

KuBus 56 - The Young Scientists Contest

00'00" BA

00'02"

Walter Stein, the physics teacher, passes on a few final tips.

00'05"

For the umpteenth time his students will be going through their Plasma Crystals presentation for the Young Scientists Contest.

00'13"

Walter Stein gingers up his proteges' self confidence.

00'19" Original sound, Walter Stein, Teacher

"Caesar's foes were strong, brave and courageous but he beat them. How great, brave and courageous did Caesar have to be to beat such bravery and courage? That's why you have to spell out the problem big and clear. And then you'll find a solution."

00'39"

Binia Neuer, Moritz Plötzing and Benedikt Lorbach, all grammar school students in Bad Münstereifel, are just three of the 8,000 participants in this year's Young Scientists Contest.

00'53"

Young Germans have now been busy scientists for the last 38 years.

What began in 1965 as a call from a well-known news magazine has now become a firmly entrenched institution in the German education scene. In the meantime the German government as well as a sizable portion of industry are nowadays much involved in the Young Scientists Contest. The interest has remained unbroken and this year will see once again a record number of participants in keen competition.

01'28"

This interest in the Young Scientists Contest is somewhat surprising considering recent German headlines about the dreadful state of education and the indifference towards learning allegedly shown by students.

01'42"

But Walter Stein knows just what makes the Young Scientists Contest so interesting.

01'49" Original sound, Walter Stein, Teacher

"We are producing something here, we are creating something. And for many that is a bit more exciting than straightforward consumerism. Sometimes you're disappointed sometimes you're excited. There's this change between the positive and negative experience and that, naturally, can be stimulating. The Young Scientists Contest gives these young people a stage on which they have to perform and prove themselves.

02'15"

These young scientists have spent 6 months on preparatory work.

02'19"

First of all they looked for a topic that fitted into one of the eight categories of Science, Mathematics and Technology that they could send in as an entry.

02'29"

"Plasma Crystals" A research area of Physics. Summed up in simple terms it deals with the behaviour of microparticles under extreme conditions.

02'40"

It is highly topical and also an area of major research. The students' ambition is to take on the sort of research that is normally carried out by just a few institutes at enormous expense but they want to see it through by using their own modest school resources

02'57"

School then became a second home – often deep into the night.

03'03" Original sound, Binia Neuer (Off)

"If you could take up the Young Scientists Contest professionally, I think I would really like that but that would be very hard to do."

03'09" Original sound, Binia Neuer (On)

"You teach yourself. It is not like having a teacher who shows you how it is done. Rather you learn something, for example, from someone in the 5th class, who has done some sort of a physics experiment with a Microwave or something like that.

And you want to do something yourself, something a bit further on than the horizons of normal schooling.

You come into contact with people, with various university professors and that is a great experience. And I think the fun that you have doing it is the most important thing."

03'34" Original sound, Benedikt Lorbach

"Plasma Crystals are a very topical area of research. Only a few institutes around the world are doing it. And that increases the fun because when we discover something new we never know whether the others have found it out yet or not."

03'47"

Walter Stein has a second iron in the fire.

03'50" Original sound, Walter Stein, Teacher

"Hallo Jens and Florian. Isn't it a bit too wet for you out there ?"

03'53"

Two students have fitted up a truck with sensors which, when overtaking, measures the safety distance between itself and other vehicles and gives the driver a signal when he can safely cut back in again.

04'08"

A programme has to be written up, technology available in the electronics market has to be modified and a model has to be constructed. This is a working project with a distribution of tasks that is hard to bring about in normal teaching. And that is a stimulation for the students.

04'22" Original sound, Jens Ruland

"We can work separately and independently of each other and still be sure that the other is doing a reasonable job and both results show, without having to check on each other all of the time, that he has done just that."

04'34"

The Young Scientists Contest is more than a competition among the highly talented.

04'40" Original sound, Walter Stein, Teacher

"These students bring into the school, into their courses and into their classes a different feeling about work and performance. They introduce work or performance that really is fun. That is contagious for other students, not necessarily those in the Young Scientists Contest, they suddenly see the fun in doing something more. I don't mean those who just do the minimum job and nothing more, that's too little, rather those who say, OK, I'd like to do something, do something extra. We offer those something as well in the school."

05'18"

Four weeks ago in a regional competition the students qualified for the next round. In three days the state competition takes place. That will be the final hurdle before the grand finale.

05'37"

Monday morning. The arrival in Leverkusen on the premises of one of Germany's leading chemical companies.

The Young Scientists Contest would get nowhere without the support of industry. And they are eager to help. There is hardly a well-known German company that is not involved as a partner in the contest.

05'57"

70 young scientists will be taking part in the state competition. 70 from the thousands who have qualified in regional competitions

06'06"

And it could be that among them there is an idea that the big companies haven't yet thought of.

06'13" Original sound, Norbert Drekopf, Bayer Industry Services

"Their work doesn't yet have the quality of research findings that can be directly applied. But there are always exceptions. We offer the young scientists advice on getting a patent, help on protecting prototypes. And it can easily be that one or the other idea is so innovative that it is of interest to one of the firms."

06'30"

But what is more important for industry is long term recruitment in the scientific area as a result of the Young Scientist Contest.

