the second week of the Varna summer school)

Costs:
a) British Council Local = 2200leva (700 GBPs)
5 leva per day institution fee x 30 x 7 = 1050 leva
Internet/computer room fee = 100 leva
Ministry of Education, Bulgaria (tutor accommodation at 3 x $30 x 6 nights = $540 (approx. 1200 leva)

b) ELTeCS funds = 2350 leva (750 GBPs)
local travel (minibus for ferrying participants/tutors to and from airport) = 350 leva
collation and preprint preparation of training materials = 300 leva
pulbication of training materials x 250 (110 for Bulgaria, 35 each for each of participant countries) = 1500 leva
postage of training packs = 200 leva

c) Other sources of funding SAW (1500 GBPs)
SAW … (fee, travel, subsistence for tutors and consultants: John Clegg, Nigel Heslop, Lida Schoen at £500 each)

Impact:
- meets British Council regional aims in promoting UK Science and Science Education
- colleagues from 5 countries will receive quality CLIL training in the region
- FACT Network consolidated and coordinating team created for the region
- participating countries encouraged to set up similar in-service training programs to the one in Bulgaria. This will help to create a team of trainers in each country linked through FACT network
- quality training materials produced and distributed
- general awareness of science issues in the region increased through the English language
- SAW programme promoted and developed in the region

Name: Keith Kelly Date: March 9, 2003

Joining FACTWorld in YahooGroups

GO TO: www.yahoogroups.com

Next::
If you are a member of factworld:

Click •sign in• and type in your username and password and access the factworld site.

On the left you will see a column of options, one of which is •files• click •files• and you will see all of the folders which contain materials from our group.

Download whatever you like by double clicking on the icon of the file you are interested in.

If you are not a member of factworld:

Type •factworld• in the filed which says •join a group• and click •search•.

Then you will see some text explaining about the group, click the title •factworld•.

Now you are the factworld site but you haven•t yet joined. Click •join this group• at the top of the winow.

You will be sent to a page to sign in. Now, if you have a yahoo ID, type it in the spaces provided giving your username and password and you follow the instructions for joining the group.

A request to join will be sent to me and I will approve it.

If you don•t have a yahoo ID, click •sign up now• and go through the instructions to sign up

Where it asks for •language and content• please choose English … United Kingdom, and where it asks for a postcode, type •OL9 6SP• (don•t worry about this, this is mine in the UK and I know it will work)

Uncheck the box which says •Send me special offers, promotions, etc•. Be sure to leave this box blank or you will receive adverts in your mailbox.

Where it says

Enter the word as it is shown in the box below
Type the word you see in the box
Then click •submit this form•

On the next page where you are shown the agreement with yahoogroups click •I accept•

You may need to change some of your details if they are shown in the next page in red! Log in name, for example.

Keep trying and submitting your attempts

When you are accepted, it will have another box and you should leave this empty as well •Yes, personalise my browser with Yahoo! Companion toolbar• and click •continue to My Yahoo•

Next they may ask you to verify your email address

And your password

And they will send you an email address and you can click the link in the message to activate your account with yahoo.

Click the link Important! Please click here to verify this email address for your account.

And click •join• in the page the link opens

When I have approved your request to join you will get a message telling you and next time you enter •factworld• on the left of the window underneath the title •my groups• and you simply need to click it to enter the factworld site and the files folders.

Section 1:

Getting to know SAW - design your own web quiz

How to make a web quiz?

You can use the web quiz presented during FACT III , as an example.
www. scienceacross.org

PowerPoint

Start PowerPoint.
Type the title and subtitle of your quiz on the first slide.
Think of a meaningful illustration (screendump) on the title page.

NB The illustrations besides this text are just examples!

Questions

Decide how many slides/questions you will ask.
With three slides on a page the maximum is 12 slides ð 4 pages printed.
Write down your questions about the website/subject.
Cluster the questions and identify a title/name.

Clusters

If a cluster has more than three questions, divide the cluster in sub clusters with a maximum of three questions.
Think of meaningful names/titles of your clusters.

Slides

Type the cluster names and the questions on the slides.
Add your illustrations.
Important! Always check your questions as shortly as possible before your students will work on the quiz: websites tend to change very often!

Printing your web quiz

Print your slides as a handout with three slides on a page.
Procedure

- Choose in the menu bar File, Print ƒ ;
- Choose in the box Print : Hand-outs;
- Choose in the box Colour: Pure black/white;
- Activate the square in front of slides in a frame.

Print your webquiz on (maximum) four pages.

Registration process Science Across the World in 10 steps

1. Homepage: click on 'Join us'
   Read about the benefits and the process
2. Click on 'Not a member yet?'.
   First window: please type your own e-mail address in the box 'Email address' (you yourself and not a general school email address will receive all post from Science across the World).
3. Submit the first window. The database will check if your school is not a member yet.
4. If not, in the second window: type all details and submit.
5. For security reasons you will receive a confirmation email.
   Just confirm.
6. Now you are able to register a topic.
   Login with your email address and your password.
7. Click on 'Select topics and update exchange details '.
8. In your own window: 'Add topic'.
9. During Varna summer school 2003 your school can have one topic for free. Promotion code: Varna2003

Neglect the warning you will be invoiced for 12 Euro. Just don't pay!

Enjoy your membership of
Science across the world

You can always update or change your details or add a new topic or a college (New teacher). Just click again on 'Select topics and update exchange details'

SAW class discussion

The writing of materials focusing on •the language of arguing• came about with the new pack •talking about genetics around the world•. Informed debate is at the heart of the discussion on GM science. For this reason we prepared a list of useful phrases for arguing your case. These phrases can be found in the genetics pack in the teacher•s notes included in this book. We also prepared materials for considering the presentation of the issues in the press, another source of information, sometimes misinformation!

Activity for arguing about GM

Think of 5 statements arguing in favour of GM Science

Think of 5 statements arguing against GM Science

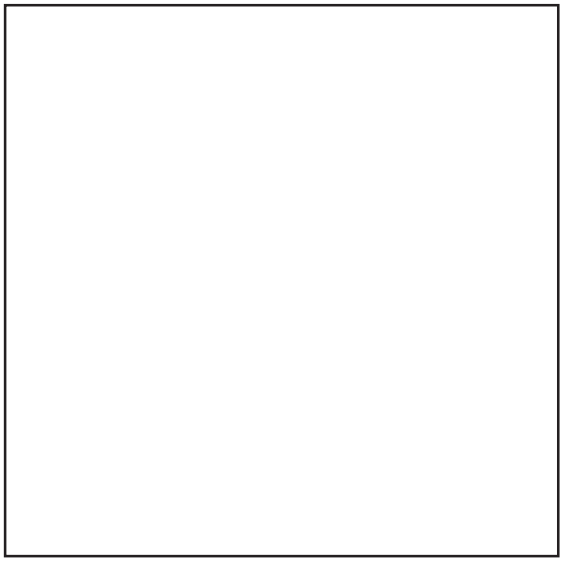
Write your statements on the strip of paper given and place them on the wall in two clusters entitled FOR GM, and AGAINST GM

Divide the class into two groups and make one group FOR and the other AGAINST

Hand out the list of phrases •The Language of argument• and give each group 10 minutes to match a phrase with a statement depending on how strongly they feel about the statement.

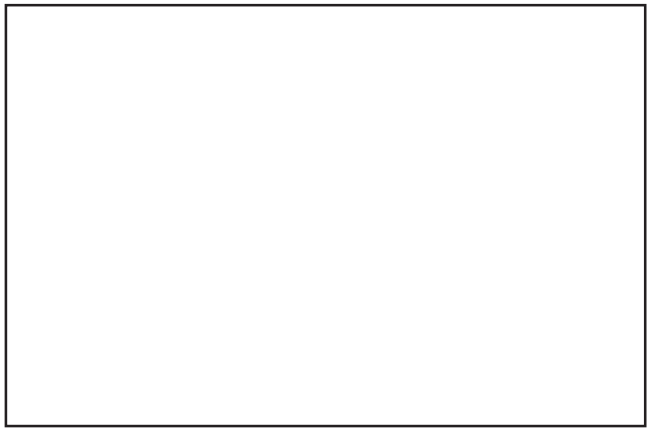
Elect a chair and then begin, awarding points for the strength and quality of the argument.

If you look at the other materials packs you will find a wealth of resources for opportunities for arguing questions or debating issues.

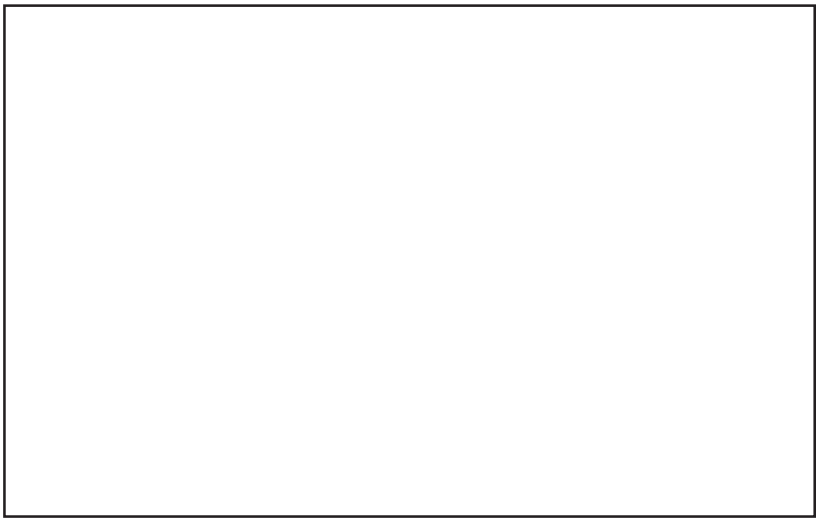


Acid Rain Student Pages 7-8,
(desert island discussion)
•prioritising•

and also*f*



Often the quotations themselves offer opportunity for debate.



