

**PREMIOS EXTRAORDINARIOS DE BACHILLERATO 2020-2021**

**INGLÉS**

**How an 11-Foot-Tall 3-D Printer Is Helping to Create a Community**

Pedro García Hernández, 48, is a carpenter in the southeastern Mexican state of Tabasco, a rainforest-shrouded region of the country where about half of the residents live below the poverty line. He ekes out a living making about 2,500 pesos ($125.17) a month from a tiny workspace inside the home he shares with his wife, Patrona, and their daughter, Yareli. The home has dirt floors, and during Tabasco’s long rainy season, it’s prone to flooding.

But that will soon change. In a matter of months, Mr. Hernández and his family are moving to a new home on the outskirts of Nacajuca, Mexico: a sleek, 500-square-foot building with two bedrooms, a finished kitchen and bath, and indoor plumbing. What’s most unusual about the home is that it was made with an 11-foot-tall three-dimensional printer.

Nearly any object can be printed in 3-D; in construction, it uses concrete, foam and polymers to produce full-scale buildings. The real estate industry is warming to the trend: The construction firm [SQ4D](https://www.sq4d.com/) listed a 3-D printed house in Riverhead, N.Y., this year for $299,000. It was billed as the first 3-D printed home for sale in the United States, but it was predated by similar projects in France, Germany and the Netherlands.

And now, the era of the 3-D printed community has arrived. Mr. Hernández’s home is one of 500 being built by [New Story](https://newstorycharity.org/), a San Francisco nonprofit organization focused on providing housing solutions to communities in extreme poverty, in partnership with [Échale](https://echale.mx/en/), a social housing production company in Mexico, and [Icon](https://www.iconbuild.com/), a construction technology company in Austin, Texas.

When New Story broke ground on the village in 2019, it was called the world’s first community of 3-D printed homes. Two years and a pandemic later, 200 homes either are under construction or have been completed, 10 of which were printed on site by Icon’s Vulcan II printer. Plans for roads, a soccer field, a school, a market and a library are in the works.

The technology is promising, but some investors remain wary, and they’re watching the emergence of 3-D housing clusters closely. “It really is a very effective and efficient way to build a small segment of properties, but it’s not something that applies across the broader commercial real estate ecosystem,” said Henry D’Esposito, who leads construction research at JLL, a commercial real estate firm. “We don’t know exactly how these buildings will perform over decades.”

In Nacajuca, building a home with Icon’s Vulcan II printer looks much like a massive soft-serve ice cream cone: Layers of lavacrete, the company’s proprietary concrete mix, are poured one after another in long swirls. The printer is controlled by a tablet or smartphone, requires as few as three workers and can complete a home in less than 24 hours.

New Story was started in 2015, shortly after Brett Hagler, chief executive and one of four founders, took a trip to Haiti and saw families still living in tents years after the 2010 earthquake there. Across the globe, 1.6 billion people live with inadequate housing, according to Habitat for Humanity.

Échale, which has been operating in Mexico for 24 years, helped New Story select residents for the new homes based on need. It decided to sign the titles of each home not to a whole family but to the woman of the house. “It’s to protect the family,” said Francesco Piazzesi, Échale’s chief executive. “A man will sell a house if they need to. A woman will do whatever she needs to do to save the house for her children and her family.”

29 September 2021, The New York Times (Adapted)

**Question 1**: (2 points) Indicate whether the following statements are TRUE or FALSE and write down the sentence or the part of the text that justifies your answer. No points will be given if the evidence is not correct.

1. One of the main problems in the Hernández family’s current house is recurring wetness.
2. Mr. Hernández works in a workshop detached from his house.
3. The Nacajuca project was initially inspired by a personal experience.
4. Mr. Hernández will be listed as the owner of one of the 3-D printed houses in Nacajuca.

**Question 2**: (2 points) Answer the following questions in your own words according to the text.

1. What organizations are taking part in the Nacajuca project and what do they do?
2. According to the text, what are the pros and cons of 3-D printed housing?

**Question 3**: (1,5 points) Find words or phrases in the text that correspond to the words given.

1. Immaculate (paragraph 2)
2. To precede (something else) in time (paragraph 3)
3. To begin construction, esp. of a building or group of buildings (paragraph 5)
4. Cautious (paragraph 6)
5. A curving, twisting line (paragraph 7)

**Question 4**: (1,5 points) Choose the correct option – a, b, c or d – for each question and COPY both the letter and the sentence that follows onto your answer sheet.

1. Mr D’Esposito believes that 3-D printed houses may
   1. not be ecological.
   2. be a good solution for ecological problems.
   3. have a limited impact in the real estate sector.
   4. be the solution to the housing problems in big cities.
2. According to the text, SQ4D was the first firm
   1. in the world to put a 3-D printed house on the market.
   2. in the USA to put a 3-D printed house on the market.
   3. in the world to build a 3-D printed house.
   4. in the USA to build a 3-D printed house.
3. Lavacrete is
   1. a mixture of concrete, foam and polymers widely used in 3-D printing.
   2. a kind of volcanic material used to build 3-D printed houses.
   3. a chemical project which is currently developing in Mexico.
   4. a 3-D printing concrete formula owned by Icon.

**Question 5**: (3 points) Written production. Write an essay of at least 150 words discussing the topic below:

“Adequate and affordable housing is a fundamental human right.”