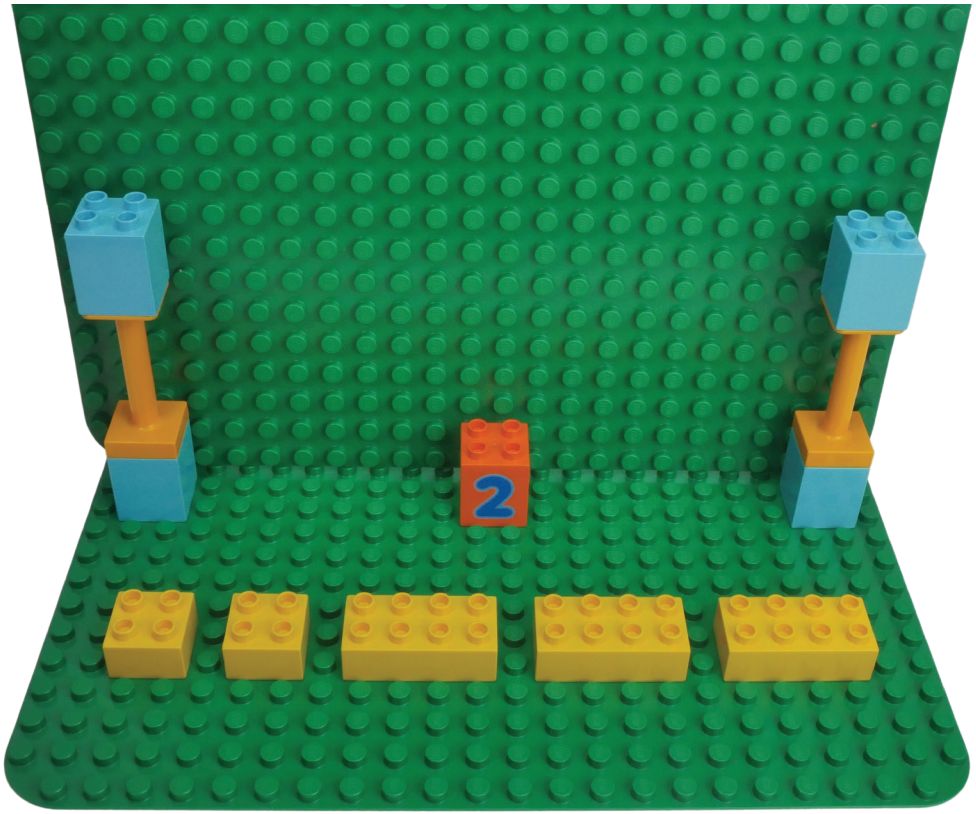
KIDS BUILD THEIR KNOWLEDGE AND SKILLS ABOUT THE WORLD THROUGH STEAM

J-5

Funded by the European Union

Topic: Encoding numerals

Resources: two large green baseplates, instruction cards 485 and 486 and the corresponding construction material, two sets of bricks with numerals 1 to 5, five 2x2 bricks and four 2x4 bricks in one color, five 2x2 and four 2x4 in another color, two J-5-1 activity cards, two pencils.



Sequence of activities:

1. The teacher explains that humans have created different systems for encoding information. One of the oldest is Morse code. With it, people use only two characters - a dot and a dash. They can encode any particular number by referring to a table. The teacher divides the children into teams of two and gives each child an activity card, explaining that on it they can see which number is coded with dots and dashes. The 2x2 brick will be used to encode a dot, and the 2x4 brick a dash.

2. The teacher gives each team the resources for the topic. Each child in the team is to choose the color of brick they will work with and take an additional a set of numeral bricks. The teacher then tells each child in the team to code the numeral 1 using bricks in their color. They will refer to activity card J-5-1.

3. When they are ready, the children show their coding and the teacher checks that it is correct.

4. The teacher tells the teams to build the partition structure. One child then chooses a brick with a numeral

that they will code without being seen by the other child in the team. They place it in the middle of the partition wall facing him. Then they code the number using the code on the activity card.

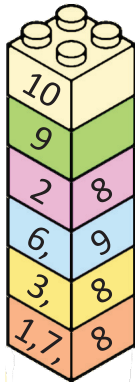
5. The teacher asks them to build the box on instruction card 486 and to hide the numeral brick in it.

6. The children how turn the model 180 degrees to face their partner. Each child must now deduce which numeral was coded by the other child in the team and circle it in the left column of the code matching table on the activity card.

7. When the children have done this, they check their decoding by opening the boxes with the numeral bricks hidden in them. The teacher, together with the children, counts how many successful decodes there were, and where the decodes were not successful, they find out why.

8. The teacher asks the teams to create a code of two digits, each digit is to be written on a separate line. He explains that this is how to encode a numeral when it has two digits. This happens quite often, for example in the months of the year, there are several that are written with a two-digit numeral. The teacher then asks: “Do you know which these months are? And what numerals do we use for them?". The teams carry out this exercise using the green plate that was used as a partition. The two numeral bricks are to be hidden in the two boxes.

9. When the team finishes, they pass the plate with their code to another team the to decode. The other team decodes the numeral and marks the corresponding numerals in the right hand column of one of the two activity cards. A child from the team passes the activity card to a child in the team from which they received the code, and together they check whether they have successfully coded and decoded. The teacher and the children calculate how successful their coding and decoding was. Where it went wrong, the teacher finds why.



10. The children, with their teacher, conclude that Morse code can be used to encode any numeral, provided the rules for encoding each digit are followed precisely.