MS. SCHLAU: Professor, I can guarantee you that spiders are very, very useful.

PROFESSOR EINSTEIN: That may be. But there are many students who are afraid of spiders. So we have to get rid of these cobwebs. Look! Up there, up there in the corner.

MS. SCHLAU: What? Where? What's there?

PROFESSOR EINSTEIN: Huge cobwebs.
I'm starting this vacuum cleaner and then – haha – attack!

MS. SCHLAU: What? Why don't we have JOWO do that? Maybe he could just fly up and blow away the cobwebs.

PROFESSOR EINSTEIN: JOWO? He's afraid of spiders. When I told him that we were going to hunt for spiders today, he took off and hid somewhere.

MS. SCHLAU: These cobwebs, they're actually spider webs, aren't they?

PROFESSOR EINSTEIN: Exactly.

MS. SCHLAU: Then why don't we give a lecture about the topic of spider webs. Then we and the students can decide what we will do with it. JOOWOOO? Little JOWO, where are you? Where's my favorite little drone? Can you show us the film about how spiders build their webs? Yes, you can close your eyes when the spider appears. But now start the film! This is a spider web with a **spider *(SPINNE)***. The spider builds the web because it wants to catch insects.

PROFESSOR EINSTEIN: But just how does the spider actually build the web?

MS. SCHLAU: In order to find out, we brought a tropical silk spider into the studio. They **build *(BAUEN)*** particularly large webs. The most important thing on the spider for building the web – you can see it here – is the spinneret on the back of its abdomen.

PROFESSOR EINSTEIN: With this it makes the thread. Without the thread there would be no web. But let's start from the beginning. The spider is going to build its web between these two branches. First it slowly climbs up to the top. Starting at the highest point, it sticks the thread from the spinneret on to the **branch *(AST)***.

MS. SCHLAU: The thread is so fine and thin that you can't even see it. And then the spider climbs back down. Stretching out a back leg, it guides the thread so it doesn't tangle itself in it.

PROFESSOR EINSTEIN: Here you can clearly see the thread.

MS. SCHLAU: Back at the top, it reattaches the thread which now stretches from the tip of one branch to the other. And regardless of where the spider goes, the thread continues to come out of the spinneret.

MS. SCHLAU: And this thread she attaches the to the **middle *(MITTE)*** of the existing one.

PROFESSOR EINSTEIN: Pulling the thread behind itself, it climbs down once more. Once again, it attaches the thread in the middle of the other branch and then climbs back up to the point where the other threads meet.

MS. SCHLAU: Now a short **break *(PAUSE)*** and let's look at where the first threads are.

PROFESSOR EINSTEIN: These threads and branches create the basic framework for the web. And now we'll speed up the film a bit.

MS. SCHLAU: The spider pulls even more threads. It stretches the threads between the middle, where all of the threads meet, and the branches on the sides. Because the threads run like spokes on a bicycle, they're called spoke threads.

PROFESSOR EINSTEIN: Now, in the middle, the spider does something very different. Look: She's moving the spinneret on her abdomen from one spoke thread to the next. And now the basic net has been completed.

MS. SCHLAU: The thread now runs like a **spiral *(SPIRALE)*** from the inside to the outside. With big gaps. And when the spider gets to the outer edge, it does something else. Now the gaps in the web become narrower, and uniform.

PROFESSOR EINSTEIN: Here you can see it checking the threads with its back **legs *(BEIN)***. All eight of the spider's legs are in action. With its front legs it holds on to the web. They're a climbing aid for the spider.

MS. SCHLAU: To stick the new thread on, the spider's spinneret briefly touches one of the spoke threads. The spinneret is the dark bump out of which the little thread is coming. This spinneret is made up of many silk glands. Here's how it looks in slow motion. And again. There.

PROFESSOR EINSTEIN: The silk spider has now been working more than an **hour *(STUNDE)*** on her web without a break. And what you can now see in time lapse actually took more than half an hour. To complete this web, the spider spun more than 20 yards of thread. Eventually it's finished. Brilliant!

MS. SCHLAU: And now there's another special trick. For this, we mist the web to get it **wet *(NASS)***. That's like a bit of dew in nature. Little drops form on the threads of the little web. But not on the spoke threads.

PROFESSOR EINSTEIN: This requires investigation. The field researchers decide to use a **brush *(PINSEL)***. Touch the spoke threads and nothing happens.But the brush sticks on the threads with the drops. Why doesn't the spider stick too?

MS. SCHLAU: The spider is quite skilled. When it goes across the web or sits on it, it tries to only disturb the threads that don't stick. Those are the spoke threads. On these spoke threads, the spider can also use its legs to feel when something edible has flown into the web

PROFESSOR EINSTEIN: And there is something already. This is why the spider built its web. Alright then. Bon appetit. Ms. Schlau, that is spectacular. These spider webs are real works of art.

MS. SCHLAU: I'm very happy that you think so as well.

PROFESSOR EINSTEIN: I simply have to investigate them further. Back there on the left is a particularly big spider web.

MS. SCHLAU: For goodness sake, Professor… sitting on your back is…

PROFESSOR EINSTEIN: So, dear students, don't forget how useful spiders and their webs can be. And don't be afraid – these animals are mostly harmless. Well, at least the little spiders. Hahaha.

MS. SCHLAU: It's a…it's a…spider. And it's a big one!

PROFESSOR EINSTEIN: What? What did you call me? Ha, Ms. Schlau, I'm not a spider I'm a Nobel Prize winner. JOWO tends to be so jumpy lately. His emotional programming is definitely in need of an urgent check-up. Hm, hm.