Biodiversity Teacher•s Notes Page 5, discussing difference in opinion.

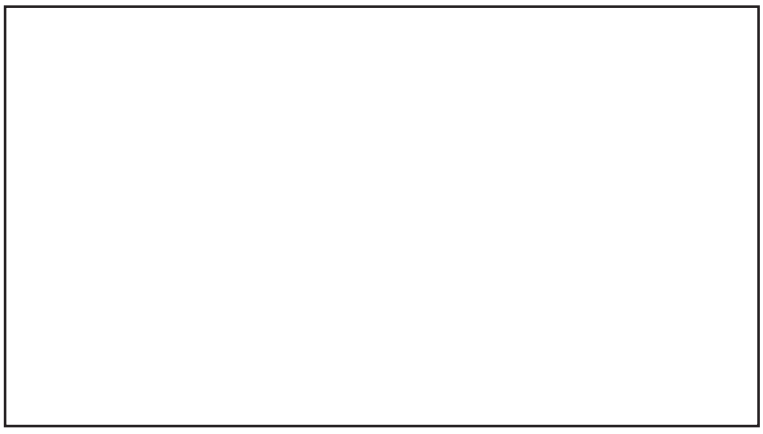
Also the pictures offer debates, Biodiversity Student Page 8 which asks •mass extinction accelerated by humans?•

Also, what we know as prompts for discursive compositions, Biodiversity Student Page 9:

•We have not inherited the world from our forefathers … we have borrowed it from our children• Kashmiri proverb. This is often turned into an essay title and •discuss in 350 words•.

You can use the table on page Student Page 12, as a stimulus for writing about this topic (discursive writing, cause and effect)

The text in the materials often give themes for debate, as in Domestic Waste Student Page 1, A Throwaway Society.



The survey of •What waste do you create?• Student Page 2 could be used as input material for a discursive essay on the topic.

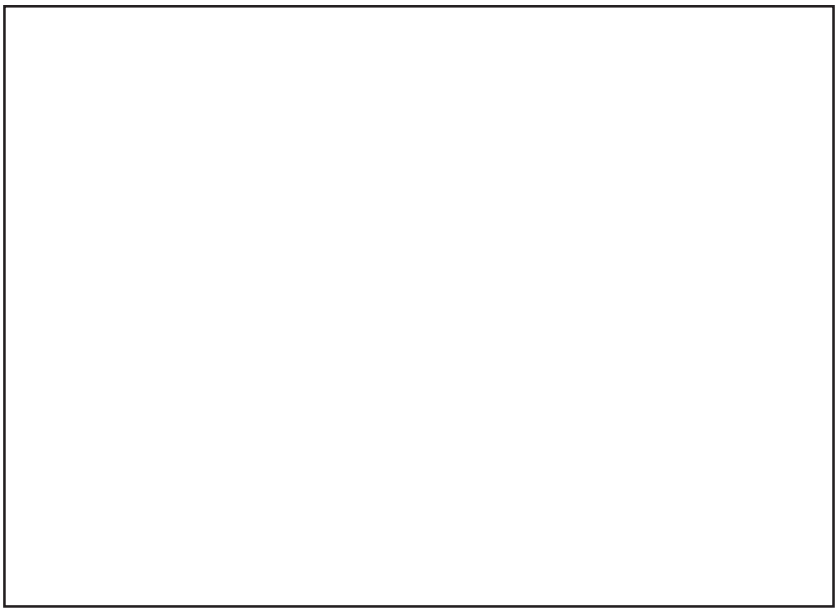
Sometimes the issues are clear and simple as in Global Warming, Student Page Questions for understanding •Explain why global warming could have both beneficial and harmful effects for people on earth•.

This task could be accompanied by a simple scanning task to find specific examples within the text itself.

The data at the end of the materials can be used for discussion. See Table C Deaths in young people, here students can be given the task of identifying trends in the data and suggesting conclusions, and justifying their conclusions. For example, in Table C you can see that there are more deaths on the roads in Western Europe than East while there are more deaths by accident in the East as a proportion of all deaths in young people. This could be explained by *ƒ* etc etc.

You might encourage students to focus on one paragraph to state an opinion, as in Renewable Energy, Part 5, Points for Discussion, Suggest reasons for the similarities and differences between use of renewable energy sources in your own country and others.

Even is there is only one side to the argument, it can still be useful to create the paragraph stating a one-sided argument. Take a look at Road Safety Part 3, Speed and Safety

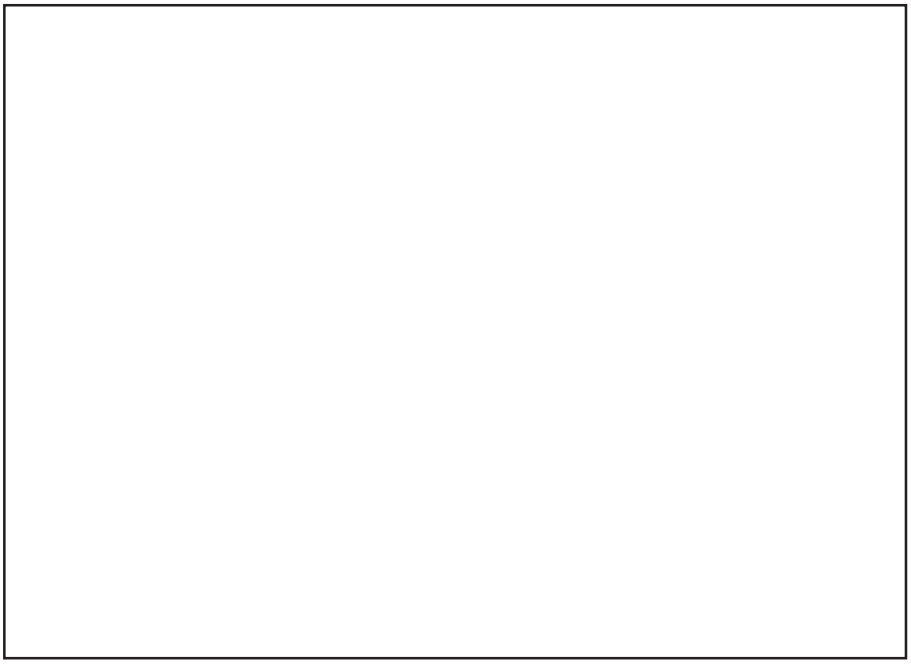


•5 per cent of pedestrians die if struck by a car travelling at 32 km/h but at 64 km/h about 85% die.•

Begin with this statement and ask students to find other equally strong statements of fact and tell them to make conclusions, here the conclusion is that drivers reducing speed will bring down the death toll on the roads.

Questions from the exchange forms lend themselves as debate prompts •Do you think we need to take strong measures to reduce the use of energy in the countries in Europe? Why?•

Some of the topics lend themselves to presentation work, or written work of a more descriptive nature. See •What do you eat?• Part 2 What are your eating habits? Here, students are likely to give opinion, argue, criticize their own eating behaviour.



A report text outlining the behaviour of the class as a whole in terms of their eating habits would present a very good activity for presenting argument in written or spoken form.
•Are eating habits in your country changing?• Can you give reasons for this?•

Let•s get our students arguing!

Language for arguing

Introducing the theme

Many people believe that*ƒ*
It is said*ƒ*
People•s opinions on*ƒ* differ widely.
Some people go as far as to say that*ƒ*

Supporting your argument

One of the main advantages of / problems with*ƒ* is that*ƒ*
In the first place, /Firstly, /To begin with, /Secondly, /Thirdly, /Finally, /Last, but not least, *ƒ*

Adding further reasons

Both*ƒ* and/not only*ƒ* but also*ƒ*
In addition, /What is more, /Furthermore, /Besides, *ƒ*, similarly*ƒ*

Giving an opinion

In my view/opinion, /It seems to me that*ƒ*
I think/feel that*ƒ*
It is reasonable to suppose*ƒ* / It is not stretching a point*ƒ*

Giving the opposite opinion

On the other hand, there are several disadvantages
Let us not forget the disadvantages*ƒ*
Contrary to popular opinion*ƒ*
In fact*ƒ*

Linking phrases

Although*ƒ*, /However,/ In spite of this, /Despite*ƒ*, /Nevertheless
Some people*ƒ* while/whereas others*ƒ*
On the one hand*ƒ* on the other*ƒ*

Analysing the opinions of others

While it could be said that*ƒ* let•s not forget*ƒ*
One possibility*ƒ* If this were the case*ƒ*
It is true that*ƒ*
Certainly*ƒ*
To be sure*ƒ*
(this) is based on the assumption/premise that
(this) implies/would imply/suggest that
(this) ignores/does not take into account the fact that*ƒ*
(this) assumes that

Concluding

In conclusion,/ To sum up, /On balance, /All things considered

SAW Debates

If you look at the other materials packs you will find a wealth of resources for opportunities for arguing questions or debating issues.

