

The Magazine

3.18



At its own pace

A school in Greifswald tackles inclusion

Is digital better?

A debate on the future of learning

A discriminating machine

On dealing with artificial intelligence

Learning



Robert Bosch
Stiftung

Dear Readers,

The processes that are activated in the brain when we're learning are fairly well researched in neurological terms. People connect sensory inputs to other sensory inputs and to their remembered experiences. In the process, new neuronal links are created, and existing ones grow stronger. When you learn, you expand the data pathways in your mind; they grow from little trails to paved roads or even highways. This biological discovery confirms what educators have seen in practice: just googling information doesn't help you learn. In order to actually build new pathways, you have to work to acquire knowledge and apply it over and over again.

As a foundation, we want to provide these effective learning experiences with many of our programs. We'll introduce you to some of these programs in this issue, and we'll take you on a journey – to the Thomas Mann House in California, which is becoming a new place of exchange and discussion on the major societal issues of our time. We'll also take you to Asia, where university graduates from German-speaking countries are teaching – and learning just as much as their students, perhaps even more.

One particular focus area of our work is improving the quality of schools; a good school makes a crucial contribution to helping children realize their potential and fully explore their own personalities. The *German School Award* created by our foundation demonstrates that there are many schools doing an excellent job in this regard. Today, there are also options for applying these schools' good concepts to other schools. In this way, we hope to help facilitate the learning process in the school system – and, in doing so, to leave a lasting impact.

We hope you enjoy the read!



Joachim Rogall, Uta-Micaela Dürig, Sandra Breka, Hans-Werner Cieslik
Board of Management of the Robert Bosch Stiftung



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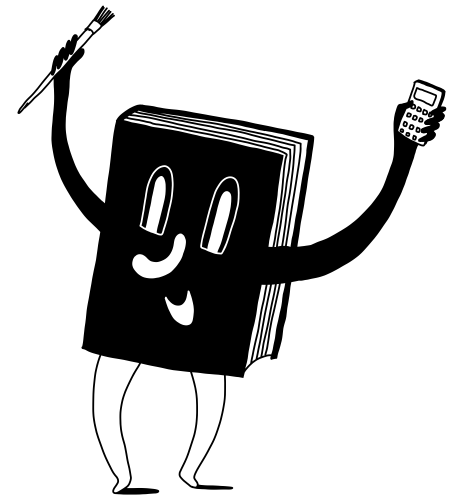
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The German School Award recognizes good schools and helps raise awareness about their concepts and ideas. You can read about the groups involved on the following pages:

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How We Learn

Eight facets of learning – in Germany and worldwide



People learn from mistakes – even from ones they only hear about in stories or movies.

Artificial neural networks can already carry out 70% of the tasks that the human brain does, and perform just as well as the brain – or better.

(For example: recognizing objects, images and actions, identifying language, and reinforced learning)

53%

of first-year college students in Germany have at least one parent with a college degree.

753 million

adults worldwide are unable to read, write or do maths.

In 2018, the “mBook History” became the first non-printed textbook to win the German “School Book of the Year” award.

Dialog is the most important factor in a child's brain development.



82%

of national constitutions guarantee the right to education. In 55% of countries, people can enforce that right through legal action.

70%

**of human learning occurs outside
of educational institutions.**



**Jonas Budkiewitz**

was born on the German island of Usedom. He later moved to Münster to study education. He has been in Busan, South Korea with the *Lectureship Program* since September 2017 – and the 28-year-old has extended his stay in the country for another year.

Please Ask Questions

Jonas Budkiewitz works as a German teacher in the South Korean city of Busan. When he started out, the job seriously put his German educational ideals to the test.



I am the first Bosch German lecturer at the University of Busan, and at the beginning, I felt like I'd been thrown in at the deep end. And it wasn't just me; my students felt the same way. Here's a good example of what I mean: I was teaching a class, and we were doing group work. Initially, the students were working in pairs, and it was going well. But when I wanted to discuss results with the whole group, no one moved. In my typically direct German way, I asked them flat-out, 'What's the problem? Do you need help?' I asked and asked, but the silence stretched on for minutes; all the students kept their eyes firmly fixed on the floor. It was obvious that there were major cultural differences at play here. The students would never tell me if they didn't understand something, and they would definitely never dream of contradicting me. Having someone stand at the front of the classroom and tell them to ask questions was a huge change for them. I showed up with my give-and-take German approach to education, and I hit a brick wall right away.

The first projects I attempted outside of the German classes I was teaching also came to nothing. At one point I wanted to start a student newspaper, and another time I thought a workshop for cultural exchange would be a good idea. Korea is a highly homogeneous society; the people don't have much experience with cultural differences. Different groups – Korean students, Chinese students – don't mix on campus, and I wanted to address that. But hardly anyone signed up. Obviously, that was a bit of a disappointment. Since then, I've been asking myself how I can get the students interested in projects where the focus is on personal experiences rather than professional qualifications. I still don't feel like I've wrapped my head around everything here – and that's what makes it so exciting. At the moment, I've teamed up with a few other professors to set up a center for German-Korean cultural exchange, and recently, there was an artists' exchange between Hamburg and Busan.

I just love other cultures – maybe I get that from my father. He was a sailor during the period of the former

German Democratic Republic. When I was younger, I went on high school exchange programs to Paris, Romania, and Israel, and later on, I spent semesters abroad in Iceland and Krakow. But starting a life in South Korea was harder than in any of those places. I wasn't automatically part of a network of exchange students; I had to build my own network. I started going to climbing gyms, which are usually built into the upper floors of office buildings here. I found restaurants where I can eat vegetarian meals without me having to explain why I don't eat meat. I also play soccer with my students.

I hope I can inspire curiosity in my students. If I can, then my time here won't have been in vain. The university offers projects that involve the students traveling to Germany. I helped the students prepare and make contacts. They then went to Hamburg, where they stayed with my parents and their neighbors. I think these sorts of cross-cultural interactions are wonderful – including the fact that my parents got to know my friends and acquaintances from Korea.

25 Years of the Lectureship Program

With the *Lectureship Program*, the Robert Bosch Stiftung supports university graduates from Germany, Austria, and Switzerland and college employees in China, Indonesia, South Korea, Thailand, and Vietnam who teach German as a foreign language and implement educational projects. The *Lectureship Program* is organized in partnership with MitOst e.V. MitOst was founded in 1996 by former lecturers as a platform for more extensive networking. Today, it supports numerous projects as well as the involvement of members and alumni from more than 40 countries. The *Lectureship Program* is celebrating its 25th anniversary in 2018/2019.



Side by Side

During his medical training, Sebastian Friedrich studied alongside trainee nurses.

It was one of my first days as a medical intern on the “Treasure Island” pediatric ward at St. Josef Hospital in Freiburg. The urine collection bag just wouldn’t stay put. The adhesive strips kept coming loose as soon as the two-year-old girl started moving around her hospital room. I experienced first-hand just how complex and time-consuming it can be to collect a urine sample. Carmen, a nursing student, stepped in to lend a hand. Carmen and I were part of IPAPÄD, the “Interprofessional Training Ward in Pediatrics.” Medical and nursing students can participate in this project at the Center for Children’s and Youth Medicine at Freiburg University Hospital for two weeks. Carmen and I shared responsibility for four young patients.

