

Teacher notes

Pre-event materials – Have you eaten rice?

These pre-event materials are designed with the following objectives:

- to **generate interest in the topic** of the lecture
- to **scaffold key language** of the lecture
- to **practise communication skills** relevant to the topic

Please note:

1. Detailed procedures are described, focusing on key teaching techniques and methods used by English language teachers.
2. You can adapt, omit and extend activities to suit your students. Suggestions for these changes are marked in the lesson plan in blue.
3. Answers are marked on the lesson plan in red
4. Timings should be adapted to suit the needs of the students.
5. A power point presentation accompanies this lesson, although the lesson can be followed without it.

Level	Senior Secondary
Aims	By the end of the lesson the students will: <ul style="list-style-type: none"> • be familiar with vocabulary of reagents, procedures and results which will be used in the lecture • be able to write a lab report for a protein coagulation experiment.
Skill focus	Main skill = reading, writing Sub-skill = speaking
Time	40 min lesson time
Materials	Required – worksheets Optional – internet access for student/teacher research



Activity 1

Food reagents



1a. Which foods and drinks can you make with the following letters?

patoot	somkily	viganre	lonem	cmrae	sugra
1.....	2.....	3	4.....	5.....	6

1b. Which of these foods/drinks

- contain a lot of protein?
- contain a lot of starch?
- contain a lot of fat?
- are acidic?
- are sweet?

1c. Which of these can you make plural?

1d. How often do you and your family use these ingredients in your kitchen?
Tell your partner. Use the language below to help you.

We often use...

We use that for...

We hardly ever use...

We occasionally use that
when we make...

I don't think we ever use that.

I don't know what we use!



Activity 2

Chemical reagents



2a. Which letters are missing? All the missing letters are vowels.
Write the chemicals again.

H_2O_2	Hydr*g*n per*x*de
KI	Pot*ss**m i*d*de
I_2	I*d*n*
$CuSO_4$	Copp*r s*lp*te
CO_2	C*rb*n d**x*de
N_2	N*tr*g*n
NaCl	Sod**m hydr*x*de

2b. How many syllables do these words have? Mark each syllable.

Example: so/di/um bi/car/bo/nate
po/ta/ssi/um per/man/ga/nate

Which syllable is stressed? Circle the stressed syllable in each word.

2c. Listen to the instructions
from the teacher and play the game!



Activity 3

Procedure



3a. Find opposites in the box below:

ignite pour sprinkle vigorously extinguish slowly

3b. Complete these sentences with the words in the box.

1. You can or salt.
2. You can or a fire
3. You can stir tea or



Activity 4

Results



4a. What's the result? Find the beginning and end of each sentence.

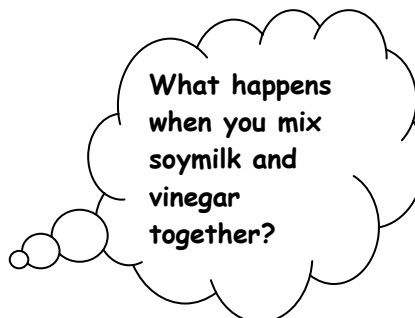
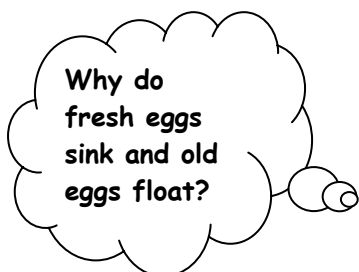
- | | |
|---|--------------------------|
| 1. When washing up liquid is mixed with water | (a) it becomes an ion. |
| 2. When certain particles come together in a liquid | (b) it produces froth. |
| 3. When a fresh egg is put in water | (c) it dissolves. |
| 4. When salt is added to water | (d) it sinks. |
| 5. When an atom loses or gains electrons | (e) they will coagulate. |

Now circle any words on these pages that are new for you.



Activity 4

4b. Read the food chemistry bubbles below. Do you have any ideas?



4c. Choose one of the bubbles above and research it on the internet.
Design a safe experiment and write up your findings!



I observed that.....

.....
.....
.....
.....

This is because.....

.....
.....

This means that.....

.....
.....