- Acid Rain Student Pages 7-8, (desert island discussion) •prioritising•

- Often the quotations themselves offer opportunity for debate, Biodiversity Teacher•s Notes Page 5, discussing difference in opinion. Also the pictures offer debates, Biodiversity Student Page 8 •mass extinction accelerated by humans?•

- Also, what we know as prompts for discursive compositions, Biodiversity Student Page 9 •We have not inherited the world from our forefathers … we have borrowed it from our children• Kashmiri proverb (discuss in 350 words). You can use the table on page Student Page 67, as a stimulus for writing about this topic (discursive writing, cause and effect)

- The text in the materials often give themes for debate, as in Domestic Waste Student Page 1, A Throwaway Society, and here the survey of •What waste do you create?• Student Page 2 could be used as input material for a discursive essay on the topic.

- Sometimes the issues are clear and simple as in Global Warming, Student Page Questions for understanding •Explain why global warming could have both beneficial and harmful effects for people on earth•. This task could be accompanied by a simple scanning task to find specific examples within the text itself.

- The data at the end of the materials can be used for discussion. See Table C Deaths in young people, here students can be given the task of identifying trends in the data and suggesting conclusions, and justifying their conclusions. For example, in Table C you can see that there are more deaths on the roads in Western Europe than East while there are more deaths by accident in the East as a proportion of all deaths in young people. This could be explained by*ƒ* etc etc.

- You might encourage students to focus on one paragraph to state an opinion, as in Renewable Energy, Part 5, Points for Discussion, Suggest reasons for the similarities and differences between use of renewable energy sources in your own country and others.

- Even is there is only one side to the argument, it can still be useful to create the paragraph stating a one-sided argument. Take a look at Road Safety Part 3, Speed and Safety: •5 per cent of pedestrians die if struck by a car travelling at 32 km/h but at 64 km/h about 85% die.• Begin with this statement and ask students to find other equally strong statements of fact and tell them to make conclusions, here the conclusion is that drivers reducing speed will bring down the death toll on the roads.

- Questions from the exchange forms lend themselves as debate prompts Do you think we need to take strong measures to reduce the use of energy in the countries in Europe? Why?

- Some of the topics lend themselves to presentation work, or written work of a more descriptive nature. See •What do you eat?• Part 2 What are your eating habits? Here, students are likely to give opinion, argue, criticize their own eating behaviour. A report text outlining the behaviour of the class as a whole in terms of their eating habits would present a very good activity for presenting argument in written or spoken form. •Are eating habits in your country changing?• Can you give reasons for this?•

Let•s get our students arguing!

SAW topic

Class 4B/ 26 students, aged 14

Kinds and Importance of Meals (Food)

Breakfast: eaten by 15 students/not eaten by 11 students
consists of: bread and butter with jam or cornflakes with joghurt or milk, fruit
importance: important meal, provides energy for school and daily activities

Lunch: eaten by all 26 students
consists of: pizza, lasagne, baguettes, spaghetti, mostly ready-made meals
importance: students are hungry at lunchtime which is why providing energy is necessary. Students think lunch should be cooked

Supper: eaten by 23 students/not eaten by 3 students
consists of: cold snacks like bread and butter, cheese, cold cuts, vegetables, or toast

Snacks
(between the meals) eaten by 16 students/not eaten by 10 students
consist of: rolls with various spreads, fruit, pudding; crisps, popcorn, crackers
importance: not really necessary when three meals are eaten

Sweets: eaten by 9 students/not eaten by 17 students
consist of: chocolate, biscuits, muesli bars, chewing gum, jelly bears, toffees

Eating at School:

Food brought from home: by 12 students
Food bought at snack bar: by 8 students
This food is bought and prepared either by mothers, by the students themselves, by fathers or grandparents.

Meals at Home:

Meals eaten with the families: breakfast: 10 students - lunch: 11 students - supper: 15 students

Eating together as a family is regarded as important because it improves appetite, is more entertaining than eating alone, and improves community by discussing the day.

Type of Food:

Fresh … cooked food is often eaten by 18 students
Raw vegetables and fruit are often eaten by 14 students
Preserved, deep-frozen and ready-made food is often eaten by 11 students
Pasta, rice and peas and beans are often eaten by all 26 students
Snacks and sweets are often eaten by 9 students

Eating Out

(Street vendors, McDonald•s, restaurants)

16 pupils never eat out - 8 students eat out lunch once a week

Eating Habits

Traditional eating habits:	Various sayings of our parents and grandparents: •Eating makes you tall and strong• •If you don•t eat up, the sun won•t shine• • One glass of red wine a day is good for your health•
Festive meals:	Carnival: special doughnuts Lent: fish salads on Ash Wednesday less meat and fewer sweets Easter: coloured, hard-boiled eggs, Easter ham Martinmas: goose Advent: Christmas biscuits, gingerbread Christmas Eve: carp Birthday: cake
Religious eating habit:	saying Grace before a meal has become rare
Changes of eating habits:	rarely the family eat together more ready-made and fast food more deep-frozen vegetables than fresh vegetables cooked meal in the evening instead of at noon, because the mother works supper is taken later and later food scares like BSE and antibiotics in feed and foot and mouth-disease cause a feeling of unease among people, who eat less meat and more often become vegetarians stress leads to eating more or less, according to type of person

Diet and Health

Health problems commonly caused by the diet in our country are:
overweight, heart attacks, high blood pressure, diabetes, gout, food allergies
cancer, bulimia, anorexia, osteoporosis

How students feel about their own eating habits: too much sugar/fat/salt - too little fresh fruit and vegetables/roughage

Healthier diet: drinking more, less fat, fewer sweets, more fresh fruit and vegetables and wholemeal products, less salt

Concerns:

Putting on too much weight/ losing weight
High cholesterol levels
Genetically modified food
Not enough food produced by organic farming
Is vegetarian or vegan food healthy?
Not enough physical exercise
BSE, foot-and-mouth disease, salmonella and antibiotics in food
Intensive life-stock farming
The quality of beef and pork
Atomic power stations

EATING HABITS – A COMPARISON

LESSON PLAN

TOPIC: EATING HABITS … SAW:What Do You Eat?

PROJECT AIM:

To compare and contrast eating habits of students from Bulgaria, Ireland and Spain
To raise awareness of the link between eating habits and culture

LANGUAGE AIM:

To practisedifferent reading skills (skimming, scanning, reading for details)
To summarise information
To compare and contrast data
To revise and practise comparative and superlative degrees
To write a composition using notes

OBJECTIVES: By the end of the lesson students should:

Know more about eating habits of Irish, Spanish and Bulgarian students
Compare and contrast Eating habits of students from different countries
Be more concerned about the link between diet and health

AGE: 14-15 years old learners

LEVEL: Pre … Intermediate / Intermediate

TIME: 80 minutes

PREPARATION:

1. Handouts of the exchange forms from Spain, Ireland, Bulgaria … the English Language School, Bulgaria … St. Patriarch Evtimii School.
2. Handouts of the Eating Habits table for comparison

PROCEDURE:

1. Summarise what students have done so far working on the SAW topic •what Do You Eat?Ž and explain that in this lesson they are going to compare data and information from other schools.
2. Divide the students into groups of five.
3. Give each group a copy of the handouts (each group should have a copy of all the exchange forms and a copy of the Eating Habits table.)
4. In each group there should be
   - Student A … reading about Eating Habits in Bulgaria … St. Patriarch Evtimii Secondary School
   - Student B - reading about Eating Habits in Ireland
   - Student C - reading about Eating Habits in Spain
   - Student D - reading about Eating Habits in Bulgaria … English Language School
   - Student E … responsible for filling in the table
5. Ask Ss to skim the text (set a time limit of 2-3 min.) and ask some questions to check general understanding
6. Ask Ss to read the questions very carefully and by scanning the text to find their answers.

(You can ask Ss in advance to bring markers and while scanning to highlight their answers in the text.)

7. While reading the text, ask them to give their answers to Student E, who fills in the table.
8. Give some langue support for comparing and contrasting:

ƒ. is like *ƒ*. in
ƒ.. is similar to *ƒ*. in
ƒ. and *ƒ* are similar in *ƒ*..
ƒ. is unlike / different from*ƒ*.
ƒ.. differs from *ƒ*.
ƒ. whereas / but / although / however*ƒ*.
On the one hand*ƒ*. On the other hand*ƒ*.

9. Get feedback and fill in the information in a table either on the black/white board or on a poster and ask Ss to copy it
10. For homework ask students to choose a country and compare their Eating Habits with Eating Habits in Bulgaria, using only the notes from their tables.

Collect the exchange forms and the tables.