Every morning, we grabbed the patients’ charts and studied their lab results together. Then we did our rounds together, not as a nursing student and a medical student, but as a team. Together, we asked the

children and their parents about their problems and needs. We also carried out examinations and treatments together. I learned a great deal in the process, especially about the practi-

“Why does a doctor give certain instructions? Why do nurses carry out tasks a certain way?”

cal, everyday processes involved on a hospital ward. Nurses know a lot more about that than we medical students do – despite our years of education. IPAPÄD gave me the opportunity to see and try out many aspects of the nurses’ work for myself, and now I’m fully aware of the consequences of my instructions to the nurses. Doctors delegate a lot of the work to

nurses, such as nebulizer treatments or checking bandages, so it’s important to know more about the background of that work. Why does a doctor give certain instructions? Why do nurses carry out tasks a certain way? The program included half an hour for reflection every day. It was a very important experience for me. All the participants and supervisors came together during that time to look at what had gone well during the last 24 hours – and what hadn’t. IPAPÄD was like getting a jump start to my career – but with a safety net! I was able to take on responsibility, but I was working in a secure space where I could try things out – and I could make mistakes without harming patients, because our supervising nurses and doctors obviously always kept a close eye on us, and we could always ask them for advice and assistance. I’ve now been a resident on another children’s ward at St. Josef Hospital since August. Thanks to IPAPÄD, I saw myself as a member of a team – and not a lone fighter – right from the very beginning. I still try to give feedback to the nurses and get feedback from them. I’ll ask them, “What are you doing right now? What can I do to give you the time and support you need? Can one of you maybe explain this or that to me?” And I feel like my colleagues aren’t the only ones responding positively to this approach. When doctors and nurses work well together, it’s good for our young patients and their parents as well.

Operation Team

The “Interprofessional Training Ward in Pediatrics” (IPAPÄD) at Freiburg University Hospital is one of 24 ongoing projects that are part of the support program *Operation Team – Interprofessional Learning in Healthcare Professions*. With this program, the Robert Bosch Stiftung is supporting the development and implementation of interprofessional learning units for the healthcare professions. The program trains future healthcare professionals to work together as part of a team, across professional boundaries. They learn with, from, and about each other – to improve collaboration and the quality of care.

Everyone at Their Own Pace

TEXT
Eva Wolfangel

PHOTOS
Ériver Hijano

At the “Martinschule” school in Greifswald, everyone learns together: highly gifted children and children with mental disabilities and the many levels in between. How does this “learning for everyone” system work?





P

Piet would love to keep his ring on his finger. He's slid it onto his pinky and gazes at it dreamily. But he knows that the group discussed it and decided he should keep it in his pocket. He found the ring two weeks ago during a school field trip and so badly wanted to keep it. The other sixth graders explained to him that he first needed to find out if someone was looking for it. They worked together to make posters and hung them up at the school and in the area where he had found the ring, and Piet had to wait two weeks before he could finally claim the ring back from the school office. "Piet, what did we discuss?" asks his teacher, Ines Morszeck, during circle time at the beginning of the school day - ten sixth graders learning together. "Do you need help?" She knows how difficult it is for the boy with learning disabilities to let go of the shiny ring. But finally, Piet puts it away.

The children of the Martin-schule in Greifswald then start planning their day. "What are you doing today?" they ask each other. There are three study periods for this day - three periods when each student works on his or her own goals, supported by teachers and trained members of the educational support staff: child care workers, special needs caregivers, integration aides. "I'm doing German," Piet says. "I'm doing geometry and division," Lilly says. "I'm doing German, reading, and geometry," says Paul. One of the children



Creative

The students learn maths in small groups; strings of beads and dice help them in the process.

Attentive

(Image, right) Moments of retreat as shown here are an integral component of the Martin-schule's concept.

notes all this down. At the table next to them, a girl is preparing a report on her favorite book.

This school has forged a unique path in the 25 years since it was founded as a school for children with special needs; it has since opened its doors to everyone. 570 students in grades 1 through 12 benefit from this unique environment, including 246 children with special educational needs. In 2018, the inclusive elementary school and integrated high school with a college preparatory level received the *German School Award*, which is given by the Robert Bosch Stiftung in partnership with the Heidehof Stiftung, ARD, and the ZEIT publishing group. In addition to recognizing the school's excellent educational practices, this award also comes with 100,000 euros in prize money;

five other schools receive 25,000 euros, and all schools that have been nominated are awarded 5,000 euros.

There are many extraordinary things about the Martinschule. For example, the school has an extensive repertoire of teaching methods that it has collected over the years from a range of different sources and refined to suit its own needs. But really, one thing is most important, says Benjamin Skladny, the headmaster. “Every child learns differently and at his or her own pace.” That’s why in a single grade level, some children might still be struggling with reading, while others are working on square numbers, like in Piet’s learning group.

It all started 25 years ago with a school for children with mental disabilities that Skladny set up in Greifswald after the fall of the Berlin Wall. “In special education, we know that if you don’t focus on the individual child, you will fail,” he says. “And the same holds true for other children; it’s just that we can’t see it as easily.” A visit to the school shows us how much the children benefit from this approach, and what a challenge it is for the teachers. There are three parallel classes in the elementary school, and up to four children in each class have special educational needs. In the integrated high school, which starts from fifth grade, the students are divided into learning groups. There is a maths room, a German room, and an English room. 60 teachers work in the building, alongside 23 members of the educational support staff such as special needs caregivers and 60 integration aides. The state, the local community, and private payments from parents finance the school. Each teacher is assigned twelve children to teach. With this teacher, they plan their days, set monthly goals for themselves, and come together to see whether they’ve met their goals.

“Did we get it right this time?” That’s what Namid and Anselm want to know today. The two seventh-graders are standing in front of the computer on the teacher’s podium like kids at an ice cream shop – with that same longing, pleading look and intonation in their voices. “Can you pleeeeeease print out the maths test on fractions for us?” Namid has only been at the Martinschule since fourth

The parents seem to have an overwhelming desire for their children to receive a personalized education.

grade; before that, he attended a Waldorf school and a regular public school. “It was boring,” he says. “They went too slowly.” Here, he can learn as quickly as he wants. There’s no homework, no grades, and even tests are fun.

“Parents often get nervous when their child still likes going to school after a few years,” Skladny says with a grin. The idea that learning has to be painful is deeply ingrained in them. “Is my child actually learning anything?” they ask themselves. But the numbers speak for themselves. “Our students, whether they are on a college prep track or not, complete their diplomas with better scores than the average in our state of Mecklenburg-West Pomerania,” says the principal. “So we must be doing something right.” Skladny is fighting a battle on two fronts: he repeatedly has to explain himself and the school’s concept to parents. And it’s not always easy to get the faculty excited about the concept, either – some teachers have a hard time with it. Traditional class structures can be more convenient. But despite some resistance, the parents seem to have an overwhelming desire for their children to receive a personalized education. That much is obvious at an information session for parents of future elementary school students one evening. The small elementary school is bursting at the seams, with fathers and mothers shimmying through



the corridors, every seat in the auditorium occupied.

