



## The Toddler Robot

**A** It is only one metre high. It looks and behaves like a human child of about three. It can crawl and sit up. It can even play the drums. It isn't made of flesh and blood, though; it's made of metal and circuits. What is it? It's the iCub robot - the latest in artificial intelligence and technology! The humanoid iCub robot was created by scientists at the Italian Institute of Technology in Genoa, Italy, in order to understand how human children learn about the world around them. This is important because scientists believe that once they understand how human beings learn, they will be able to apply these principles to robots.

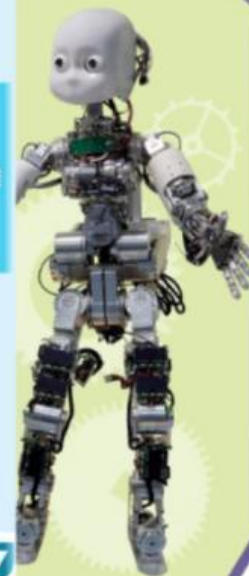
**B** How can a robot teach scientists about how humans learn? Well, many scientists believe that one way humans learn is by physically interacting with objects and other humans. A baby, for instance, learns many things simply by touching, smelling or seeing objects around it. So, by



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**B** How can a robot teach scientists about how humans learn? Well, many scientists believe that one way humans learn is by physically interacting with objects and other humans. A baby, for instance, learns many things simply by touching, smelling or seeing objects around it. So, by building a robot with a physique that is as human as possible, scientists can study how our physical form helps us develop our learning abilities.

**C** How has the iCub robot been equipped to help scientists research this idea? Well, it has a large number of motors in its body that generate movement in the head, arms, hands and legs. It has cameras for eyes and it listens with two tiny microphones on its head that record sounds. Also, it has been programmed with 53 different movements. This enables the iCub to crawl, walk and even pick up objects in its hand in a similar way to a toddler.







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**D** On the outside, the iCub looks like a small child. However, a child will interact with interest to what it sees. What's more, it will investigate it, then store what it has learnt. The iCub robot has only just managed to 'learn' how to control its eye movements based on external stimuli. That's a long way from being able to learn by interacting with its surroundings the way a child does.

**E** Do you dream of a future where robots can think and make their own decisions? If so, you could be in for a long wait! Nevertheless, the iCub - and robots like it - demonstrate that one day it should be possible to introduce 'thinking' robots into the workplace. Places such as hospitals and residential care homes could use these robots to assist with patient care. If the iCub experiment succeeds, many busy doctors and nurses will get a helping hand with their workload. Meanwhile, the iCub research team are patiently waiting and watching - much like normal parents - to see



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Fill in: **CHECK**

residential

artificial

human

helping

research

pick up

1  team2  objects3  care home4  being5  hand6  intelligenceComplete the text with the words below. **CHECK**

movements

high

humanoid

objects

record

assist

circuits

care

The iCub is a 1)  robot. It is 1 metre 2)  and made of metal and 3) . It has got cameras for eyes and microphones on its head that 4)  sound. It can do 53 5)  including crawling, walking and picking up small 6) . In the future it may be able to 7)  with patient care in hospitals and residential 8)  homes.

Complete the text with the words below. **CHECK**

overpower

intelligence

interactive

easier

comfortable

humans

because

instructions

intelligent

make

I think it would be great to have an 1)  robot. We could get it to follow 2)  and do all the things that we didn't want to do. It would 3)  our lives 4) .

I don't feel 5)  about interactive robots 6)  they may turn against 7) . They may become more 8)  than us and they may be able to use their 9)  and their physical strength to 10)  us.