EATING HABITS – A COMPARISON

Questions:	BULGARIA … St. PE	IRELAND	BULGARIA … EDS	SPAIN	CONCLUSIONS
1. When do Ss get up?					
2. When do Ss go to school?					
3. When do Ss have breakfast?					
4. When do Ss have lunch?					
5. When do Ss have dinner?					
6. What do most Ss eat for breakfast?					
7. Do Ss think it is important to have a good breakfast before going to school?					
8. Do Ss consider snacks/sweets as •foodŽ?					
9. Who chooses/prepares meals and snacks?					
10. Do Ss have meals during the school day?					
11. Do Ss bring food from home, buy food from a shop or does the school provide a meal?					
12. Do Ss have traditional/religious beliefs on foods? Give examples. Are they explicable by science?					
13. Do most Ss eat a balanced diet?					
14. Are eating habits across Europe changing? How?					
15. Are people concerned about the links b/n diet and disease? Give examples.					
16. What suggestions do Ss make for improving their diet?					

Section 2:

Fifty things to do with Exchange Forms

- prepare a feedback form for the children to fill in and return to the authors
- prepare a chart on the issues (ethics, health) to fill in
- in international conference with the students presenting the information from their exchange forms
- prepare a list of true or false statements, the students search for the answers and circle the answers
- simple questions and answers in written or spoken form
- table filling activity on forms comparison
    - Eva•s puzzle game (Expert groups work on a certain part of the form, they identify interesting material*f* country groups work on material for one country and each expert goes to visit another group to gather information and return to their group to inform their classmates on their group
- divide class into two groups, prepare charts with same questions for each group, blank table written on the blackboard (time competition). Each groups read and identifies answers, one rep will run to the board and fill in their group•s answers. Then groups provide general conclusion statements about the information in the forms
- •childhood tomatoes full of taste•, tomato tasting competition, compare looks and taste, prepare a ketchup with different tomatoes
- write •if I could live in any country, I would choose *f* because (reason to do with the information in the exchange forms)
- maps, draw arrows, draw products on maps of GM products based on exchange forms
- compare regulations in each country, order countries according to how concerned, how much control
- Dice game, 6Qs and 6As, on cards, roll the dice and a question is pulled from a hat, first hand up gets to answer, wrong answer minus a point
- guessing game, predicting answers of the other groups, check while reading the forms
- memory game, filling in a table without the form, then check to find other details
- jigsaw reading, groups given part of forms, they come together to share information
- true or false statements (T•s or S•s)
- cut up sections, students move around the class and find information, and share their own (Gossip)
- translation search, students find statements in the FL in the exchange forms
- drawing, designing, posters, adverts, models to go with the exchange forms and then present, explain the idea
- create a postcard from the country of origin
- T thinks of a piece of information from the exchange form, Ss guess, (20 questions)
- checking grammatical and lexical errors in the text
- paraphrasing, rewriting some of the sections (use only 10 words*f*)
- on basis of one key sentence we ask students to create a short story (GM crops)
- give students three words and they write, then check with original sentence
- find a key sentence in the form, translation into mother tongue, then they pass on to next group which translates it back to the FL
- picture description in pairs (blindfolded drawing of genetics, faces)
- include deliberate mistakes in the forms and the children search for them (is it appropriate since the forms are very personal texts?)
- finding information missing from text

- unfinished sentences students should finish with appropriate info from text
- creating a background story based on the form, they eat lost of chocolate, why?
- breaking stereotypes, finding information that counters the stereotypes
- finding examples in literature, and art, and pop (beans)
- cross-curricular links in the forms, students find which info goes with which subject area
- matching colours and pieces of music with different sections (what colour do you think of here?)
- cut up the forms and hide them around the room, read and put in order, *f*
- creating debates on the issues mentioned, stand in line according to your opinions
- forming personal opinions on the basis of the text
- cook the recipes in the form
- heads and tails, matching halves of information together (walk round and find)
- dictation activities based on the forms (different sections on the board, they run up and memorise, dictate)
- giving titles and subtitles, matching
- board games activities based on the forms
- student-created worksheets
- underline key words, maximum 7 words
- dramatising some of the information
- preparing interviews, press conference based on the forms
- transforming different sentences into funny sentences, crossword puzzles to solve based on the forms, miming activities based on the different sections, two columns things I like, don•t like and they collect from the forms, write a slogan

English … What did you eat?

Level: lower intermediate
Things to do with an exchange form
Time: 40 minutes

We received an exchange form (see file … Austria Exchange) from Austria on the topic What did you eat? and the following is the follow up lesson.

Step 1 Ask class what kind of eating habits they would expect from the Austrians
Whole class discussion … Feedback

Step 2 Hand out the exchange form from your exchange class to pairs one sheet between two
Instruct pairs to find:

Main similarities/differences with Bulgaria
Most interesting thing

Ask for volunteers to feedback to group

Step 3 Hand out student pages part 6 and 7 from the materials pack
Instruct pairs to study the data for Austria and prepare conclusions about the Austrians and how they compare with the rest of Europe
Feedback to the group

Step 4 Prepare a reaction to return to the exchange group and email it back

Divide class into small groups

Give each group an area to investigate in the exchange form(s)

In your group scan through the exchange forms you have and gather information on, for example, 'Traditions' in all of the different countries:

Country	Meals	Traditions	Beliefs	Snacks	Who?
Bulgaria					
Spain					
Austria					
Italy					

Hand out exchange form(s) and tables for collecting data

Students investigate information in exchange forms and present results

Add questions after feedback of information from students in order to focus on important information.

'What are the main differences between country A and country B?'

'What are the similarities?'

'How much fast food do they eat in country A? How does this compare with your country?'

Section 3:

Communicating Information - Language of Data

Sharing Variation Data

Characteristic	Class
Height (cm)	Number of students
Less than 150	
151 - 160	
161 - 170	
171 - 180	
181 - 190	
over 190	
Skin colour	Number of students
White	
Olive	
Brown	
Black	
Eye colour	Number of students
Blue	
Green	
Grey	
Brown	
Hazel	
Hair colour	Number of students
Blond	
Red	
Mid or light brown	
Dark brown	
Black	
Ear lobes	Number of students
Attached	
Unattached	
Tongue	Number of students
Can roll	
Cannot roll	
Mid finger	Number of students
Has hair	
No hair	

Introduction

Comparisons of physical characteristics provide opportunities for students to examine differences and similarities between different countries and use the language associated with comparisons to describe these differences.

The procedure is quite straight forward for this activity:

- Students in different countries collect information and measurements on a range of characteristics (these can be selected by the teachers in advance)
- The class data is placed in a spreadsheet such as excel
- The excel files are swapped to share the information (communicated to the other country/countries)
- Students make comparisons (to communicate their analysis of the information)

There are two types of communication techniques used in this procedure. Firstly, to communicate the data in a format that can be interpreted easily by the students in the other country, this can be done using charts. Secondly, to communicate the interpretation of the information in words, spoken or written. The activity develops key skills in the areas of Information Technology and Language.

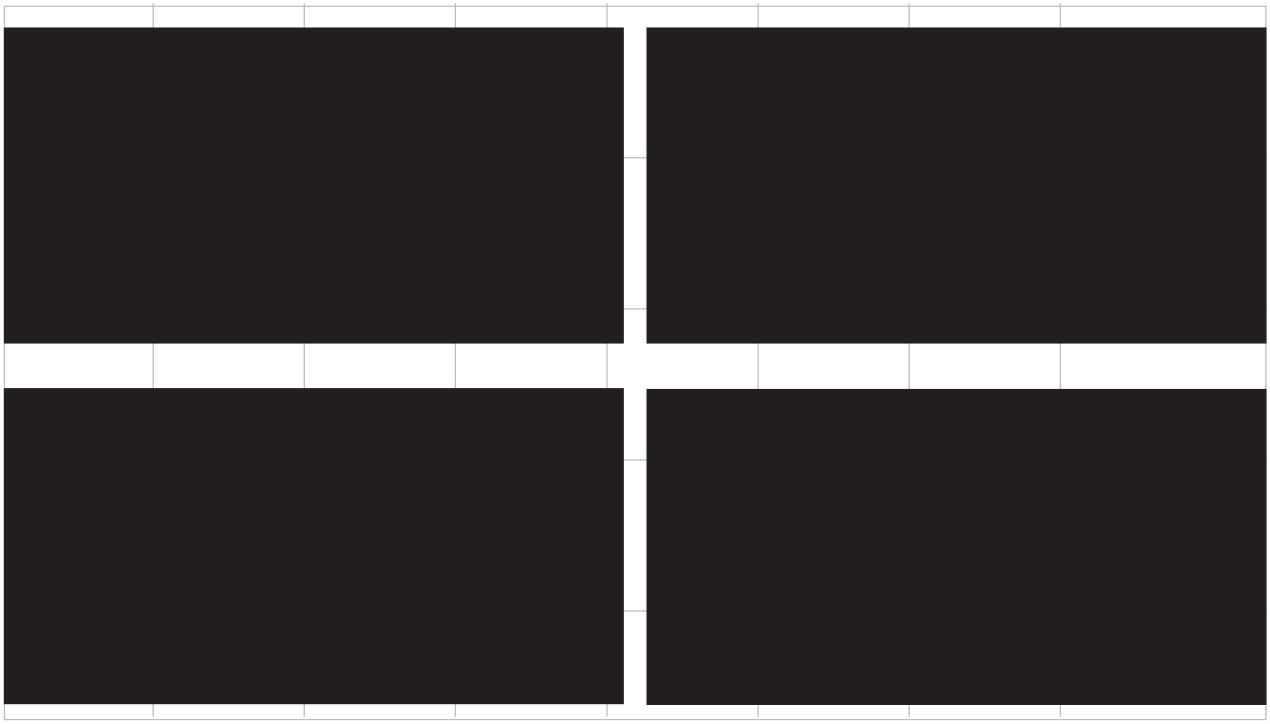
Collecting Data and Preparing the Charts

Students collect information on their own characteristics and make a written note of these. The data for the class is compiled in an excel spreadsheet. Details of the characteristics are shown in the table, but teachers can choose to adapt these to their own needs and those of the teachers in the other country. The only equipment required for the measurement of characteristics is a tape measure or metre ruler for collecting height data. Other characteristics which can be considered for an exchange are things like weight (provides interesting results but many students are self-conscientious about making their weight public knowledge), or shoe size (remember to use a standard such as European measurements).