The teachers have laid out course materials and the students' works in some of the classrooms. "In fourth grade, every child builds a stool," says a teacher in the workroom. Later on, a teacher demonstrates how the method of "learning to read by writing" works. She explains in great detail that the children are allowed to make mistakes at the beginning - which is why the method is controversial - and how much this method helps to motivate them. "My son can already read. What would you do with him?" asks Anja H. "Well, kids who can read will be assigned another task," the teacher explains. "It wouldn't make any sense to learn something you already know how to do!" The parents nod gratefully, knowing full well that at most schools, all children in the same class actually do have to learn the same things - and as a result, some students get bored, while others struggle to keep up because they learn at a slower pace and get left behind.

The next door is labeled "Snoezelen Room." "Oh, my son would love this," Anja H. says as she opens the door. There's a waterbed, a couch, and a ball pit inside, and the lights are dimmed. "He's not good with large groups," she says. She also likes the wide hallways, the fact that there are places to sit everywhere, and that there are always spaces for the children to retreat to.

This is the reason why principal Benjamin Skladny chose exactly this building when he was faced with the task of setting up an inclusive elementary school in 2002. The former daycare center, with its long corridors, seemed ideal. Personalized learning requires space. He felt that children with mental disabilities shouldn't be segregated, saying, "They learn better when they are integrated." He believed that isolation was the wrong approach. So he sought out other elementary schools for a partnership, and he found one that took on one of his classes in exchange. Their experiences were positive, but there weren't enough schools willing to enter into a partnership. So Skladny founded his own - at a time when public elementary schools in Greifs-

wald were shutting down. The Martinsschule is a private school, however. Many families are exempt from tuition, and the parents who do pay spend about 170 euros per month in fees - and they have been beating down Skladny's door since day one.

Seventh-grader Christian is sitting in the corner with his adviser, diligently writing biographies in neat, careful penmanship: Alexander Graham Bell, inventor of the telephone, and Alan Turing. Christian is writing all of this from memory, and if you ask him about it, he'll tell you the exciting story of the competition surrounding the invention of the telephone in great detail. And why is he writing all of this down? "Well, I'm

Dedicated

Teacher Ms. Mangel encourages the kids with multiplication games and strategies tailored to their individual needs.

Motivated

(Image, right) Students Namid and Anselm pore over their maths test.



doing German right now,” he says. And that means writing.

A few rooms down the hall, teacher Christine Mangel is sitting with students tutoring them in remedial maths. Four girls with dyscalculia, i.e. a weakness in arithmetic. But Mangel knows how to reach them. First, they play some multiplication table games, in teams of two versus two. The girls are loving it; they’re doubled up with laughter. Then, Mangel hands out worksheets on long division. “Can you do this, or is it too hard?” The girls hesitate. One of them says, “It’s too hard.” The teacher knows that German is Hanna’s favorite subject; she’s very creative and writes excellent essays. “What is division, exactly?” Mangel asks her. “What’s this all about?” She is trying to figure out how Hanna thinks, and how she approaches a maths problem. “What is division? Tell a story about it! How would you explain it to a little kid?” Step by step, they get closer to the heart of the issue; now Mangel knows how Hanna approaches maths problems and understands her strategy. “There’s no one-size-fits-all strategy for every child; luckily, there are lots of different ways to do maths,” she says. “Is it OK if I finish the whole worksheet?” one of the girls asks at the end.

Where else would you find children with dyscalculia begging to finish a maths worksheet? Mangel shrugs. “It’s all a question of relationships and motivation. You’ve got to measure up to society’s expectations, and to the parents’ expectations, of course,” Mangel says. And that’s not always easy. “The neighbors’ kids are already learning fractions. Why aren’t you teaching that?” She hears that question often. Or, “The curriculum says that the kids should already be able to count to 1,000 – why can my child only count to 100?” “But what good would it do for a child to teach fractions if he or she still needs to learn the fundamentals?” Mangel asks.

During a break, she sits with Wolfram Otto in the principal’s office. He’s a wiry man with gray hair dressed in a track suit. Together, they discuss the next steps. The two of them are jointly responsible for organizing grades five through eight; she’s a trained special needs teacher, and he a high school teacher. “Of course, you



“I don’t teach. The children teach themselves – I help them in the process.”

need a hook – some form of content that seems worth learning,” Otto says. But that wasn’t always so obvious to him. When he was studying to become a high school teacher, educational research wasn’t really an issue they touched on. It wasn’t until he graduated in the middle of a hiring freeze and ended up working as an educational consultant for the state sports association that he encountered teaching methods where motivation and personalized learning played a central role. “In schools, you often hear people say that if a child doesn’t know something, it’s because they didn’t pay attention,” he says. “But really, the question should be: Why weren’t you interested in that?” As an educator, why wasn’t I able to reach this child? While some of his colleagues complain about the hard work of teaching in a way that meets everyone’s needs, Otto can’t imagine teaching any other way these days. “This job is so fulfilling when you see that you’re making a difference.”

Once, when he was teaching high school, he decided to evaluate his teaching methods for his biology class. He put together a multiple-choice test on the material they had covered that school year. “It was sobering to see how little of the material actually stuck with the kids.” And that was despite his activity-oriented teaching style. From his perspective, the problem was that all the children had to learn the same thing at the same time.

“But learning only works when you’re really interested in something, when you actually want to know about it.” He believes that teachers need to re-think their role if they want to achieve life-long learning. “I don’t teach. The children teach themselves – I help them in the process.”

But can all children handle the freedom of getting to decide for themselves what interests them each day? Isn’t that asking too much of some of them? “Some of them can’t handle the freedom; they need structure,” says Christine Mangel. And at the Martinschule, they get it. “But just because some children need structure doesn’t mean we have to bind all the others to that same rule.”

As Wolfram Otto jogs around the corner of the sports field, he sees Piet, the sixth-grader who didn’t want to give up his ring that morning. Piet looks a little lost; he’s kicking the fence that runs around the field. When he sees Otto, he gives the fence one last kick, then runs over to the teacher and jumps up to hug him. “Shall we play some soccer?” Otto asks. “Yeaahhhhh!” Piet shouts, and runs ahead to the field. When he gets there, he jumps up to try to hug another teacher, but that teacher immediately places him back on the ground, keeping him at arm’s length with a perplexed look on his face. Not every teacher is comfortable with the physical aspects of working at the Martinschule. And yet, this is par for the course at a school that specializes in this approach and therefore relies on the unconditional cooperation of the entire faculty. That becomes clear a moment later, when two boys start to fight over a ball; they push each other, and one of them lashes out. An integration aide puts her arms around him; it looks like another fight at first. The student tries to break free, but the teacher holds him tight with both arms and all her strength. He then starts to cry in her arms, resting his head on her shoulder: “But I wanted the ball!” She comforts him and suggests that the two kids take turns with the ball.

