

What's the Secret?

What Is *IT!*

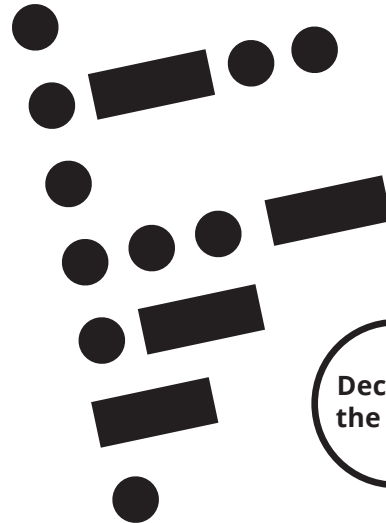
During World War II, a group of Navajos were recruited into the United States Marine Corps to be a secret weapon. The unique Navajo language was unbreakable and used as a cryptic code to quickly transfer messages back and forth. This strategy resulted in the winning of important battles such as the Battle of Iwo Jima.

There are many different ways to transmit codes such as through visual signs, light, sound, touch, or even using various types of wave energy. For example, the blind use a form of code called Braille to read. Braille is a pattern of raised dots that represent numbers and letters instead of print. Blind people 'read' the code with their fingers through the sense of touch. Codes can be sent through a telegraph machine in a series of electronic waves or pulses, too. By assigning a series of short and long pulses that are strategically assigned to the alphabet, individuals can send secret messages to one another.

Think About *IT!*

How many different ways can you communicate with another person?

The Navy, Coast Guard, some aviators, and radio operators used Morse Code to communicate important messages. Morse Code was developed by Samuel Morse after he missed an important message regarding the failing health of his wife. He found there was a great need to discover an innovative way to communicate over a considerable distance. In 1837, he achieved his goal. He analyzed the alphabet and developed a series of short and long pulses to represent each letter. By stringing these short and long pulses together, the operator could spell out and communicate the necessary information.



Decipher
the code!

Materials List:

- Drum
- Recorder
- Flute
- Sticks
- Flashlight
- Buzzer
- Paper
- Pencil

*Students can determine the best materials to use beyond this list to achieve the optimum results for their design.

Using the information about Morse Code, how many different ways could you communicate a message to a friend? What way was the most successful?

A	● —	N	— ●
B	— ● ● ●	O	— — —
C	— ● — ●	P	● — — ●
D	— ● ●	Q	— — ● —
E	●	R	● — ●
F	● ● — ●	S	● ● ●
G	— — ●	T	—
H	● ● ● ●	U	● ● —
I	● ●	V	● ● ● —
J	● — — — —	W	● — — —
K	— ● — —	X	— ● ● —
L	● — ● ●	Y	— ● — —
M	— —	Z	— — ● ●

Extend *IT!*

How can you design a more secure messaging system?

Imagine you work in a secure environment where you are not able to use the commonly known Morse Code alphabet. Try with a partner to come up with a new way to deliver messages using different representations for each letter. Are other friends outside your group able to decode your secret message?

Dare to Change *IT!*

How can you save a life using Morse Code?

Scenario: Have you or someone close to you lost the ability to use their cellphone? Imagine if that were to happen when you are lost on a hike! A division of the National Park Service decided to run a campaign to teach hikers and tourists, as the skill of communicating through Morse Code. Forest rangers at a variety of national parks expressed this need in order to increase the survival rate of lost hikers and tourists, as well as reduce the cost of manpower and resources it takes to conduct a thorough search. Many searchers shared that locating a lost individual is difficult because often they don't really know where to search. If there were some kind of signal or sound to provide direction it would help considerably. Therefore, the National Park Safety Education Division has asked for marketers, educators, engineers, and first responders to collaborate on ways to educate the public and promote the use of sending signals using any resources at hand, and the well-known Morse Code.

Challenge: Design, build, and present a variety of ways a lost individual could communicate their location to reduce the search time. Create a marketing plan that details how you would share this information with other hikers and tourists.

Suggested Resources and Articles:

Mother Nature Network: [Navajo Code Talkers Helped Win World War II](#)

YouTube: [Navajo Code Talker Explains Role in WWII](#)

[The Origins of Morse](#)

University of Southern California: [History of Communication Through Morse Code](#)

Science Direct: [The sixth wave of innovation: are we ready?](#)

YouTube: [How Does Morse Code Work?](#)

YouTube: [The History of Morse Code](#)

Maryland Science Center: [DIY Telegraph](#)

If You Love to Read: [Morse Code](#)

YouTube: [U.S. NAVY SIGNAL CORPS FLAG SEMAPHORE / BLINKER / MORSE CODE TRAINING FILM 85664](#)

Smithsonian Science Education Center: [How can we send a message using sound?](#)

Campmor: [Surviving with Morse Code](#)

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