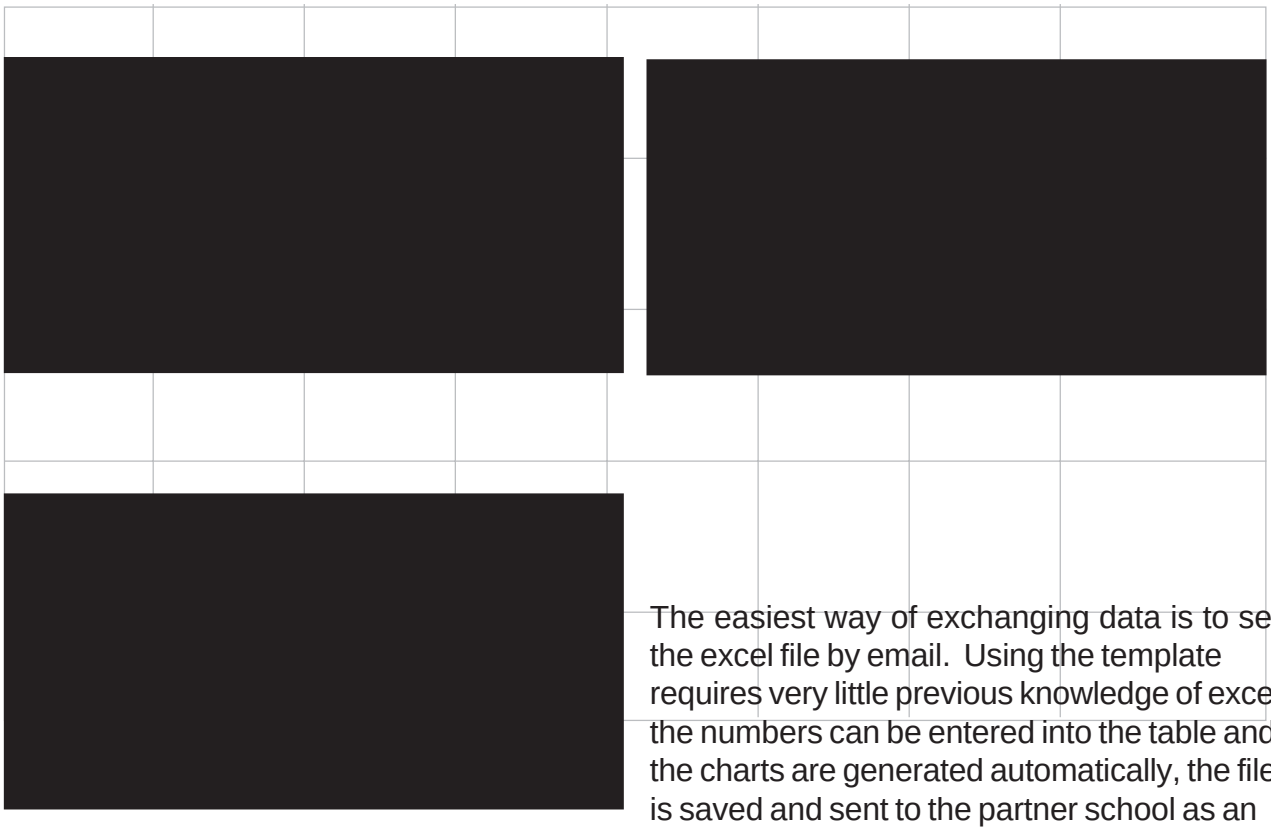
It is of course possible to carry out the exchange of information without using excel, but this will require students to make their own charts and post them to the partner school. It would make an interesting activity to carry out in collaboration with mathematics or science if done in this way.

The charts are generated in excel and a template which includes the table shown above and the related charts, can be downloaded for this from [Stefka … please insert link to Fact2 here by typing in the web site address].

Making Comparisons



The charts above are examples from data collected by a class of 14 year old students from Penrice Community College, Cornwall, UK. Below are charts from their partner school for this activity, IES Sant Quirze, Spain:



The easiest way of exchanging data is to send the excel file by email. Using the template requires very little previous knowledge of excel; the numbers can be entered into the table and the charts are generated automatically, the file is saved and sent to the partner school as an email attachment. In addition a photograph of the group can be sent as this will provided a concrete visual to link to the data, but it is not essential.

Comparing the Charts … the use of Language

Comparisons of the charts provide opportunities to develop the use of the following words or statements in language:
Roughly, generally
In addition
More than
Less than
While, but

The graphs above can be used to introduce the activity to students and give them practice in using the key words and phrases.
Examples of sentences:
In Spain most students have *ff*. hair while in the UK, they are mostly *fff*.
There are more students with *ff*.. eyes in the UK compared to the class in Spain.
The majority of students in both countries can *fff*..
Students in both countries seem to be similar in their ability to *fffffff*
Generally speaking, the students in Spain are shorter/taller than the students in the UK.
In addition to blue and green, students in the UK also have *f*. and *f*. eye colours.
The number of students with height less than *ff* is roughly the same in both countries.
Very few students in Spain and the UK cannot *ff*.

Supertasters

The Supertasters activity is another example of variation between individuals, involving a short practical and analysis of data using excel. It is an activity which can be used to look at variation between individuals in the same class and develops skills in Information Technology, and the language of comparisons.

Collecting the Data
This is a fun activity involving a count to the number of taste buds on the tip of the tongue. The following procedure is taken from •The Secrets of Life•, a booklet produced to accompany the Royal Institution Christmas Lectures 2001, sponsored by GSK.
The Tongue Test
You•ll need some blue food colouring, a cotton bud or cotton wool, a mirror and a plastic reinforcement ring [these are often difficult to obtain and cutting around a hole punched in paper works just as well … make sure the holes used by all individuals are the same size]
Swab the blue colouring on your tongue. Make sure that you cover the tip. If you look in the mirror, you should see little pink circles that don•t stain. These are called fungiform (because they look like mushrooms) papillae and they are the structures on your tongue that hold your taste buds. Non- and medium- tasters look as though they have polka dots on their tongues. Supertasters have a tiled effect on theirs, and the fungiform papillae will be edge to edge on the tip of the tongue.
Now place the [paper] ring flat on your tongue as near to the end as you can get it. Count the number of pink circles inside the hole of the ring. Make sure you only count the unstained pink circles … other bumps on your tongue are different kinds of papillae and don•t contain taste-buds. If there are 25 or more pink circles in the ring you are a supertaster; between 5 and 10 and you•re a non-taster; the in-betweens are medium-tasters.

Using Excel to Produce Charts for Analysis

The following instructions use the Supertasters as an example for producing charts from data in excel. The results used are from the working party in Varna.

Name	Number
Keti Tomovska	24
Marianna Tzaneva	7
Renata Marcova	15
Su Ping	10
Eszter Veszelinov	16
Albena Hristova	19
Anelia Hristova Chakarova	19
Dobromir Dimitrov Vetsov	8
Drazen Dragovic	9
Eva Spalj	13
Lily Samurkova	15
Stefka Kitanova	36
Tatyana Gancheva Tusheva	17
Dimitriyka Dimitrova Boeva	20
Doina Teodoroviai-Brasov	13
Elka Goranova	19
Lyubov Dombeva	35
Maria Iordanova Dimitrova	12
Mihaela Serban-Buzan	25
Milena Ivanova Milkova	20
Tatyana Vancheva Vancheva	12
Trentinné Benko Eva	26
Denitsa Dimitrova	16
Rossitza Popova	20
Jacquie Ashton	21
Petzanka Yonova	15

1. Open excel on the computer
2. Click in cell A1 (column A, row 1) and type the heading for the first column ..Name
3. Click in cell A2 and type in the heading for the second column …Number
4. Under the first heading, type the names of the individuals taking part in the experiment
5. Under the second heading type the number of taste buds for bitter taste found on their tongues
6. Click on cell A1 and hold the right mouse button down as you drag the cursor over the table to the bottom of the second column (do not include extra cells, only those containing information). This highlights the table.
7. Click on the chart wizard in the standard toolbar at the top of the screen
8. Select column, bar, pie or doughnut for the chart type and click next
9. Check that the chart looks appropriate and click next
10. Write in the title and labels for the axes. Click the legend tab and remove legend.
11. Click next and then finish

The chart should appear on the excel sheet next to the table and it is possible to change its size by clicking inside the box containing the chart and then holding the mouse button down over the small black square on the corner (a double arrow will show when you are in the right place). It is sometimes necessary to do this if all the names do not appear along the x axis due to lack of space.

