

And then what happens?





Building a car? Child's play if you've visited the Junior Campus at BMW Welt in Munich.

Florian What do you need to make a fast car? Florian glues on the side, uses polystyrene and leather for the seats and cork for the headrests.
Lea and Fabian (facing page) The children are mesmerised by what is happening on the screen above them. An exciting quiz kicks things off.

Leon A sphere with table-tennis balls demonstrates the workings of an engine. When Leon places his hand on the membrane, he can feel the variation of pressure distribution in a cylinder. Optimal pressure increases the power of the engine.



Helene, Max and Daniel Time for the safety test. Max and Daniel are doing the testing. Disc brakes OK? Seatbelts intact? Interior lights working? All the items on the list are meticulously checked, and Helene takes careful notes.



Max and Daniel can't make up their minds. "D'you think we should put bigger ones on the back?" asks Max. Can cars have different-sized tyres? A shrug of the shoulders – and off they scoot to the materials warehouse. Why not give it a go?

Max and Daniel are engineers at BMW's headquarters in Munich. But there's no cause for concern – the results of their bold experimentation won't find their way into series production. It will be a few years yet before the two of them are even allowed behind the wheel of a car. Aged nine and ten, they are but fledgling engineers, guests of the Junior Campus at BMW Welt in Munich.

Around 100 children a day, aged between seven and 13, visit an experimental laboratory created specially for them to discover what mobility is and how it can be technically implemented. To begin with they reverentially wend their way between the rows of gleaming four-wheelers installed in the vast entrance hall of BMW Welt as if they were an integral part of the stunning architecture. But not far from the south entrance, behind a silver Z4 Roadster, another world opens up – one to which adults are not admitted. Here, two ladies await the arrival of a group from the Munich area: children whose local parish was keen to organise an exciting vacation programme for them and decided to send them off to BMW Welt. Their parents have signed on for a tour of the BMW plant, and hand over their offspring at the reception area of the Junior Campus. Anoraks off, rucksacks on the hook, and off they go!

Behind a soundproof door the young visitors are welcomed to a mysterious, circular, windowless room, illuminated by just a few spotlights. Slowly their eyes adjust to the semi-darkness. In the middle of the room are cube-shaped seats fixed to the floor. Each child – 20 boys and seven girls – was handed a chip card at the entrance. This they now insert into a slot under the seat in order to activate it as an electronic selection box. Already the group have turned into competitive teams who will be vying against each other. Everything they do from here on will automatically earn them points that are stored on their electronic cards. At the side of the seats are buttons with which they can vote – scoring one, two or three.

The two moderators pick up a brace of computer control units and stand among their charges. Suddenly the ground under the seats starts to move, gently swivelling to the right. A screen descends from above, and the journey begins.

"Now it's time for a quiz! Let's see how much you know!" On the screen Clara and Tim appear, two cartoon characters who will accompany the children that morning, jollying them along and giving them plenty of laughs. "What does the abbreviation ABS stand for?" "What is more slippery when it rains – the dirt on the road or the water?" "What accounts for most traffic – leisure activities, freight transport or commuters?" "What does car sharing mean?" Sometimes the topics are couched in trick questions, but the teams acquit themselves well. The Leopard team go into the lead, ahead of Turbo and Tornado.

New assignments now await the teams. Around them, boxes containing various objects are mounted on the walls. In front of them are screens along with other, more mysterious gadgets. The various groups spread out around the room. The youngsters use their chip cards to activate the screens: Clara and Tim pop up and hand out new tasks.



Practical test A slope allows the teams to find out how their vehicle handles with a heavy or a light load.

For example, the teams are challenged to find out what friction is. Next to the screen, a large, shiny silver disc is rotating. "Try out which material is best for braking – the very soft one or the really hard one." The wall shelf contains four different linings, mounted on a kind of mitten. The children put these on and try to stop the wheel with both hands. On the screen they can see how many seconds it takes to bring the car to a standstill. The soft felt – this they quickly work out – is of no use at all. The very hard rubber lining certainly makes the car brake, but so suddenly that the suitcase falls off the back seat. "Brake linings require a very specific material mix," explains Irene Prestele, one of their guides. "They have to be robust, but flexible as well." And so it's on to the next challenge.

The children comprehend and experience with all their senses what movement means and what goes on inside a car. They sit down on a stool placed on a bumpy disc that is turning horizontally. It's quite a rough ride with the shock absorber switched off. On the other side of

Trackside Formula One racer versus people carrier. Which is faster? The crucial factor for the first few metres is acceleration.



Helene The exterior of the car is also important, believes Helene. She is responsible for adding colour, and her bold design is rather fetching. For the roof she has chosen an exciting leopardskin pattern. But the smart feature is that you can actually open the boot.



the room, meanwhile, are two transparent plastic spheres full of table-tennis balls. At regular intervals these are hurled into the air with a loud bang. A girl places her hands on the two membranes near the top and suddenly recoils: the difference between a targeted and an untargeted explosion is dramatic, conveying an immediate and palpable impression of how the efficiency of an engine can vary.