06'38" Original sound, Norbert Drekopf, Bayer Industry Services

"Well if anyone applies to us when they have finished their studies and if they have the Young Scientist Contest on their cv, that is a big point in their favour."

06'47"

The Young Scientists Contest should also help in deciding on a career. Once a researcher, always a researcher. Perhaps that is setting hopes too high but in many cases that's the way it has worked out.

07'01"

Martin Bleilebens took part in the Young Scientists Contest years ago in a study on thunder storms. Today he is researching professionally hypersonic effects on wing models for space travel.

07'12" Original sound, Martin Bleilebens, former participant

"If I was to read what I wrote then, against all that I have learned since, then, naturally, there would be one or two things I would want to take out or be a bit more cautious about."

07'23"

"Sticking to it, that is something that I had learned even then. That you just don't drop things and go no further with them."

07'36"

Monday afternoon in Leverkusen. Let's see what the competition has to offer.

07'43" Original sound, Librarian

"Right, you take a book reference card and scan the number, take any book, this one here for example, "The Dead Poets Society", and the first thing you get is a synopsis which tells you what the book is about. Then you can select 'Order'. Accordingly this information is passed on to the robot which sets off and pulls the book off the shelf. The book is then dropped down, there at the back, where it runs over a ramp before it is delivered to the library on this conveyor belt."

08'15"

Workaday questions are a moving force in research. But first of all you become aware of them.

08'22" Original sound, squeaking sand

"What we've done here is to examine squeaking sand. There are only a few beaches where sand squeaks. For example it doesn't squeak at all here. Then we made photos of microscopic studies, here are the sand samples that squeaked and here are those that didn't. These, you see, have more edges than the others over there. Obviously you can only show this with the right technology."

When you simply walk, just by walking, you don't notice anything but, if you run it squeaks every time, with every stride."

08'49"

The next group are measuring capacity levels in beer barrels.

08'57" Original sound, beer barrels (Off)

"We're both second year apprentices at Thyssen-Krupp-Stahl working in Mechatronics. We more or less came across our project in our leisure time because we're both fairly active in the sports club. There, from time to time, one or the other has to take a turn behind the bar and serve the beer."

09'16"

Dr Zuther of the Young Scientists Foundation is visibly pleased with what he has seen.

09'25" Original sound, Dr. Frank Zuther, Young Scientists Foundation

"The quality of the work has risen so much that there is an increase in the search for co-operation with Research Institutes. And also in the support that is actively being offered. Work is now being carried out that is more or less worthy of Diploma or Doctorate status."

09'46"

But despite robots and computers it is astonishingly not the technology that the young scientists mostly enthuse about.

09'55" Original sound, Dr. Frank Zuther,

Young Scientists Foundation

"In the first three years it was the Physics category that held the lead but since 1969 it has regularly been Biology followed sometimes by Chemistry, sometimes by Technology. But the favourite category by a long chalk is Biology."

10'14"

Tuesday morning. Waiting for the jury.

While the 'overtaking' researchers are slowly succumbing to nervousness the Plasma researchers are in the middle of their presentation.

10'25"

Because they are so close to the actual research the students fear that the experts on the jury – all established physicists – may not be aware of everything about Plasma Crystals. But it turns out to be quite different. The jury is very well informed.

10'42" Original sound, Juror

"Where does one find hexagonal structures in nature?"

10'44" Original sound, Binia Neuer

"In general in crystals."

10'46" Original sound, Juror

"Is that always so ? Or is that a special hexagonal structure? Do you know of an example of a hexagonal structure?"

10'54" Original sound, Binia Neuer

"The problem is that most of them are now three dimensional -"

10'56" Original sound, Juror

"What about graphite.....?"

10'58"

But what exactly is now going to be assessed?

11'03" Original sound, Dieter Römer, Contest Director

"Mainly it's to do with having a great idea. At best the sort of idea that ,potentially, anyone could have had. And then to put the idea to work. To build up on a question. And then, when possible, to produce a reasonable answer."

11'18"

Done it! Exhaustion. Relief. Hopes and fears. Just like every examination.

11'28" Original sound, Binia Neuer

"I think that the presentation went pretty well. Ok, so there were some critical questions. But I think, despite that, we did fairly well. I was a bit concerned that the jury wouldn't have too much awareness but in fact they really did have a great deal of awareness."

11'45"

And now! A whole day to wait until the results are made known.

11'56"

Wednesday afternoon. The ceremony. Culture, politics and business all have their say.

12'03"

For the participants this the hardest time of the contest.

Special prizes, and those for particular areas, are to be awarded. Bursaries, practical training and financial rewards are on offer.

12'14"

Only eight of these projects will make it to the national final in a few weeks time. The first place, as ever, is always the last to be announced.

12'26"

A partial success for the Bad Münstereifel researchers. The lads with the ‚Overtaking‘ project get a special prize.

12'36"

And then, relief at last for the Plasma researchers.

12'42" Original sound, Dieter Römer, Contest Director

"Moritz Plötzing, Binia Neuer and Benedikt Lorbach are awarded for their project "Plasma Crystals" a first prize in the Physics category.

13'07" BE

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