Reasons for Using Charts
Ease of comparison of data … the differences can be clearly and quickly seen without having to scan through numbers.
Clear presentation … charts can be copied and pasted into documents (such as word) or presentations (such as PowerPoint).

Association
for Science Education

Exploring science locally -
sharing insights globally

Exchanging ideas
The exchange form is the basis for sharing scientific, cultural and personal information and ideas between schools across the world. As a group, you work through the activities to gather the data and opinions you need to fill in the exchange form.

Working to a common agenda makes it possible for you to have meaningful exchanges with people from different cultures you have never met. By exchanging with schools in different countries and continents, you will gain insights into cultural differences in the impact of science on people•s lives.

Send copies of any good Exchange Forms to Karen Shoebottom at Science Across the World saw@scienceacross.org We are always looking for good examples to showcase on our website.

www.scienceacross.org
e-mail: science@ase.org.uk

Excel: charts

Start Excel

Open GMcrops.xls.

Sorting data

Select the whole tabel.

In the menu bar: chose Data, Sort ƒ, select column Country.
Save the result, the name GMcrops-your-name

(Count the number of participants per country

New Sheet

Open a new sheet: click on sheet 2 (left down corner of the spreadsheet).

Pie chart

Type your data.

Select both columns Country and Number.
In toolbar Standard: choose the Chart Wizard.

Choose pie chart, follow the instructions.

Save the result, the name GMcrops-your-name.

Column chart

Open a new sheet: sheet 3.

Repeat the procedure with the teaching subjects. Maybe it is necessary to change the table, because of the double qualifications.

Choose a 3D column chart.

Pull the chart horizontally till all subjects are legible.

? How could you avoid this very wide chart?

Save the result, the name stays GMcrops-your-name.

Statistics GM crops

Insert a new sheet: : in the menu bar choose: Insert, Worksheet.

Open sheet 4
Produce the spreadsheet with the data of the survey.
Produce your favourite chart
Experiment with different possibilities.

Save the result, the name stays GMcrops-your-name.

Excel and Word

In Excel: select a chart. Click with the mouse, Copy

Open (a file in) Word. Right click with the mouse, Paste

Section: 4 Making Posters and presentations in Class

Making Presentations in Class

Notes for the teacher are in grey

Research
Planning
Putting together
Delivery

1. Research (SAW Topic, section) … informs presentation title

Your students may be carrying out a SAW project and come to a single question in the exchange form and decide to do some research to answer the question (how have eating habits changed in your country over the last 50 years; what old style biotechnology do you know of in your area?)

2. Planning the presentation (title, introduction, main body, conclusion)

Do a brainstorm activity giving ideas for types of presentations (ppt, product, OHTs, poster)
Give advice to students for giving the presentation:
must be a fixed time, mustn•t be entirely spoken (max 5 min) plus others (separate document)
T … prepare and hand out blank planning sheets to the students

Phrases the students need to remember to use:
•Please may I have your attention?•
Include a task … quiz, questionnaire for during the presentation
Make a special event of the presentation, formal dress
Brainstorm a list of criteria for evaluation of the presentation (relevant, interesting)
How many evaluators?
Organise self evaluation for the students, what would they do differently
Plagiarism (acknowledging sources)
Referencing
Use visuals
Body language

3. Planning sheet

Tell, tell, tell
Title (exciting, clearly explains focus of research)

Content	Time
Start (gives the introduction to the presentation)	short (10%)
Body (main ideas of the presentation)	most (80%)
End (Conclusion)	short (10%)

NB - You need to decide whether or not you will include time for questions in this final section if any questions at all.

4. Putting together the presentation (other than ppt or OHTs)

prepare cue cards
one for the start
one for each of the main ideas in the body
one for the end

Think!
- on each card write a few key words and reference to visuals (OHTs, poster, other)
- put cards in order and number them for ease
- make a copy for each member of the team (if there are other members)

5. Delivery

Hand out 10 commandments for good and bad presentations jumbled up and instruct students to match the good points with their equivalent bad ones.

Better Presentation	Worse Presentation
1 Ensure that the space around you is free from obstacles	A People are still coming in and the ones that are present are talking about their weekend in the mountains.
2 Wait until your audience is seated (and silent) before starting	B Look only at your cue cards, (screen, poster) and speak seriously all the time
3 Stand while presenting	C You don•t ensure that there is adequate space around you and your group (there is a chair in your way, you nearly break your neck over the box of books on the floor)
4 Remember! Do not block the view to your visuals	D Speak for longer than you planned
5 Talk freely from cue cards	E You stand in front of your screen or your poster
6 Vary your voice, speak loudly and clearly	F You interfere in your team member•s presentation. Shut up and sit down!
7 Look at the audience, smile and be friendly	G Read your whole presentation
8 Speak within the time limit and leave time for questions	H Don•t make any pauses
9 Pause when you want to give a new idea	I Speak monotonously, quietly or mumble
10 Be silent and allow your team members to deliver their part of the presentation	J Sit while talking

Answers: 1-C; 2-A; 3-J; 4-E; 5-G; 6-I; 7-B; 8-D; 9-H; 10-F

Activity for students: DNA and crime

The Ministry of Justice asks your school to tender for putting together the content for an inset course for judges, public prosecutors and all other staff members, dealing with fining suspects. There is a fair chance also lawyers will be interested in this course.

The course should teach the participants about the scientific background of determining and using DNA profiles, as DNA profiles seem to play a more and more important role to collect evidence. The use of DNA profiles excites many questions, e.g about reliability and privacy. •DNA-profile and jurisdiction• clearly has two aspects: scientific and ethical. You can choose to stick to the scientific aspect or discuss the ethics as well.

The challenge is to explain difficult scientific knowledge to well educated non scientists. The best thing to do is to start with a short course about the basics of DNA. Dependant on former knowledge you have to study the biochemistry •behind• the DNA profile first: the composition of hereditary material[1] . You need knowledge about amino acids, proteins (composition, spatial structure and functions)[2] and DNA, before you can start with the subject of the course.

Examples:

- structure of nucleic acids[1] ;
- protein synthesis;
- helix structure of DNA;
- isolation of DNA;
- augmentation technique PCR[2] ;
- hereditary material: unique fragments of DNA.

Next you have to produce answers on questions relevant for the target group and end to apply all new knowledge in an actual crime case[3].

Possible subjects[4]:

- What is a DNA-profile?
- How is a DNA-profile determined?
- How unique is a DNA-profile?
- Pro•s and con•s on the use of DNA-profiles in jurisdiction.

Collect your materials in a folder: cuttings from newspapers (authentic context), a glossary with explanations, a source list with explanations (sources can be: textbook, other suitable books from the (school) library, web sites, video, •scientific• articles from newspapers).

After collecting and studying all information you can •write• the course.[5] The course can be:

- a text;
- a PowerPoint presentation with oral explanation;
- a number of connected web pages. The advantage of this last method is that the Ministry can publish the course on it•s intranet. So it would be wonderful, if the course could be made self explaining, so interested staff members could work independently from time and place.

Methodology

In modern education there is shift from a teacher-centred approach to a learner-centred approach. The teacher-centred approach emphasises the transfer of knowledge, a learner-centred approach takes constructivism as a point of departure. Constructivists regard learning as an active process in which a learner constructs knowledge and understanding in an active manner through personal experience or experimental activities. Constructivists advocate the use of authentic contexts. Authentic contexts are usually ill-structured and where multiple •right• outcomes exist, they are considered the best for learning.

Another shift is from individual learning to collaborative learning in groups, contrary to competitive and individualistic learning. The benefits of constructivism are amplified in collaborative learning, because differences in prior knowledge, backgrounds and multiple perspectives of reality provide opportunities for social negotiation, that can lead to critical thinking, shared understanding and the co-construction of knowledge: social constructivism.

The activity •DNA and crime• is an example of a learner-centred activity. The students work in collaborative groups. The work on putting together the folder and •writing• the course can be shared within the group.

Depending on former experience with this way of learning, you can give the groups all sources to be used (teacher-centred), you can also let them find their own sources, making the whole activity completely learner-centred.

Further reading:

1 news.bbc.co.uk/1/shared/spl/hi/sci_nat/03/dna50/timeline/html/default.stm
History/time line

dna50.britishcouncil.org
Portal: general information about DNA

www.bbc.co.uk/genes
Homepage of the genes web site of the BBC

2 ull.chemistry.uakron.edu/biochem/index.html
PowerPoint presentation about •Concepts of biochemistry•, many illustrations, little text

faculty.quinnipiac.edu/health/biology/buckley/BI_101/org_mol/sld030.htm
Slide show, slides 30 - 62 (proteins and DNA) relevant for this activity

3 www.howstuffworks.com: keyword DNA

4 www.howstuffworks.com: keyword PCR

5 www.bbc.co.uk/science/genes/dna_detectives/thief_game/thief_game.shtml
DNA detective in Miss Marbles DNA fingerprinting game

6 www.deakin.edu.au/forensic/Chemical%20Detective/forensic_science.htm
Case studies and background information about forensic science

Chemistry in our lives

What do you eat

Extra activity: new drink

Design

1. a new drink for 14-16 years old.
2. an attractive name for your new drink
3. the labelling of the bottle to sell it in.
4. a procedure to pour the drink in a glass and make it look spectacular.
5. a campaign/commercial on television to promote your drink.