Aim	Time	Procedure
To generate interest in the lecture topic	2 min	<p>1. Introduce the topic of the lecture by writing “food chemistry” on the board. Ask: “<i>what do you expect to see in the lecture?</i>” “<i>what is food chemistry?</i>”</p> <p>Give students 1 min to discuss predictions in groups of 3.</p> <p>2. Elicit 5 or 6 ideas from group captains e.g. <i>protein, kitchen, cooking</i>. Write ideas as a mind map on the board</p>
To review spelling, meaning and grammar of key foods in the lecture	10 min	<p>1. Explain to students that the lesson will be conducted as a team competition. Keep team scores through the lesson as suited to your students. This is because the lesson is conducted as a vocabulary review lesson. The activities themselves are not focused on one particular chemistry aim, but highlight key vocab for the lecture.</p> <p>2. Divide class into teams of 3 students and set up a score board and scoring system. Points can be added for other adaptations and questions you set yourself.</p> <p>3. Give students 1 min to complete activity 1a in their teams.</p> <p>4. Elicit answers and start scoring. Refer to powerpoint slide 2 You can also focus attention on:</p> <p>a) pronunciation. Focus on stress patterns and repeat the words together. The stressed syllable in each word is underlined in the answer box</p> <p>b) “<i>contain + noun</i>” structure. Highlight this on board in colour and ask students to identify the nouns in activity 1b (protein, starch, fat)</p> <p>c) “<i>are + adjective</i>” structure. Ask if <i>acidic</i> and <i>sweet</i> are also nouns. Confirm that they are adjectives, and highlight this structure on board in a different colour (Ask “<i>What is the noun of acidic?</i> Acid)</p> <div data-bbox="542 1099 1294 1182" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Answers for activity 1a 1. <u>potato</u> 2. <u>soymilk</u> 3. <u>vinegar</u> 4. <u>lemon</u> 5. <u>cream</u> 6. <u>sugar</u></p> </div> <p>5. Give students 1 min to complete activity 1b and 1c</p> <p>6. Elicit answers, continue scoring, and review pronunciation. Refer to powerpoint slide 2</p> <div data-bbox="542 1312 890 1523" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Answers for activity 1b Protein = soymilk Starch = potato Fat = cream Acidic = lemon, vinegar Sweet = sugar</p> </div> <div data-bbox="919 1312 1259 1523" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Answers for activity 1c Plurals: <i>potatoes, lemons.</i> Note that the others are usually uncountable and therefore not plural.</p> </div> <p>7. Give students 3 min to discuss activity 1d in groups and tell them they will be awarded points for the team who works best together. Monitor and note down 5 or 6 interesting ideas (either correct or incorrect English). After the time limit, write your notes on the board and give students 2 min to discuss with partner if/how the sentences need correcting. Give the board pen to students and ask them to come to the board and correct them.</p>

To review spelling, pronunciation and use of basic chemicals for the lecture	10 min	<p>1. Give students 3 min to complete activity 2a and activity 2b</p> <p>2. Elicit answers – refer to powerpoint slides 3 and 4 - continue scoring, and repeat words together to focus on pronunciation. The stressed syllables in activity 2b is underlined in the answer box.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>Answers for activity 2a</p> <p>Hydrogen peroxide</p> <p>Potassium iodide</p> <p>Iodine</p> <p>Copper sulphate</p> <p>Carbon dioxide</p> <p>Nitrogen</p> <p>Sodium hydroxide</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>Answers for activity 2b</p> <p>Hy/dro/gen pe/ro/xide</p> <p>Po/ta/ssi/um i/o/dide</p> <p>I/o/dine</p> <p>Co/pper sul/phate</p> <p>Car/bon di/o/xide</p> <p>Ni/tro/gen</p> <p>So/di/um hy/dro/xide</p> </div> </div> <p>3. Activity 2c can be adapted to suit your class.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Possible adaptations of activity 2c</p> <p>Elicit 10 more common chemicals in the laboratory and write them on the board – tell students to draw a 4x4 grid and write 16 different reagents in their grid. They can include reagents from activity 1a, 2a, 2b and any other reagents you have elicited and put clearly on the board. When everyone is ready. Explain the rules of bingo:</p> <p><i>“I will talk about one of the reagents but I won’t tell you the name of it. If you have the name on your grid, cross it out. If you don’t have it on your grid, you do nothing. Cross out any reagents that I talk about. When you have 4 crosses in a line, you shout “bingo”.”</i></p> <p>Start playing bingo – read a short description, definition or use of each reagent</p> <p>Example for nitrogen <i>“this is a gas that makes up most of the air around us”</i> or <i>“this molecule is made of two atoms with a triple bond”</i> – as suitable for your students.</p> <p>When students shout “bingo” – elicit their line of 4 and continue the scoreboard.</p> </div>
To review language used in experiment procedures	5 min	<p>1. Give students 1 min to complete activity 3a and activity 3b</p> <p>2. Check answers, meanings and pronunciation. Refer to powerpoint slide 5.</p> <p>3. Play a game of charades with these words. Act one of the words and students guess answers. Repeat with other words and keep score. Let students act/guess in their groups. Address any pronunciation issues here.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Answers for activity 3a & 3b</p> <p>1. pour/sprinkle</p> <p>2. ignite/extinguish</p> <p>3. vigorously/slowly</p> </div>
To review language used in experiment results	5 min	<p>1. Give students 2 min to complete activity 4a.</p> <p>2. Check answers, meanings and pronunciation. Refer to powerpoint slide 6.</p> <p>3. Calculate scores and award suitable rewards!</p> <p>4. Ask students to go back through the worksheets and circle any new words.</p> <p>5. Refer to powerpoint slides 7 and 8 and ask students to recall the meanings of words with their partner.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Answers for activity 4a</p> <p>1b, 2e, 3d, 4c, 5a</p> </div>
To practise using language from the lecture in lab report language.	5 min	<p>1. Give students 5 min to research answers on the internet or provide students with cut ups of research you have already printed out about activity 4b.</p> <p>2. Discuss research findings.</p> <p>3. Activity 4c can be done at home or in class. Encourage students to research “protein coagulation” on the internet to help them explain their results.</p>