

Percussion Building Instructions for the LEGO WeDo Set: A Comprehensive Guide

Are you ready to embark on a musical adventure with LEGO WeDo? Our comprehensive building instructions will guide you through the creation of four captivating percussion instruments: a drum, xylophone, claves, and a maraca. With these instruments, you'll unlock a world of rhythmic possibilities, fostering creativity and STEM learning.



Percussion: Bulding instruction for the Lego Wedo 2.0 set

★★★★☆ 4.4 out of 5

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The Art of Percussion

Percussion instruments occupy a captivating place in the world of music, their rhythmic beats pulsating through our hearts and souls. From the thunderous boom of a drum to the delicate shimmer of a maraca, percussion instruments add life and energy to any musical composition.

Building your own percussion instruments not only sparks your musical imagination but also engages your mind in the principles of STEM (science, technology, engineering, and math). These instruments serve as tangible

representations of sound production, inviting you to explore the fascinating relationship between acoustics and engineering.

Materials and Tools

- LEGO WeDo 2.0 Core Set (or equivalent)
- Pliers or wire cutters
- Scissors

Building the Instruments

Drum

Step 1: Create the Drum Frame

Assemble the baseplate and attach the four 1x8 beams vertically at each corner. Connect the top and bottom of the beams with 1x4 beams, forming a square frame.

Step 2: Build the Drum Membrane

Cut a piece of plastic wrap slightly larger than the square frame. Place the plastic wrap over the frame and secure it with rubber bands or string.

Step 3: Attach the Drum Mallet

Connect a 1x2 beam to a 1x4 beam using a Technic axle. Attach the other end of the 1x4 beam to the Smart Motor. The 1x2 beam will serve as the drum mallet.

Xylophone

Step 1: Create the Xylophone Base

Build a 10x5 baseplate using 1x2 beams. Attach 1x4 beams along the length of the baseplate to support the xylophone keys.

Step 2: Build the Xylophone Keys

Cut six pieces of wood to different lengths (e.g., 4 cm, 6 cm, 8 cm, 10 cm, 12 cm, 14 cm). Drill small holes in the center of each piece of wood.

Step 3: Attach the Xylophone Keys

Insert 1x2 beams through the holes in the wood pieces and attach them to the supporting 1x4 beams on the baseplate. Make sure the wood pieces are level and parallel to each other.

Step 4: Attach the Mallet

Build a small mallet using 1x2 beams and a rubber band. Attach the mallet to a Smart Motor.

Claves

Step 1: Build the Claves

Cut two pieces of dowel or wooden sticks to equal lengths (approximately 20 cm).

Step 2: Attach the Claves

Drill small holes near the ends of both claves. Thread a piece of string through the holes and tie it together to connect the claves.

Maraca

Step 1: Create the Maraca Shell

Cut a small piece of fabric or felt into a circular shape. Fill the fabric with dried beans or small pebbles.

Step 2: Create the Maraca Handle

Connect two 1x4 beams using a Technic axle. Attach one end of a 1x2

beam to the axle, forming the handle.

Step 3: Attach the Shell to the Handle

Poke a small hole in the center of the fabric shell. Insert the handle into the hole and secure it with glue or a zip tie.

Playing Your Instruments

With your percussion instruments complete, it's time to explore the captivating world of rhythm.

Drum: Use the drum mallet to strike the drum membrane, creating deep and resonant sounds. Experiment with different striking points and intensities to produce variations in tone.

Xylophone: Activate the Smart Motor to move the mallet back and forth over the xylophone keys, generating a series of clear and melodious notes.

Claves: Hold the claves in your hands and strike them together, producing a bright and rhythmic clicking sound. Experiment with different hand positions and striking angles for varied tonal effects.

Maraca: Shake the maraca vigorously to produce a rustling or jingling sound, adding a vibrant and percussive element to your music.

STEM Connections

Beyond their musical applications, these percussion instruments offer a tangible platform for STEM exploration:

- **Acoustics:** Explore the science of sound by experimenting with different materials for the drum membrane and xylophone keys. Observe how variations in materials affect the sound produced.
- **Engineering:** Analyze the structural design of the drum and xylophone. Identify the different forces at play and discuss how the instruments withstand impact and vibration.
- **Technology:** Integrate the use of the Smart Motor and sensor into your instruments. Learn about basic circuitry and programming as you connect and control the motor.

Congratulations on building your very own set of percussion instruments! We hope these instructions have inspired you to explore the world of rhythm and STEM learning.

Let your creativity soar as you combine these instruments to create unique musical compositions. Share your musical adventures with friends and family, and let the power of music bring joy and connection to your world.

Remember, the journey of learning never ends. Continue to experiment with different sounds, materials, and designs as you expand your musical horizons. With each new discovery, you'll unlock a deeper understanding of music, STEM, and the world around you.



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