Equipment for every student or pair of students

- water bottle (as small as possible);
- tap water;
- one teaspoon;
- food colour (admitted in EU for food colouring: with E-number);
- •chemicals• to produce bubbles: soda, bicarbonate of soda, citric acid, lemon;
- detergent to produce/stabilise foam;
- labels to stick on the bottles;
- felt pens to write on label and bottle or colour them;

Equipment in the classroom

- washing up facility. As all products are water soluble, washing up should not be a problem;
- tea cloth, kitchen paper or toilet roll.

Talking about genetics around the world

Overview

These are notes for language teachers as well as science teachers. These notes may encourage collaboration between science and language teaching departments.

The two sets of notes for teachers will help you to see how the topic fits into the curriculum as well as telling you about any resources you will need for your class.

There is a brief commentary on each part of the topic, based on the experience of other teachers.

Aims

Working through this topic may help students to:

understand the meaning of genetic modification, and its scientific back ground

recognise the extensive effects of genetic modification, and how it affects our lives

understand why genetic modification, especially around crops, food, health and the environment, has become an issue today

discuss the ethical issues from a personal, national and international perspective, in an informed manner

develop their reading, written, oral and spoken knowledge of other languages, and the specialised language of genetics.

This topic is in five parts

Part 1 What do we mean by Genetic Modification?

A brief introduction to the topic. Students develop an understanding of GM technology and make comparisons with traditional selective breeding.

Part 2 How does Genetic Modification affect our lives?

Students discuss the many practical ways in which GM technologies may affect their lives. The benefits and disadvantages of such technologies are also discussed.

Part 3 Addressing the Issues and Concerns, with a focus on GM crops, food and the environment.

Students explore food production and attitudes to GM crops in their own locality and country. They also discuss concerns that people may have over the products and consequences of GM technologies, as well as socio-economic concerns and those revolving around religious and cultural beliefs.

Part 4 Exploring the issues with others worldwide

Collation of information and exchange with other schools.

Part 5 An international perspective on the issues

Comparisons and discussions of responses from other countries.

Prior knowledge, understanding and skills

Students should have a basic understanding of genes as the units of inheritance

inheritance through sexual and asexual reproduction

the role of gene variation inheritance

DNA being a large molecule, parts of which are genes.

gslc.genetics.utah.edu/ Genetic Science Learning Centre, University of Utah, USA, Website recommended by the BBC for the genetics basics.

Students should be able to:

interpret text, data, graphs, charts and maps

extract and interpret information from secondary sources, including the media and especially web sites.

Instructions for teachers

It is often best for students to work through the Students• Notes in small groups to collect facts, data and opinions. The teacher should help the groups consolidate all this information into one final Exchange Form version.

The images throughout this topic may be used as the basis for an introductory discussion to set the scene at the start of each Part.

Exchanging information with other schools is what makes working through a Science Across the World topic rewarding, so you need a copy of the Exchange Form from the start.

It is well worth contacting schools before you start work on a topic to make sure that the teachers are definitely interested in collaborating with you.

The School Search allows you to find other teachers with classes interested in exchanging information at about the same time as you will be studying the topic.

The Teachers• Notes explain the exchange process in more detail.

Sometimes it turns out that the response from other schools is rather limited. This is why we have included an Exchange Form Library on our website as a back up. The examples in the library also help to show some of the benefits of taking part in this programme.

Part 1

Use the weblinks, images and a range of sources including text books, library books, directories and so on to investigate the meaning and differences between traditional biotechnology and modern genetic modification. The weblinks should also give students a clearer understanding of the importance of the 1953 DNA structure discovery to GM technology today.

This part also encourages students to be creative. Some collaboration with your teaching colleagues in the humanities department might be fruitful.

Part 2

The illustration can be used to ask students to consider the importance of GM technology to our everyday lives.

The quotes may be useful to portray some of the positive and negative aspects of these technological developments. Students should particularly consider developments which are taking place in their own locality.

Part 3

Students may like to compare the quotes when discussing the wide range of differing opinions that people may have about the effects of GM technology.

The illustration •A humorous interpretation of how GM technologies may be portrayed through the media• may be used to stimulate group discussion work.

All of the images in this illustration have some foundation in current research or applications. For instance, the •goat spider• is based on the Nexia company•s work to mass produce man made spider dragline silk (with its unique combination of enormous tensile strength and elasticity in an ultra light weight fibre) through recombinant proteins in the milk of transgenic goats.

www.nexiabiotech.com

Another example is the controversial work of Cloneaid, founded by the religious Raelian Movement, as the first •human cloning• company.

www.clonaid.com

www.rael.org

Here are some notes that may be useful to both science and language teachers when preparing students for informed discussion on the positive and negative effects of GM foods, as in question 10:

Language for arguing

Introducing the theme

Many people believe that*ƒ*
It is said*ƒ*
People•s opinions on*ƒ* differ widely.
Some people go as far as to say that*ƒ*

Supporting your argument

One of the main advantages of / problems with*ƒ* is that*ƒ*

In the first place, /Firstly, /To begin with, /Secondly, /Thirdly, /Finally, / Last, but not least, *ƒ*

Adding further reasons

Both*ƒ* and/not only*ƒ* but also*ƒ*
In addition, /What is more, / Furthermore, Besides, *ƒ*, similarly*ƒ*

Giving an opinion

In my view/opinion, /It seems to me that*ƒ* I think/feel that*ƒ*
It is reasonable to suppose*ƒ* / It is not stretching a point*ƒ*

Giving the opposite opinion

On the other hand, there are several disadvantages
Let us not forget the disadvantages*ƒ*
Contrary to popular opinion*ƒ*
In fact*ƒ*

Linking phrases

Although*ƒ*, /However,/ In spite of this, Despite*ƒ*, /Nevertheless
Some people*ƒ* while/whereas others*ƒ*
On the one hand*ƒ* on the other*ƒ*

Analysing the opinions of others

While it could be said that*ƒ* let•s not forget*ƒ*
One possibility*ƒ* If this were the case*ƒ*
It is true that*ƒ*
Certainly*ƒ*
To be sure*ƒ*
(This) is based on the assumption/ premise that
(This) implies/would imply/suggest that
(This) ignores/does not take into account the fact that*ƒ*
(This) assumes that

Concluding

In conclusion,/ To sum up, /On balance, /All things considered

The following notes may be useful to both science and language teachers when preparing students to analyse how the media deals with DNA/GM/cloning issues, as in question 11:

1. The aim here is to get students to analyse how news is presented in the press through the layout, visual and structural elements of the article.

2. Next, students then write their own article in the style of the newspaper they have chosen, either for or against in the GM debate.

The best place to look at the presentation of the news is on the front page of a newspaper, or, especially if you are looking at online news, the layout of the piece of news.

Students may discuss why the presentation might be designed in the way it is.

There are many things you can look at to analyse how the news is presented. If you take the same story from two newspapers you can also compare how the presentation of the news story differs in each newspaper.

Take a look at the following:

The BBC
http://www.news.bbc.co.uk/1/hi/sci/tech/1675602.stm

The Mirror (front page Nov 26-27 2001)
http://www.mirror.co.uk/news/allnews/page.cfm?objectid=11445006&method=full

Mirror article
http://www.mirror.co.uk/news/allnews/page.cfm?objectid=11444271&method=full&siteid=50143

The Center for Bioethics and Human Dignity
http://www.cbhd.org/

The New Scientist
http://www.newscientist.com/hottopics/cloning/

The Daily Telegraph
http://www.telegraph.co.uk/news/main.jhtml?xml=%2Fnews%2F2001%2F11%2F26%2Fwclon26.xml

Make notes on how the news is presented in each of the sources of news above and general conclusions based on your notes as a group.

Comment on some of the following:

- use of photographs
- difference in stories reported
- advertising
- headlines
- use of colour
- size of text
- amount of text compared to pictures

Students can also look at:

- where the story appears in the paper
- what the attitude of the paper itself is to the issue in the article
- how long and detailed the story is
- the language in the headlines

The following is from the Oxford English Programme and may fit into the second part of the activity for writing a piece in the style of a certain newspaper.

JOURNALISM - PYRAMID WRITING

Badger baiters may be jailed. 100%

Badger baiters and trappers will face imprisonment under the changes to the Criminal Justice Bill accepted by the Government last night. 70%

The changes, based on a proposed amendment by Mr Peter Archer, the former Labour Solicitor General, come at a time of growing anxiety about the mal-treatment of badgers. 50%

The present penalty for cruelty to badgers is a fine, although Ministers have announced an increase in the maximum from 2000 to 3000 pounds. Under the new clause magistrates can jail offenders for up to six months. 40%

The Daily Telegraph

NB The percentage figure represents numbers of readers who may read from beginning to end of an article.

So 100% may read the headline but only 50% get as far as the third paragraph.

Because of this articles in newspapers give the main facts in the opening lines of a story and headlines become a vital part of attracting the reader.

This is called pyramid writing because the number of readers diminishes from the broad 100% at the start of the article to a much smaller percentage at the end.