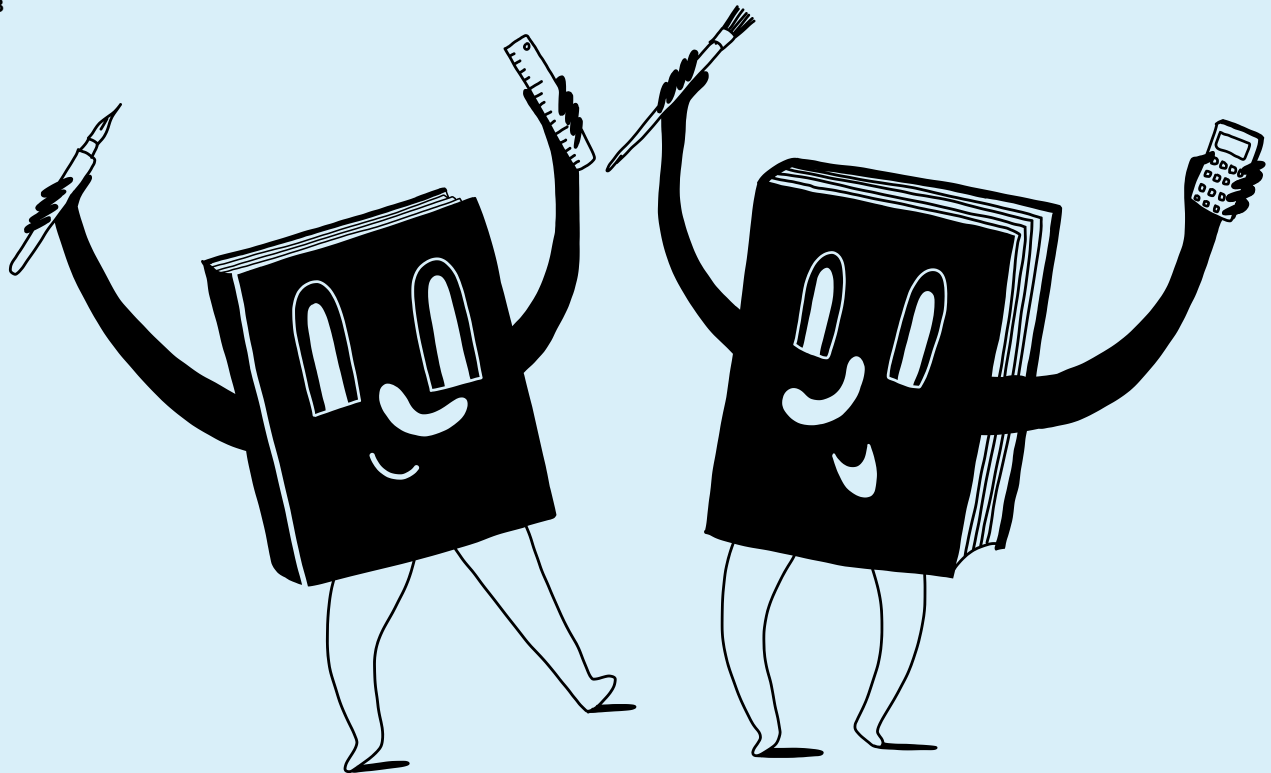
On a neighboring sports field, a gym teacher from another school is screaming his lungs out. His voice cracks and sweeps over the heads of the children at his feet like a tornado. “You’ll do as I say right now, or I’ll make you run laps!”

The students from the Martinschule, on the other hand, apparently don’t view running laps as a punishment. They are all taking a warm-up jog around the field; the faster students run three laps, while the slower ones run two. A boy wearing a shirt emblazoned with “Landeskader Schwimmverband” (State Swimming Federation) leads the pack. He outstrips Paul and Luis, who have spent the whole time chatting about soccer. Just before they finish their second lap, they come up behind a child in a wheelchair who is just finishing his first lap – and instead of running past him, they give push him onwards a bit.

Head over heels

Students in gym class. The teachers want to motivate their students here, too – by making things fun and giving the kids the freedom to make their own decisions.





INTERVIEW
Alexandra Wolters

ILLUSTRATION
Stefan Mosebach

What Makes a Good School?

A conversation with Hans Anand Pant, education researcher and CEO of the German School Academy, about the crisis facing the education system and the ideas behind the *German School Award*.

Mr. Pant, what impressed you in particular about the winner of this year's *German School Award*, the Martinschule in Greifswald?

This school works with people with mental and physical disabilities as a matter of course, and its work is both exemplary and unparalleled. It says: Yes, these students are sometimes loud and out of control. But the Martinschule manages to not only integrate these members of society who are often hidden away as if they were a source of shame, it also views them as a source of enrichment to the classroom environment.

How does the school do it?

The faculty has a well-coordinated routine and a very good antenna for whether something might be about to happen that could disrupt the classes. For example, if a child with a developmental issue suddenly gets

loud, the teacher just needs to make eye contact with the aide in the room, who will “step in” to handle the situation.

Many of the schools that have won the German School Award have gone through a crisis that led to a long-term development process.

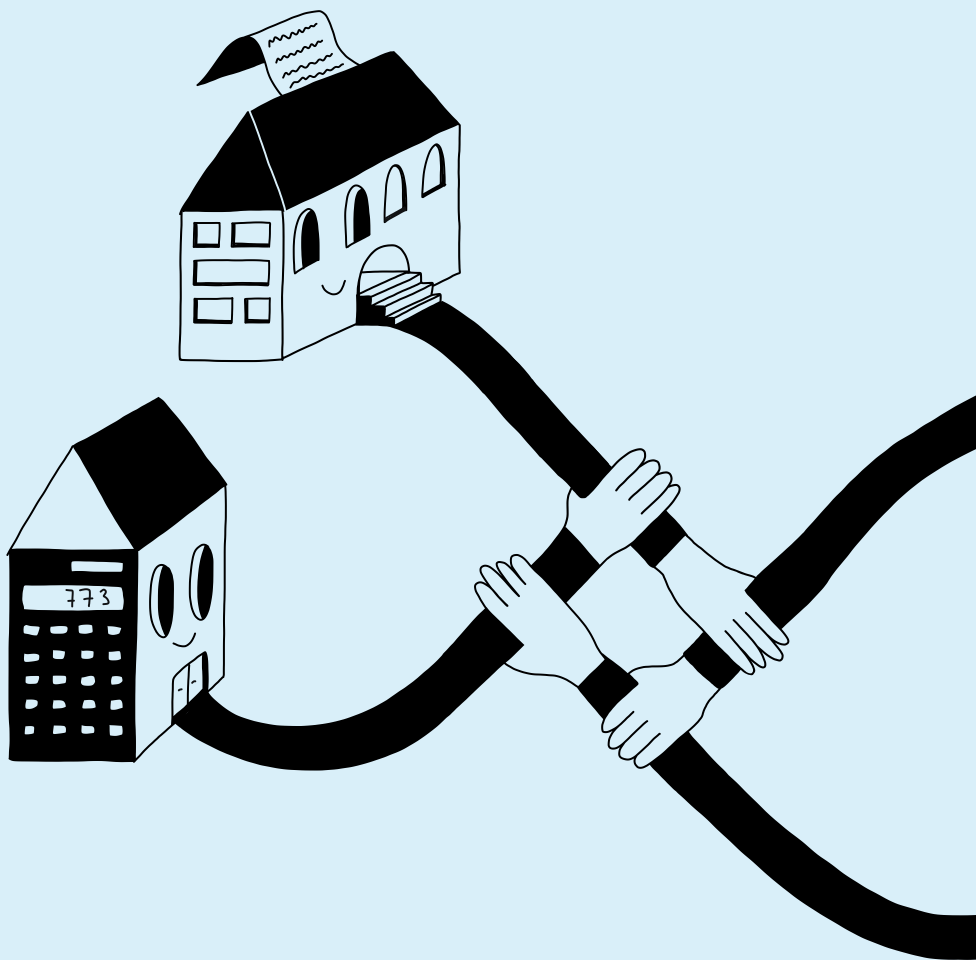
I am convinced that crisis is a very important starting point for growth. And problems don't usually affect the elite schools – they affect the schools that are already operating in a difficult environment. If I had my way, I would like to make it possible for schools to essentially simulate a crisis and use it as a way to spark growth. The purpose is to work together in a systematic process of self-assessment – essentially to take stock and reflect.

