UNIT 3. –RADIO

SESSION 1

Method:
Deliver the student’s worksheet of this lesson

Activity 1. - Brainstorming

Group activity. All the class.
Sort of activity: Speaking
Place: classroom

1. In a small or large group select a leader and a recorder (they may be the same person).

2. Define the problem or idea to be brainstormed.
   - “How much do you know about the radio?”
   - How does it work?
   - Can you name any of its parts?
   - Who invented it? In what year?

   Make sure everyone is clear on the topic being explored.

3. Set up the rules for the session. They should include
   - letting the leader have control.
   - allowing everyone to contribute.
   - ensuring that no one will insult, demean, or evaluate another participant or his/her response.
   - stating that no answer is wrong.
   - recording each answer unless it is a repeat.
   - setting a time limit and stopping when that time is up.

4. Start the brainstorming. Have the leader select members of the group to share their answers. The recorder should write down all responses, if possible so everyone can see them. Make sure not to evaluate or criticize any answers until done brainstorming.

5. Once you have finished brainstorming, go through the results and begin evaluating the responses. Some initial qualities to look for when examining the responses include
   - looking for any answers that are repeated or similar.
   - grouping like concepts together.
   - eliminating responses that definitely do not fit.
   - Now that you have narrowed your list down some, discuss the remaining responses as a group.
Pupils can use dictionaries and the general glossary, in order to look up at the most technical terms.

It is very possible that pupils arrive at one definition proposing examples or different moments/ways of using it. All of them are valid taking into account they can use them in the oncoming exercises.

**Activity 2. – Power Point**

- **Group activity. All the class.**
- Sort of activity: Introducing new information
- Place: computers room

Introducing the concepts to be learnt in this lesson.

Try to comment every slide at the same time that you are looking at it. At the end, deliver a set of photocopies of what you have been watching, it will be their guidelines throughout all the lesson.

**Activity 3**

- **Individual activity**
- Sort of activity: memorising new vocabulary
- Place: classroom

Some of the most technical words are the ones introduced in this activity. It is an easy exercise, where students only have to fill in the gaps with the vowels missing, but this kind of exercise will be very helpful to get familiar with the new vocabulary of the lesson.

They do it by their own and once the correction time arrives, the teacher will pick up a student who will have to write down in the board the right spelling of each word, at the same time that he/she will try to explain or translate it. If he/she does not know the meaning of the word, another student can help him/her. In the last case, the teacher will remind them the meaning.

**Answer key:**

- Waves
- Frequency
- Decoder
- Amplifier
- Stronger
- Aerial
- Loudspeaker
- Station
SESSION 2

Activity 4. – Getting the right order

Group activity. 5 people.
Sort of activity: Memorising a sequence of steps
Place: classroom

Show on the board the steps you want your students to memorise. Number them. Give the students time to try to memorise the correct order, in this case:

- aerial
- tuner
- decoder
- amplifier
- loudspeaker

Put the students into groups of the same number as the steps you want them to memorise, in this case, 5. Number the students 1-5. If you have more than 5 students in a group, two can share a number. If you have 4 students, you can give one student two consecutive numbers.

Student 1 in the group stands and says the name of the first step, student 2 the second one and so on. Check each group. If a student makes a mistake, student 1 starts again from the beginning. They continue like this until they have managed to get through the whole sequence at least twice without making a mistake.

Activity 5

Individual activity.
Sort of activity: showing the knowledge learnt
Place: classroom

This is the typical exercise of matching the word with its definition, it is interesting that they coloured the matches in order to retain them at first glance.

Answer key:

- Receives all the waves: aerial
- Selects the station: tuner
- Translates the signal: decoder
- Makes the sound: loudspeaker
- Makes signal stronger: amplifier
Activity 6. – Surfing the internet

Group activity. 2 people.
Sort of activity: Looking for information, writing
Place: computers room

In groups of 2 people, they will have to look for information about the characters listed in their student’s worksheet and answer the questions about them. Make sure the pages they visit are written in English going around the classroom and skimming down them.

SESSION 3

Activity 7. – Ask me your questions

Group activity. 2 people.
Sort of activity: arousing students’ curiosity, listening for specific information
Place: classroom

Remind the students about question forms by practising yes/no and “wh”-questions. Write examples on the board like:

What nationality was he?
   When did he live?
   What did he invent?
   Why is it useful?

Put the students into pairs. Give them a time limit (about 10 min) to tell each other what they know about the figure and then to write a question about it that they want answered. They write their questions on the board. Correct any mistakes. If necessary, they write their questions in the mother tongue. You then help them translate the questions into English.

The class copy all the questions on the board into their jotters.
Each student who wrote a question says it out loud to the class. The class try to answer it.