Writing articles:
Some advice from Roger Finn, the TV Newsround presenter.

The first sentence
Put much more effort into this than anything else. Make it short and dramatic. Surprise your readers, make them curious.

Be clear
Let readers know exactly what the story is about from the start. Put the most important facts right at the beginning.

The 5 W•s
Answer the five obvious questions about a news story:

- Who is involved?
- What happened?
- When did it happen?
- Where did it happen?
- Why did it happen?

Accuracy
Get your facts right and never guess. Beware of feeling •Well, I•m pretty sure that•s right so I•ll write it anyway.• I made that mistake when I wrote that Sydney was the capital of Australia.

Keep it brief
Don•t use complicated words if simple ones will do and above all don•t bore your readers by making the story longer than it needs to be.

Be fair
Remember that there are at least two points of view in any story. Your job is to present the whole truth so that your readers can make up their own minds.

Avoid cliches
Especially if it•s a sports story. Find new ways to describe familiar people and events.

Search for the special ingredient
Once you•ve told the basic facts of an event, try to find a detail or quotation that makes your story special.

Part 4

Students need a copy of the Exchange Form which they can download for themselves or you can provide on paper or in an electronic format.

Students can complete the Exchange Form on-screen and send it to other schools as an e-mail attachment or by fax. However while reaching consensus, it may be helpful to provide paper copies of the Form.

Establishing communication links with other schools before starting detailed work on the topic helps to keep work in step so that the feedback is more immediate. Some schools enjoy exchanging ideas and progress reports by e-mail while they were working on the topic.

When the students have completed Parts 1, 2 and 3, the class has to decide what to write on the Exchange Form. The class might vote to decide which stories and case studies should feature on the Exchange Form.

Students can use a mixture of words, pictures and drawings on the Exchange Form.

Send copies of the Exchange Form to the schools with which you have been asked to exchange information.

Part 5

When you have received the Exchange Forms from other schools, copy the Exchange Forms that you have received and the class•s own Exchange Forms for comparison and analysis.

Compare and discuss the responses with the help of the questions in the Students• Notes.

Science Across the World

Talking about Genetics around the World

Date

To (teacher•s name)

School

Address

Tel: (with international dialling code)

Fax

E…mail

Web address of school

We understand that your class is working on •Talking about Genetics around the World•. We would like to exchange information on attitudes towards genetic modification. Our students are looking forward to hearing from your class.

From (teacher•s name)

School

Address

Tel: (with international dialling code)

Fax

E…mail

Web address of school

Science Across the World [English] ©ASE 2003

Part 1 What do we mean by genetic modification?

1. This is what genes and DNA mean to us.

We got our knowledge from the following sources.

2. These are the 'old style' biotechnology or breeding examples that we see or use locally, and nationally.

Part 2 How does genetic modification affect our lives?

3. These are the main areas of GM technology, and research and development taking place in our own locality and country.

4. These are the people who are doing this work.

5. We think these are the benefits and the disadvantages of this work.

Part 3 Addressing the issues and concerns, with a focus on GM crops food and the environment

6. These are the main crops that are grown in our own locality, and in our country.

These are ❑ are not ❑ GM crops.

Our country imports, and exports the following GM foods.

7. These are the regulations for growing GM crops in our country.

8. These are the GM foods and food additives, which are sold in our country.

GM foods

Additives

Science Across the World [English] ©ASE 2003

9. These foods and additives are identified in the following ways.

Labelling is ❑ is not ❑ compulsory.

10. We have ❑ have not ❑ included samples of labels.

11. Here are the opinions of local people about GM foods.

This is how the media presents GM foods in our country.

We have ❑ have not ❑ included examples of positive and negative media coverage.

We have ❑ have not ❑ also written our own newspaper articles based on these different media styles.

Talking about genetics around the world

What you will learn

Working through this topic will help you to appreciate the importance of genetic modification (GM) and understand why it has become an important issue. You will also think about the scientific and ethical issues involved from a personal, national and international perspective.

What you will do

There are five parts in Talking About Genetics Around the World.
The meaning of words in italics can be found in the Glossary at the end of the Students' Notes.

Part 1 What do we mean by the Genetic Modification?

All genetic modification is possible because the same DNA chemical building blocks make the genes, which are present in viruses, bacteria, plants and animals, including humans.

GM technology was first developed in the 1970s, enabling scientists to modify and regulate specific pieces of DNA (genes) that 'code' for proteins and then to move these from one organism to another. Movement can be between individuals of the same species, or different but similar species. Movement can also be between very different types of living things; such as between bacteria and plants, or plants and animals, or even animals and humans.

Genetic modification can also involve increasing or decreasing the activity of genes that are naturally present in organisms.

A stylised interpretation of the DNA double helix

Science Across the World [English] ©ASE 2003

Of course, we should not forget that humans have been selecting organisms for thousands of years, particularly to improve the quality and variety of their diet through traditional selective breeding of individual species. This 'old style' of biotechnology has produced the maize, rice, sheep and cattle varieties, amongst many others, that we see today.

Traditional selective breeding

GM technology is simply a much faster and more refined process of manipulation, relying on our latest scientific advances, and sometimes involving unrelated species. Speed and efficiency can be an advantage but these new processes may not disclose long-term risks to the environment, humans and other organisms.

GM technology has been possible only since the Nobel Prize winning discovery of the DNA double helix structure by Crick, Watson and Wilkins in 1953. The year 2003 celebrates 50 years of this enlightening discovery.

1. What do you understand by genes and DNA?
   Where did you get your knowledge from?
   Illustrate your ideas through photos, drawings, poetry or prose, model-making, mind-mapping etc.

2. What 'old style' of biotechnology do you see or use locally, and nationally?

http://www.eurekascience.com/ICanDoThat/dna_genes.htm
presents a simple guide to the structure and function of genes. Learn about chromosome replication, cloning and genetic engineering.

www.bbsrc.ac.uk/life/index.html UK
Biotechnology and Biological Sciences Research Council. 'Genomics and Beyond' plus 'inGENEious' give a simple guide to the basics of genetics.

www.chemheritage.org/EducationalServices/chemach/ppb/cwwf.html
The Chemical Heritage Foundation website gives a brief history of the discovery.

www.ba-education.demon.co.uk/for/science/dnamain.html
This site presents a brief history of the discovery, and a simple method for extracting DNA in your kitchen — from kiwi fruit.

Part 2 How does Genetic Modification affect our lives?

With a growing world human population making demands on an increasingly fragile environment, GM technology may be important today and in the future. It may contribute to our general health by creating new antibiotics, gene therapies, safer vaccines, and animal organs and tissues for transplants. These technologies may also be important to our diet and health by creating new, and sometimes better food, more productive crops, often in hostile environments, and healthier livestock. They may also be valuable in protecting our environment by creating biodegradable plastics, plus bacteria to measure water pollution and break down toxic waste.

Some of the possible applications resulting from modern GM technology

'The race is now on between the technoscientific forces that are destroying the living environment and those that can be harnessed to save it'. E. O. Wilson, award winning American sociobiologist in 'The Future of Life' 2002

3. What are the main areas of GM technology, and Research and Development taking place in your own locality and country?

4. Who is doing this work?

5. What are the benefits and the disadvantages of this work?

'Advances in medicine and the possibilities of human happiness created by the relief of suffering are a great embarrassment to those determined to think nothing but evil of science and technology. Their only recourse is to point to the population problem and to say or imply that modern drugs cause as many aliments as they cure'. Peter Medawar, British Nobel Prize winning immunobiologist in 'The Threat and the Glory' 1991

www.bbsrc.ac.uk/life/index.html 'The Medicine Makers' 'Cell Repair Kits' and 'Biological Clean-Up' illustrate the possibilities of modern biotechnology.

http://www.bbc.co.uk/genes/ Excellent feature investigates how genes affect us all. Read about the role of genetics in science and history.

Part 3 Addressing the Issues and Concerns, with a focus on GM crops, food and the environment.

All GM technology work must conform to regulations. However some people find the regulations and applications more acceptable than others. Concerns may revolve around the scientific facts and questions that arise from the science. These relate mainly to the products and consequences of GM technology, and how they may affect the environment. These concerns could include the risk of spreading weeds which are resistant to pests and herbicides, and that a small number of improved 'supercrops' might lead to an overall loss of genetic diversity which is more susceptible to disease, pests or climate variation in the future.

There are also socio-economic concerns, such as the vulnerability of poorer farmers and poorer countries to new GM crops, which are expensive, may produce seeds with terminator genes and favour large-scale, highly mechanised agriculture.

Concerns may also revolve around the complex issue of patenting. These concerns could include the question of 'ownership' of genetic raw materials such as rainforest plants by local peoples, or by multinational industries, which develop them into new products. Another concern over patenting may be the restriction of free exchange of genetic materials and information, which may be seen as unfair and leading to scientific advances being made only by those with access to the patents.

In addition, there may be more fundamental concerns. This is where GM technology is thought to be simply wrong in itself, even if the science and technology works and the risks of negative consequences are considered negligible. These concerns may revolve around religious or cultural beliefs. Some people may distrust the unnaturalness of the products or feel disrespect for the interdependence of all living organisms in a self-regulating and complex 'biotic community'.

A humorous interpretation of how GM technologies may be portrayed through the media.