



Encoding and Decoding Data Day 2

Instructional Days: 1-2 days

Topic Description: Today the students will continue learning methods to encode and decode letters and numbers and gaining intuition for finding patterns in given sequences.

Objectives:

The student will:

- Learn about language translation as a form of encoding
- Think about different types of encoding techniques other than cryptograms
- Gain intuition for finding patterns in given sequences.

Outline of the Lesson and Teaching Strategies:

- Introduce the ideas of translation as a type of decoding (10 minutes)
 - Read the motivational context
 - Watch the “World Lens” video
 - Discuss the questions in the “Thinking about ‘World Lens’” section as a class
 - Languages are like their own code, and the translation process is like encoding into a new language
- Complete the introductory activity (5-10 minutes)
 - Have students decode the words by themselves or in small groups
 - Discuss the questions at the bottom of the activity as a class
 - The first encoded word is a cryptogram and each letter is translated individually whereas the second word had to be decoded using translation. The students should be able to identify the difference between decoding something letter by letter and by decoding entire words or phrases together as is done when translating from one language to another.

Lesson Plan: Encoding and Decoding Data Day 2

- Complete the “Methods of Coding” Activity (5 minutes)
 - This is a short activity and could be done by students individually, in groups, or as a whole class activity
 - Go over the activity as a class if students complete it on their own
 - Discuss the “Activity Debrief” questions as a class
- Complete the “Creating Codes” activity (30 minutes)
 - Have the students pair up. Each person should create their own encoded message and then give it to their partner to try to decode
 - The student writing the encoded message should NOT tell his/her partner what the rules for the encoding are. Instead, the partner should try to figure out how the message was encoded.
 - If you have time, have the entire class try and decode some of the students’ encoded messages
 - Have a class discussion about the reflection questions
- Watch the “Decoding in WWII” video (2 minutes)
 - Just a fun video talking about encoded messages in WWII
- Optional: Complete the “More Decoding” section
 - If you have extra time the more decoding section contains an external link that allows students to create and solve their own cryptograms

Resources:

- All the resources including the worksheet and the link to the extra cryptograms are available on the Encoding and Decoding Overview page of the muddX website (http://muddx.com/courses/HMC/MyCS/Middle-years_Computer_Science/courseware/a339ca7ac9004ffb86da90388d1a9c15/4feed2fc77ae4806a62b4162e37bf448/)