In your view, what are the major problems our schools and our school system are currently facing?

There is often a lack of balance between a school's autonomy and the dictates that the school is required to adhere to. I'm not a romantic when it comes to social issues, by any means. I'm not one of those people who thinks, “Oh, let's just let the schools do their own thing, and it will all work out.” But we need to systematically make the case for co-constructive processes. All of the important actors in a school need to come together regularly to look for the best solution to a situation, a problem or a change.

What is stopping schools and the federal states from doing that?

The structures need to be thought over more thoroughly. Today, around 50 percent of students in a given class end up on a college track. The days when certain types of schools had no contact with diversity are over – heterogeneity is everywhere. If we were to acknowledge this fact in teacher training programs and manage to familiarize all educators with issues of integration and inclusion, that would be a major step. And there's another problem: nearly half of all teachers prefer to plan their lessons alone, rather than as part of a team. Given the huge range of tasks that teachers have to handle nowadays, this is a completely inefficient way of working.



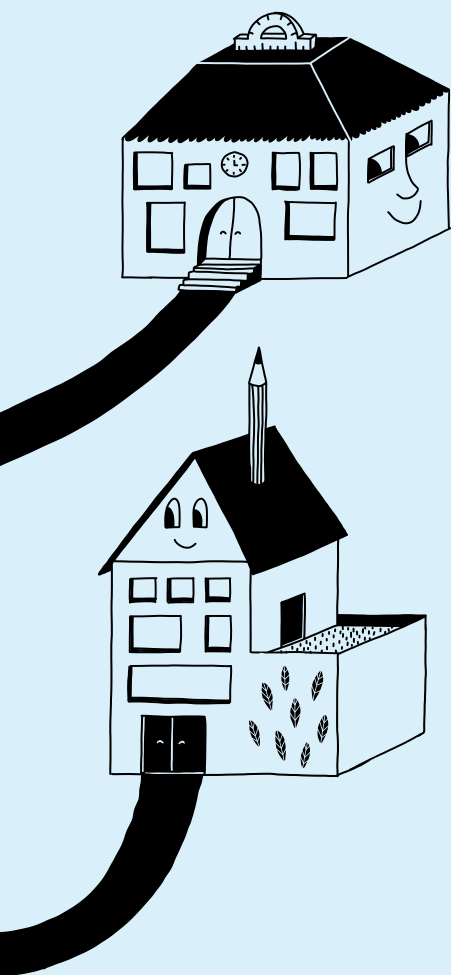
Hans Anand Pant is a professor at the Humboldt University in Berlin, where he researches the issue of how empirical methods can be harnessed to benefit schools, educational administration and education politics. He is also responsible for the German School Academy program and is a member of the jury for the German School Award.

There is a shortage of teachers at the moment, and teachers are also expected to help integrate children from immigrant families and drive forward the process of inclusion. How can you convince these teachers to rethink their approach?

To convince teachers of the benefits of teamwork, we have to focus on attitude and mentality and offer precisely targeted coaching. Teacher training needs to undergo a complete overhaul over the long term. The subject of cooperation is hardly touched on in teacher training today. We need to teach cutting-edge educational and didactic methods at universities.

How will that look in the future?

My vision of a good school is a school that offers personalized teaching and learning. Everyone should feel comfortable with all the requirements at all stages of education. All students should be supported according to their potential and have fun while they learn. That would be enough for me. Additionally, we shouldn't lose sight of how schools can help further the



process of integration in our society, such as by expanding and reinforcing democratic ideals through education. It might sound controversial, but I always say that 14- to 16-year-olds don't set fire to refugee homes because they didn't get a good education in maths.

In international comparisons of education systems, other countries perform much better than Germany. Can we learn from that?

I'm skeptical, generally speaking. If we based our actions solely on the best results from studies of educational performance, we would want an education system like the one in Shanghai. But their system is also based on strict obedience to authority and a draconian selection process; they have 15-hour school days and a high suicide rate among students. Do we want that?

But still, other countries perform better in aspects such as cooperation between teachers and students. I do think that by keeping our own detailed requirements in mind, we can look at other models and learn from

them. But I don't think that we can simply copy another country's school system. Not even large parts of it. We always have to ask ourselves, "Can we implement this in our 16 different German states?"

Are federal structures one reason why the German school system is developing so slowly and reforms are so difficult to implement?

Yes, our federal education structures are certainly one of the reasons why our school and education system often operates like an enormous, lumbering tanker. In order to steer it in another direction, we need a lot of small pilot boats. However, we shouldn't underestimate the desire to maintain the status quo among the structures of our educational administration and politics. The reasons behind this are often trivial, because every change impacts jobs – generally the jobs of civil servants. That's why I think a constant flow of ideas from the bottom up – from independent schools – is indispensable. The real-life examples of schools presented by the *German School Award* and the *German School Academy* serve as models and pointers in the right direction for a plodding system.

How can as many schools as possible benefit from the knowledge gathered by the *German School Award* schools?

The *German School Academy* offers a shadowing program where interested teachers can visit schools that have received the award. We have also worked with all the award-winning schools to establish a network that develops and implements transfer programs. Additionally, with our educational travel program, we send teachers-in-training to these award-winning schools to talk to the teachers and administrators there. For the trainee teachers, it's an excellent learning opportunity. And for more seasoned teachers, the program provides a chance to reflect.

You stress that there is no universal formula for a good school. Despite this, have you still discovered something that all good schools have in common?

The good schools I have had the privilege to visit generally have a very

positive atmosphere, including among the faculty – and they work hard to achieve that. In good schools, teachers have a say in how the school develops, allowing them to discover leadership qualities within themselves and put those qualities to use. The teachers feel like they are being taken seriously as professionals, and not treated as underlings of the administration. I see participation as the secret to changing an entire school organization. The schools cooperate in multi-professional team structures, and they work with the students on a level as individual as possible.