What do you need a crankshaft for? How does a transmission work? How many different materials are integrated in a car and why? How does a tyre grip the road? "Look at the soles of your own shoes!" Clara

What do you need a crankshaft for?

and Tim urge the kids from up on the screen. Three of the children – Florian, Paul and Martin – are sitting in front of the wall where various engine types are being explained, along with their advantages and disadvantages: the combustion engine, powerful but with exhaust emissions that affect the climate; the electric motor, environmentally friendly but with a limited range; the hydrogen engine, future-proof but as yet there are hardly any fuelling stations.

Thus primed in theory and practice, the children now ascend to the first floor and into the Workshop. Here each team can design their own vehicle and, based on what they have learnt so far, also fit it out. Each group is given their own worktable in varying colours, along with a 'secret mission' they have to carry out. The other children must not find out what they are building until the very end. Will it be a convertible – fast, sleek and low on stowage space? Or a family car – big, safe, with plenty of room for passengers and luggage? A lightweight Formula One racer or an off-road vehicle with a powerful engine for steep inclines? The budding young designers can now implement much of what they have just learnt. Which engine for the Formula One model? Definitely not an electric motor. And what kind of body profile should it have? A few tips are to be gleaned from a safety test carried out on a model car suspended on the wall. How many mirrors do you actually need to ensure good visibility?

Their sheer youthful enthusiasm means that fantasy often prevails over reason. The guides help in selecting the appropriate floor pan for the 'secret mission', but most of the rest is left to ingenuity and a glue gun. There are no restrictions on the materials that can be used. And so you get car bodies made of corrugated cardboard with stripey straws for steering columns, featherlight polystyrene constructions with electric motors and a tangle of cables, or aluminium-reinforced, angular vehicles that might well be mistaken for tanks. The boys from the Blitz team have a problem: "We forgot the windows!" Quick, get a pair of scissors, and Bob's your uncle.

Daniel fetches some scraps of leather to provide his seats, which he has cut from cardboard, with "genuine leather upholstery". One of

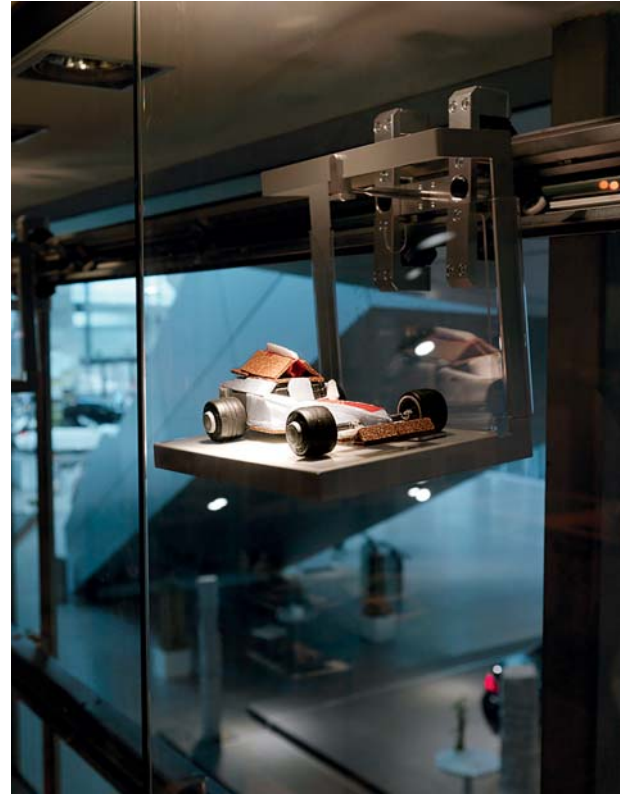


Exhibit Sleek, low-profile and lightweight: this new prototype of a race car is carried through the Junior Campus on a moving platform.

the girls is sticking pink fluffy pompoms onto the dashboard. "Those are the airbags," she proudly declares. Spoilers sprout from car roofs and sides have light-alloy rails serving as impact protectors.

Helene is utterly wrapped up in the task of decorating her family car's bodywork with brightly coloured spots and stripes. "It has to look nice," she says, while her team partners Max and Daniel are still thrashing out the question of the tyres. In the end, their jointly designed automobile sports four identical wheels and even a boot that opens and closes – the only one among the assorted creations that have been spawned this morning.

How far the car gets in the subsequent race doesn't really matter any more. Far more important than that is the engineer's patent which the young car designers can proudly take home with them after three and a half hours of happy automotive absorption. And, needless to say, they will be checking out their parents' car to see whether it lives up to their enhanced expectations. www.bmw-welt.com