

Activity 3: Coding the weather

Introduction

Can your learners construct a text message that gives details of current weather conditions in no more than 25 characters? To succeed they will need to find a way of communicating weather data using codes that they invent themselves. They will then send their coded message to other learners. Will the recipients be able to decipher the message? If so, the senders can claim success.

Learners will begin to appreciate the complexities of encoding and decoding weather information and gain insight into concepts that underlie many data handling operations. The activity also builds up skills and confidence in handling coded data that will enable learners to succeed with **Activity 4: Weather web page challenge**.

The suggested learning approach is problem-based, allowing learners to work inductively to gain a deeper understanding of data handling issues.

Learning objectives

Learners should be able to:

- understand how information can be translated into coded data
- describe the benefits and pitfalls of using coded data.

Learners will also be able to improve their problem-solving and analytical thinking skills.

Resources required

- Mobile phones or any other means of sending a short text message.
- Access to current weather information via a weather website and through direct observations.

Starting points

Activity 1: What's the weather like today? provides an ideal starting point for this activity. Alternatively, learners could review the Telecommunications area of the **Tour of the Met Office – multimedia presentation**.

Suggested approach

Stage 1: Introducing the task

Recap on **Activity 1: What's the weather like today?** This should have led learners to collect data on various attributes of the current weather, such as temperature, wind strength and so on.

If Activity 1 was done on a previous day, learners will first need to obtain up-to-date data about the current weather. As in Activity 1, they can start by making their own observations and supplement these by looking at a weather website on the internet. You might like to use the BBC weather website, where learners can put in their postcode to obtain local data.

Invite learners to work in pairs and set the following task.

- Invent a way of expressing today's weather as a series of codes that can be sent as a short text message. You can use a total of up to 25 characters (plus spaces). You have to include at least five different attributes of today's weather in your text message.

Allow the pairs a few minutes to discuss the task and then take questions. Try to avoid giving too much explanation. Allow learners time to develop their own ideas.

Stage 2: Encoding the weather data

Working in pairs, learners invent their own way of encoding the weather data into any combination of letters, symbols or numbers. Explain that this string of characters will be sent as a text message to another pair of learners. If the recipients can decode the message, then the senders will have succeeded.

Illustrative example for teacher guidance

A cold, dry and fairly sunny day in January might result in a string of codes that look something like this:

T2 WN15mph 20%Clld R0mm VisVG

This decodes as: temperature 2 degrees, wind north 15 mph, 20% cloud cover, rain 0 millimetres, visibility very good.

Do not give your learners this example. Allow them to come up with their own solutions. They may well surprise you with their inventiveness.

Stage 3: Sending coded data to other learners

Each pair sends their coded data to another pair who writes out what they think the message is saying. They show this to the senders, who confirm whether it has been decoded correctly.

Stage 4: Consolidating and checking learning

Small group discussions and/or a whole group plenary should allow learners to highlight the data handling issues that arise from the activity. Possible questions are listed below.

What sort of mistakes happened during decoding? Why did they happen? (Learners should recognise the need for coding rules or conventions to prevent mistakes.)

What are the advantages of coding data in this way?

- (Learners should recognise how codes save time, are easier to send and easier to display on devices with small screens.)
- Would it be possible to make the text message even shorter? How? (Learners should recognise that the position of each item in the string could indicate what it referred to, thus shortening the message.)

Assessment for learning

The activity will reveal whether learners understand the challenges of working with coded data. This will enable you to judge whether they will cope with the next activity as described in the suggested approach given below, or whether you will need to adopt an alternative approach.

What learners might do next

Activity 4: Weather web page challenge is designed to follow on from this activity. Alternatively, you might wish to take your learners on to the use of codes for programming or for handling data that is being entered into a database.