What does that mean in practice?

The schools that win our award think about their students' entire lives, not just a single phase of life. They look closely at the children's backgrounds and their strengths. These schools' view of the student doesn't stop at the end of the child's school career. They work hard to ensure that their students go on to translate their education into good vocational or professional experiences. Additionally, these schools don't view themselves as operating in a bubble. They are organized in networks, active in regional education infrastructure, and know nearly all the relevant programs on offer in the area. And when I see the students from good schools, I can tell that they enjoy going to school and have fun in class. They feel like they can actually achieve the goals they set for themselves.

Mr. Pant, thank you for your time.



How Good School Practice Spreads

There are roughly 40,000 public and private schools in Germany, distributed among various types of schools and 16 federal states. How is it possible to take practical concepts that have proven themselves in one school and make them accessible and effective for all of the other schools? The system of the *German School Award* has exactly that as its goal. The *German School Award* was founded in 2006 by the Robert Bosch Stiftung and the Heidehof Stiftung to contribute to school development in Germany. Every year, the award

is presented to outstanding schools. This has resulted in an ever-expanding network of award-winning schools. The practical strategies and techniques used by these schools are examined, appropriately refined or adapted, and finally made available again to all schools by the *German School Academy* through advanced training, publications and the *German School Portal*. This creates a cycle in which good school practice becomes stronger and more widespread.

Network of outstanding schools

The 73 schools that have received the *German School Award* offer many examples of good school practice from which other schools can benefit.

The six quality areas of a good school

- Academic achievement
- Approach to diversity
- Quality of instruction
- Responsibility
- School culture
- School development

Award-winning schools

Development program

Feedback

The German School Award

Each year, the *German School Award* is presented to six excellent schools on the basis of six quality areas (see box on the left). All schools in Germany and German schools abroad can apply for the competition, which is endowed with a total of 270,000 euros. All applicants receive individual feedback, and up to 20 of them that do not receive awards are included in a two-year development program.

Practical concepts



Research program “What Makes a Good School?”

This research program examines excellent practical concepts. Are they really that good? What conditions are needed for them to succeed? Scientists can apply with their own research projects. The results are later published.



Practical concepts

The German School Academy

The award-winning practical concepts are adapted at the German School Academy by headmasters, teachers and scholars and then brought back to schools as courses for further training.



Publications



Practical concepts

The German School Portal

In the *German School Portal* the award-winning practical concepts are presented to the public in digital form: they are conveyed in video or audio clips as well as text and serve as inspiration for all interested educators. School professionals will also find the latest news on schools and education policy.



Continuing education

Inspiration

Information



Roughly 40,000 schools in Germany and
140 German schools abroad





Heike Schaumburg is an educationalist and has a doctorate in psychology. In her research at the Humboldt University of Berlin, she studies the integration of digital media into school teaching. Schaumburg is co-author of a new study on personalized learning with digital media, published by the Robert Bosch Stiftung.

INTERVIEW
Martin Petersen

PHOTO
Daniel Hofer

Is Digital Better?

With the Digital Pact, Germany's federal government intends to make schools "fit for the digital age." What does this mean in practice? Teachers are not going to be replaced by computers, says educationalist Heike Schaumburg – but school principal Ulrike Kegler is certain that the role of teachers will change fundamentally.



Ulrike Kegler

is a teacher, a school principal since 1995, and has published three books on the subject of good schools. Her school, the Montessori Oberschule Potsdam, was recognized with the *German School Award* in 2007.

“Media abstinence is not the right approach.”

Heike Schaumburg

Ms. Kegler, are digital media a blessing or a curse for schools?

Kegler: I would say neither of them: it depends on the content, i.e. what you do with it. There can be excellent uses for digital media. But as I see it at the moment, we in Germany are still very far behind compared to other western European or wealthy countries.

Ms. Schaumburg, schools have been using computers for a long time. What do we mean today when we talk about learning with digital media?

Schaumburg: In the past, children learned to use computers in computer science lessons, but they didn't really know what they could use this knowledge for. Today, it's considered more sensible to teach media skills integrated into the subjects taught.



Another basic idea, which originates in the first use of computers in schools and is now gaining currency again, is to allow students to pursue individualized learning paths and give individualized feedback on their learning processes. Computers can be a fantastic source of support for teachers in this regard, because one teacher won't be able to respond adequately to everyone in all respects when help is needed. But I think one promise that was made in the past is incorrect: that computers could completely replace teachers.

When it comes to individualized learning with digital media, what first comes to mind for many people – myself included – is the image of individual students working alone with a device. Is that wrong?

Kegler: I just saw that in Denmark, in a “paperless school”: a colleague of ours, also a principal, called it a totalitarian system. It's all about technology, and there's really no encounter where screens aren't opened up.

Is that the school of the future?

Kegler: No, not for me at all! For me, the most important thing in school is the conversation, the hearing, listening and speaking. We use a digital medium whenever it is needed. I find it particularly inspiring when we write and revise texts together, and everyone sees that they can get involved and how they can do it. There are many other methods. Also individual feedback: in Finland, for example, I saw after the first PISA study that the teachers were all connected with

their students, could watch them very closely, and didn't always have to meet with them face to face to provide personal support. All of this e-learning is widespread in other countries, in such a way that students would potentially not always have to go to school. In these scenarios, you do certain things at home, and school would instead be the place where you collaborate and exchange ideas, and maybe even get personal feedback. The old teacher role, where teachers have the knowledge they then impart, has actually been outdated for a few years now. In the future, teachers could play a greater role as sources of information and advice, and they could illustrate the relationships among individual knowledge components or draw attention to interesting cross-connections.

The knowledge transmission itself will take place more and more via programs?

Kegler: Yes. Movies, for example, are a great way to do this: when you watch the French Revolution in a film, you have a feeling for that time period. That alone is not enough to ensure an understanding of the material, but it's an introduction.

So it's the digital classroom, after all, where everyone sits in front of the screen and watches?

Kegler: No, quite the opposite. The teacher has to take the knowledge that's now available to everyone and try to make something of it. This turns the whole school around; it's the principle of the “inverted” or “flipped classroom”: I watch what I need to learn at home and I go to school to practice. In other words, it's just the opposite of what it is today. That's what's coming in the next few years. At that point, it should be impossible to imagine school as it is today. That's my theory.

Schaumburg: What you have to ask yourself with these approaches is,



“Will all students be able to do that?” They won’t be able to just like that. Not every child can sit down at home and easily absorb learning content on their own. And this is exactly the role of a school: to see how we can enable children to learn to deal with this flood of information.