Tell the students you are going to give them a talk. While they are listening they should tick any of the questions they think you have answered.
Give your talk, incorporating as many answers to their questions as possible or sensible.
When you have finished, invite any students who think their question has been answered to give the answer. If they are right, they come to the board and rub off their question.
Ask pairs to work with another pair. They go through the questions in their jotters and answer any they can.
Check their answers
Go through any questions still left on the board and answer them on the spot. Alternatively, ask the students to find the answers for their homework.
Activity 8. - Dictation

Group activity. 3 people.
Sort of activity: Listening, writing
Place: classroom

Put the students into groups of 3 (as many students as characters there are to seek for information).

Tell students each one has to write down at least 4 sentences of one of the characters they have been investigating, these sentences have to contain the main information about these famous characters: who they were, why they are well-known, when they lived...

Ask the members of each group to name themselves as the character they are describing: Maxwell, Hertz and Marconi.

Tell them once you name a character, the person of the group who is named as such, has to read out the sentences he/she has written down to the rest of the group, who must copy them down.

Once they have finished, tell them to check the correct spelling of the words.

SESSION 4

Activity 9

Individual activity.
Sort of activity: Understanding text information. Showing the knowledge learnt
Place: classroom

Ask the students to fill in the gaps. Check the answers with the whole class. Check students have the right pronunciation and then ask them to give you the translation of the paragraphs in their language.

Answer key:

- Radio waves travel at $3 \cdot 10^8$ m/s
- The part of a radio which makes the signal stronger is the amplifier
- The number of waves made in one second is called the frequency
- The unit of frequency is measured in hertz
- A radio station is identified by the frequency of the signal it transmits.

Activity 10. – Back to back

Group activity. 2 people.
Sort of activity: Speaking / listening / looking
Place: classroom
1. Students sit in pairs “back-to-back” – the chair backs should touch so the students are close enough to hear each other above the noise that will follow. They decide who is A and who is B.

2. A is given visual material, in this case the teacher will hand him/her a radio photography as the ones shown below. B is given a piece of plain paper and pencil.

3. A describes the visual material to B, while B draws it, aiming to make a perfect replica, complete with labelling.

4. Partners swap roles and try it again, using different material, with B describing and A drawing.

This is a cooperative exercise. B can ask as many questions as she likes and A’s job is to be as helpful as possible. When the time is up, partners compare the original with the attempted copy.

Activity 11. – Mutual dictation

Group activity. 2 people.
Sort of activity: speaking, listening, reading, writing
Place: classroom

Give half the class the A sheets and the other half the B sheets.
Give the students time to read and understand their sentences. They can do this with other students who have the same sheets. If there is anything they do not understand, they must ask you. Explain to them that later they may need to explain their sentences to someone else.

Write on the board any words you think they may have difficulty pronouncing and work on the pronunciation with them.

Put the students into A and B pairs. If you have alternate A and B rows, each A can now work with the B student behind them. Tell them not to let their partner see their sheet.

Student A starts by dictating their first sentence to student B. Student B writes it in their first A line. Remind them to dictate the full stops. Student B then dictates their first sentence and student A writes it in their first B line. They continue like this until they have completed the dictation and filled in all their lines.

They check what they have written by reading it back to each other.
Give them time to help each other understand the content.

**Student A**

A. - Radio is the transmission of signals, by modulation of electromagnetic waves with frequencies below those of visible light

B. - ________________________________________________________________.

A. - Information is carried by systematically changing (modulating) some property of the radiated waves, such as amplitude, frequency, or phase.

B. - ________________________________________________________________.

A. - This can be detected and transformed into sound or other signals that carry information.

B. - ________________________________________________________________.

A. - This is called noise, and it is heard as crackles and hiss on radio programmes.

B. - ________________________________________________________________.

**Student B**

A. - Electromagnetic radiation travels by means of oscillating electromagnetic fields that pass through the air and the vacuum of space.

B. - When radio waves pass an electrical conductor, the oscillating fields induce an alternating current in the conductor.

A. - ________________________________________________________________

B. - All signals become weaker as they travel long distances, and they may also pick up random extra signals.

A. - ________________________________________________________________

B. - Noise may also cause an Internet connection to drop, or slow down as the modem tries to compensate.
Activity 12. – Mind Map

Individual activity
Sort of activity: gathering the knowledge learnt
Place: classroom

Tell the pupil to bring out the sheet of paper that you gave to him/her in previous units and where it is explained what a Mind Map is. (Teachers resources).

Choose a pair of them and tell them to go out to the board and draw the ideas connection that they have thought. Ask them also to explain the Mind Map. Ask the rest of the class what they think, if they consider there are some concepts that miss, how they would improve it.... It is a good occasion to join these ideas with the brainstorming of Activity 1 and feedback it.

Activity 13.- My own glossary

Individual activity
Sort of activity: writing
Place: classroom

At the beginning of each lesson, the teacher will remind pupils that words they do not understand and that are not in the general glossary, they must write down in their jotters and then look for their meaning at home. This activity has to be done simultaneously with the others. It would be helpful if they did this in at the back of their jotters in order to find it quickly and easily.