PROFESSOR EINSTEIN: Haha, Ms. Schlau, what happened to you? Was your hair stylist in a bad mood?

MS. SCHLAU: No, but this crazy storm totally ruined my hair. It's going to take days before I look decent again. I'm sorry, students, but of course, it's what a person looks like on the inside that really counts.

PROFESSOR EINSTEIN: Don't get upset, Ms. Schlau. A strong wind can be helpful. It can power the blow dryer that will bring your hair back into shape. Oh, yes.

MS. SCHLAU: What? What do you mean? I think wind and storms are an annoyance.

PROFESSOR EINSTEIN: No.

MS. SCHLAU: Yes!

PROFESSOR EINSTEIN: If you don't believe me, I'm calling field researcher Christoph. He showed real bravery while investigating how wind can be used.

MS. SCHLAU: Oh really? Well then, JOWO, call field researcher Christoph.

PROFESSOR EINSTEIN: Hello, Christoph…

CHRISTOPH: Oh hello, Professor Einstein, hello Ms…. Is that you, Ms. Schlau?

MS. SCHLAU: Help! I can't even be recognized.

PROFESSOR EINSTEIN: Ha, Ms. Schlau's hair was… somewhat battered by the wind. I wanted to alleviate her anger by showing her that wind also has a good side. I thought of your research project…

CHRISTOPH: Oh, you mean the film about the wind turbine? Indeed, Ms. Schlau, I can assure you that wind definitely –

MS. SCHLAU: Alright, OK. Go ahead.

CHRISTOPH: Start the film, please!

MS. SCHLAU: Sometimes field researcher Christoph gets mail from kids who have the same question. One…two…three **blades (*FLÜGEL*)**. Why always three, they ask. And the next letter asks the same question. Why do most **wind turbines (*WINDRAD*)** always have three blades? Roman also wants to know.

PROFESSOR EINSTEIN: That's true. The majority of wind turbines have three blades. Why is that? Who could know? Let's find out.

MS. SCHLAU: Christoph met Lutz in a wind turbine factory. There you can see the huge pieces that are mounted inside the head of the wind turbine to produce electricity from **wind (*WIND*)**. And there lie the blades. Mr. Lutz calls them rotor blades. Here Christoph is measuring how long they are. They're shaped similar to an **airplane (*FLUGZEUG*)** wing.

PROFESSOR EINSTEIN: 158 feet long. That is big. This is why the wind turbines have to be quite **tall (*HOCH*).** 328 feet tall, to be precise. Which is also very practical because the higher up you go, the stronger the wind is. Mr. Lutz invites Christoph to go up with him.

MS. SCHLAU: Since it is very high, Christoph has to put on a safety harness. Tighten it… and then a thick rope with a hook. And don't forget a helmet.

PROFESSOR EINSTEIN: Now they're going into the tower. Thankfully there is an **elevator (*FAHRSTUHL*)**. Otherwise it would have been quite exhausting.

MS. SCHLAU: But even with the elevator, it takes six minutes to get to the very top…into the turbine's head.

PROFESSOR EINSTEIN: Behind Christoph is the gear box. It transforms the wind turbine's few turns into many. The part in front of him is a **generator (*GENERATOR*)**. That's where the electricity is produced. Similar to a light generator on a bicycle.

MS. SCHLAU: Outside it's quite breezy. And there isn't a railing. Christoph quickly hooks himself in. He's a little queasy up so high after all.

PROFESSOR EINSTEIN: But what a superb view. You have to admit that.

MS. SCHLAU: You also see the neighboring wind turbines. And in the middle is a rail that you can hook yourself onto to walk a bit.

PROFESSOR EINSTEIN: There you can see our wind turbine's shadow.

MS. SCHLAU: And this measures the strength and direction of the wind. It makes sure the rotor blades can always be turned correctly towards the wind. The shape of the blades, similar to airplane wings, can make use of all of the **energy (*KRAFT*)** that's in the wind.

PROFESSOR EINSTEIN: Mr. Lutz says that five blades would also be possible. But that would only generate a little more energy. Three blades are the best solution, he says.

MS. SCHLAU: When you stand this close, you really begin to see how huge the blades really are. And up here, you can also see the special shape.

PROFESSOR EINSTEIN: But there's another reason for the three blades. This is Marvin, he is apprenticing in the wind turbine factory. He built a model wind turbine that is blown on by a **fan (*VENTILATOR*)**. Here you can see it turning in the wind just like the big wind turbines do.

MS. SCHLAU: To make the wind turbine stop, the rotor blades are turned away from the wind. For example, when something needs to be repaired.

PROFESSOR EINSTEIN: Now Mr. Lutz can explain the trick with the three blades. The higher up, the stronger the wind. And below, especially in front of the pole, the wind is weakest. When a blade is at the bottom, the other two blades aren't where the wind is strongest, because they're far apart from one another.

MS. SCHLAU: And when a rotor blade is at the highest point, the two below are placed far apart. This means that the wind doesn't simultaneously push against the wind turbine both very **strongly (*STARK*)** and very weakly and strain it unnecessarily.

PROFESSOR EINSTEIN: The wind's energy is divided as evenly as possible and the wind turbine is able to run smoothly. Yes, Mr. Lutz, thank you. And thank you, Marvin. Brilliant.

MS. SCHLAU: Wow, Christoph. How brave, climbing up a wind turbine. Don't you have a fear of heights?

CHRISTOPH: Well, I was a little uneasy, but my curiosity won out.

PROFESSOR EINSTEIN: That is what I call true research spirit. See, Ms. Schlau, how helpful the wind can be. And, dear students, perhaps if we open a window during the lecture we could produce a little electricity in the future. What do you say? Ms. Schlau, please open the window. We will be measuring the potential wind strength in the lecture hall.

MS. SCHLAU: But there's a storm outside. I don't know…

PROFESSOR EINSTEIN: Look to Christoph's example: Curiosity overcomes fear. Now. Open the window! Aaah! Close the window, Ms. Schlau. Close the window!

MS. SCHLAU: Professor Einstein? Is that you?

PROFESSOR EINSTEIN: Yes. And please get a hairdresser! Right now!