Kegler: Exactly, that’s why school is the place where it needs to be filtered. Media literacy is, first and foremost, media abstinence. That means that I decide when I use which medium and when I don’t. It should be a conscious process. We now know that hundreds of thousands of children in Germany are already considered to be addicted to digital media. Yuval Harari described a vision of the future in his book *Homo Deus*: Algorithms could control an awful lot, and there will be an elite of people controlling

them. A large proportion of people are only “fed” with what is on the market. The resulting injustice – some understand the relationships involved and have support, and others stand there passively consuming YouTube videos – that is the major problem. *Schaumburg:* To be honest, I think those kinds of horror scenarios are grossly exaggerated, and I don’t believe that media abstinence is the right path. But it is true that schools need to teach a reflective, responsible approach to digital media. This includes lessons like understanding that behind everything that seems to be free on the Internet, there are ultimately business models. With regard to the elites you just spoke about, I see the challenge in creating equal opportunity in education under the conditions of digitalization too. And who should do that if not schools?

Ms. Kegler, you are regularly in touch with other school principals – where are the difficulties in using digital media?

Kegler: One difficulty is that these devices are still treated like fetishes. Why isn’t new media integrated more naturally into teaching? Because most teachers can’t deal with it in a creative way. This can be seen from the fact that smart boards are now being used instead of the blackboard. In other words, it’s a bit more colorful, a bit more luminous, but everyone is looking in one direction again just like in the old church order. This doesn’t mean that we’re seeing individualized learning. There’s still a whole lot of music there; people are only scratching the surface.

How do you motivate your colleagues to use digital media creatively?

Kegler: I work very hard, together with my younger colleagues, to ensure that we also enjoy learning new things as teachers. We hold several conferences with cooperative digital media, and we’ve developed our entire

school curriculum by writing the texts together.

Schaumburg: I’m increasingly asking myself whether this skepticism towards computers isn’t all that bad in the German education system. After all, it also prevents us from frivolously jumping at anything and everything digital. We need to get to a place where the discussion is more about quality. I think the approach you just mentioned is very good, the idea that you also need to show teachers where the added value is. Once you’ve understood that, you can also implement it in your teaching. I do believe that some German schools are very good at staying on course and don’t have a great willingness to innovate.

Kegler: I get the feeling that new methods in general are incredibly difficult to establish in Germany. We have this three-part school system, while other countries have one shared school in which children are together for long periods of time. This also means that teachers’ attitudes are different. They need to work inclusively, with a diverse group of children. Yet this segmented school system seems to be set in stone in Germany.

The coalition agreement of the German federal government includes the intention to invest five billion euros in the digitalization of schools. Can that be used to raise the standard of the equipment?

Schaumburg: It’s pure window dressing – the money won’t be anywhere sufficient enough to get schools on the same level as to what’s going on in other western European countries. Something that always gets forgotten with these kinds of initiatives is that it’s not about a one-time investment; there are long-term costs involved. A school is exactly like any other enterprise in that you need someone who takes care of the hardware and software, for example, and it can’t be a teacher coming in on their off-hours.

“These devices are still treated like fetishes.”

Ulrike Kegler

21.9.2018

ich fand die Feder auf dem Weg
mit meinen Eltern und meiner
Schwester zum Restaurant, weil meine
Schwester Geburtstag hatte.

Meine Mutter glaubt, dass Sie aus
einem anderen Land gekommen ist.

“I’m Going to Write Myself an Imaginary World”

A visit to a writing workshop in Esslingen, where an author and a German teacher are joining forces to get students excited about literary writing.

“The children even did extra sweeping and cleaning up,” whispers German teacher Kathrin Höss to her guest as they walk down the bright school corridor. Not a scrap of paper lies on the blue linoleum floor as they enter the classroom, bags are stored neatly under the desks, and everyone’s name badges – fished out once more just for their visitor – stand at the ready.

It’s the second Tuesday after summer vacation, and the large clock over the classroom door reads 2:15 p.m. It’s the beginning of the last two hours of class for the day at the Schule

Innenstadt in Esslingen, near Stuttgart. All eyes are fixed on Tobias Elsäßer who, dressed casually in jeans, a black shirt, and sneakers, leans against the teacher’s desk. The students of Learning Group 7a have been eagerly awaiting their 45-year-old instructor.

“Hi there, everybody, my name is Tobias Elsäßer. I’m a book author, and I only started reading books when I was 14 years old.” A soft murmur goes through the room, and one or two heads shake in disbelief. “My father didn’t think much of reading. I was supposed to take care of my household chores instead. And I was pretty bad at spelling, too.”

Elsäßer and Höss form one of fifteen teacher-author tandems across Germany that are teaching literature to children and young adults as part of the *Weltenschreiber* (Writers of Worlds) program. Today is the first day, and afterwards he will continue to meet with the students and work with them over the entire school year.

As the first order of business, Elsäßer comes clean about his own academic history. He speaks quickly with a strong, clear voice; it almost sounds like a rap. The twelve- to fifteen-year-old audience quietly and attentively listens to the author, who strides through the classroom with long steps, swinging his arms back and forth as he speaks, turning and shifting about. After school, he and his band – or maybe more accurately, boy band – played small venues throughout the country, and they were fairly successful, says Elsäßer, describing what he calls a somewhat embarrassing phase. “At some point I had so much stuff, so many experiences in my head. They had to come out. So I wrote my first book.” Daniel nods understandingly. “I’ve written a lot from my own imagination, too,” the boy says, doodling a couple of fine lines on an empty notebook page with his pencil. “So what comes to mind when you think of writers of worlds?” the author asks

Notebook

The children write thoughts and feelings, paste in special finds or draw in their books. “That can lead to some exciting stories,” says author Elsäßer.

after his round of introductions. Georg, in the first row, answers. “They’re people who say, ‘I’m going to write myself an imaginary world,’” he replies.

Later, Daniel and Rebecca will remain in the classroom and talk about their first meeting with the author. Like many children from 7a, they love reading and do so often. Daniel, for instance, loves fantasy series like *Warrior Cats* and even swipes books from his older brother’s closet from time to time. For Rebecca, it’s hard to resist a book where horses play a role. Both also like to write, even together. “Oftentimes we’ll play something and then write something down about it from our different points of view,” Rebecca explains with a soft voice and flushed cheeks. Daniel is excited because they now get to work with a real author for an entire year. “My stories somehow always start out the same way; maybe Mr. Elsässer will have a few new ideas for me,” the twelve-year-old says.

For his part, Elsässer is fascinated by the inexhaustible ideas of children and young people. It is far too rare, in his opinion, that they are allowed to express them in school. The Stuttgart-based author has been leading writing workshops for about ten years now. “We in Germany absolutely need to bring writing down from its pedestal,” he says. To this end, he uses a few tricks to elicit the first few lines from his students: he has them write captions for online photos, short chat reports or Instagram comments. He’s convinced that writing stories is something very natural for human beings.

An artificial gong echoes throughout the hallways of the school. It’s 3 p.m., and the first of two German hours with Elsässer is over. The schoolyard noise can be heard up at the second floor through wide-open windows. Learning Group 7a forgoes a recess. They want to know what happens next.

