

Data Compression

Activity 1:

1. List examples of conveying information visually. (Road sign like a stop sign is an example).
2. List **abbreviations that can be used to refer to something without having to say the entire word or phrase. Give some technical or scientific examples as well as those you might hear your friends say?**

Activity 2:

1. Pair students into groups of two.
2. Have one student think of a word or phrase and write down one of the letters from that word, wait a second, then write another letter from that word, omitting some of the letters. All of the letters should be placed in the order of where they belong e.g. If I were thinking of "HELLO WORLD," I might write down "L," then later write down "LL," and eventually it might look like "H LLO W R D."
3. Have the second student try to guess the word or phrase as quickly as possible.
4. After the second student correctly guesses the word, students should switch roles.
5. After a couple of turns, ask students to try and do the same activity using a shape or a visual scene like "student walking to school," where each student draws the shape or visual one line or curve at a time.

Q1: On average how much information (turns/steps) from the first person was necessary to guess

Word	Phrase	Shape	Visual

Q2: Why do you think it required more information to guess a visual rather than a word?

Q3: What could have made each of these easier to guess, so that it would require fewer steps to solve?

Activity 3: Conveying visual information using binary numbers

1. Go to <http://www.csfieldguide.org.nz/en/chapters/coding-compression.html>
Learn how run length encoding can be used to represent an image.
Learn how the run length encoding representation can be converted back to the original representation. Write algorithms for the above.
2. Go to <http://www.csfieldguide.org.nz/en/chapters/data-representation.html>
Read 5.2. Learn how Braille is used for data representation.