“We’re glad you’re having fun writing,” says their teacher Kathrin Höss. “But be careful,” Elsässer adds with a wagging finger and mischievous smile, “because writing can completely turn your life upside down.” Daniel looks at the author mesmerized. At the same time, as if hardly being able to



wait to get started with the exercise, he begins to punch holes in his notebook with his pen. Someone also becomes audibly impatient on the other side of the room; the dark-haired Rebecca pushes her violin case back and forth under her desk with her feet. But now it’s already time to continue: with a grunt, the author lifts a large cardboard box onto the teacher’s desk and pulls out a black book with red corners. “This is your tickler,” he says, and begins to distribute the other notebooks from the box. “Each one of you will get your own copy.” Elsässer explains to the students that they should write down their thoughts and feelings, in catchwords, sentences, or small stories, whenever they like, and provide them with dates. Rebecca

browses through the empty pages. “Feel free to draw something, too. Or paste something in,” the author continues. These could be, for example, shopping lists that can sometimes be found on the street or in a shopping cart. A few hands shoot up. “I once found a banknote that had strange rows of numbers on it,” one student from the last row remembers. “We had an old receipt from a supermarket behind our heater,” a gentle-looking girl closer to the front reports, excitedly. More and more hands go up. Nearly everyone seems to have once found something exciting or unusual. “Keep an eye out for those little things,” advises Elsässer, who himself loves to study little found scraps and think up stories about them. Or maybe even just crouch down now and then to get a change in perspective. “That’s how exciting stories crop up,” he says.

As here in Esslingen, one- to two-year writing workshops led by teacher-author tandems will get underway for the first time this school year in Baden-Württemberg, Mecklenburg-Western Pomerania and Lower Saxony. With the support of the Literaturhäuser (houses of literature) in Stuttgart and Rostock and the Literary Center of Göttingen, the duos have previously developed their own project outlines to introduce students to literary writing. They plan to produce radio plays, design comics, write multi-perspective class novels, or even extend existing books. Elsässer and Höss have taken on the latter: with 7a, they want to read Elsässer’s book “Ab ins Paradies” (“Off to Paradise”) during the school year, a book about the journey of a boy who lost his grandfather and finds a new companion. They’ll talk about roles and dialogs using the novel, and then develop the story further in chats, scenes, and roleplays, and accompany these with music. “Writing is by no means just something for high-flyers and shining stars,” says Elsässer. “Writing means freedom – and that should be something for everyone.”

That view is shared by José Oliver, an author and winner of the Adelbert von Chamisso Prize, who helped to conceptualize the *Welten-schreiber* program developed under the direction of the Robert Bosch Stiftung.

“But be careful – writing can completely turn your life upside down.”

He himself has run several writing workshops, and he is convinced that all people carry poetry within them. Writing spaces just have to be created for them to express it. “Writing means being yourself, putting into words what you feel and think,” says Oliver. The *Welten-schreiber* workshops aim at teaching students to communicate, to give names to things. “People who learn to say and write something will enter into a dialog with themselves and others,” says Oliver, emphasizing that this is indispensable for participation in a community. “Language work is social work.”

No one knows exactly what will happen in the course of the writing workshop, what talents may be discovered. But the *Welten-schreiber* program reaches beyond the school framework and is laid out for the long term. In addition to teacher training in literary writing (an integral part of the program), writing scholarships will be awarded to young authors beginning in 2019. These authors will subsequently work with children and young people interested in writing. The resulting works will also be shown to the public, to give a larger audience a look into the lives of young people. To this end, a regular *Welten-schreiber* festival is planned starting in 2020, where the works from the writing workshops will be presented.

Höss and Elsässer also want to celebrate something at the end of the school year: that they were able to awaken the fun in writing, that the learning group stuck with the project for a whole year with joy and excitement, and that they produced something literary together. There’s no lack of fun and excitement during the first *Welten-schreiber* unit in Esslingen, not even at the end of the lesson, when the learning group shows its musical side and belts out Mark Forster’s hit “Chöre.” Tobias Elsässer answers with his own song, “Crazy Is Normal and Normal is Crazy.” “Totally cool,” says Mara, tucking her strawberry blonde hair behind her ear and writing a few lines from the song in her notebook, which she flips shut only at the final bell of the day for Learning Group 7a.

www.bosch-stiftung.de/writers-worlds
Find more information and contacts at our website.



Tobias Elsässer and Kathrin Höss form a *Welten-schreiber* team. The author/singer and German teacher immediately became friends and quickly had a basic concept for the writing workshop.

Ms. Albright,

which role does education play for a more equitable world?

Giving all children, regardless of economic or social status, the opportunity of a quality education is the best way to reduce poverty and close gaps of inequity. The UNESCO Institute of Statistics has calculated that if all adults in the world completed a secondary education, more than 420 million people would be lifted out of poverty, reducing the number of poor people around the world by more than half. Equity needs to be addressed between countries and within countries. That's why the Global Partnership for Education serves the poorest countries with the largest education challenges and, within those countries, we focus on the most vulnerable.

The high population growth creates enormous challenges to educational systems. Population growth, particularly in low-income countries, demands immediate action

to avert a crisis in years to come. Investing in the human capital of a country through ensuring quality education has multiple benefits for individuals, communities and countries. The greatest needs are in the earliest years of schooling where the foundation is set for future education opportunities. To participate in the job market, young people need a basic education first. Economic growth requires a skilled work force, not just in Germany.

Therefore what is needed is political leadership at the highest levels to demand that more domestic money is invested in education and that it is spent more effectively. This means having and implementing quality education sector plans and good data so that resources go where they are most needed. Foundations are an integral part to our partnership and governance. We want foundations to become transformative partners working with GPE to implement the UN sustainable development goal for education.

There are already measures which have an extraordinary high impact. Educating girls is transformative and has an exceptionally high rate of return when we look at impact and investment. An educated girl is more likely to marry later, have fewer children, vaccinate her children and have them sleep under mosquito nets to prevent malaria. And of course, there are huge economic benefits by women entering the workforce. One additional school year can increase a women's earning by up to 20 percent – money that's primarily spent on children and family.

“Educating girls is transformative and has an exceptionally high rate of return”



Alice Albright

is Chief Executive Officer of the Global Partnership for Education, a partnership of government and non-government institutions, the private sector and foundations that aims to give children in developing countries the opportunity of a quality education. She is the daughter of former US Secretary of State Madeleine Albright.

The Republic of the Ivory Coast, for example, has made a concerted effort to get more children into school and made school compulsory for boys and girls. The government also increased its education spending to 25 percent of the state budget. A strong focus was on schools and trained teachers in underserved remote areas.

On a recent trip to Malawi, one of the poorest countries in Africa, I had eye-opening meetings with young female sex workers, many of whom were HIV positive, as well as with health workers, mothers' groups, teachers, and school and community leaders. I learned that many girls in Malawi are forced to drop out of primary school due to changes in their life circumstances, such as loss of a parent. That puts them at high risk of HIV infection and early marriage. It put me face to face with the reality that, for too many children, education is quite literally a matter of life and death. It's why we've been working with the government of Malawi to do everything possible to give girls – and many other disadvantaged children – the opportunity of a quality education.



INTERVIEW
Jannik Rust
Eva Wolfangel

PHOTOS
Studio I like Birds

The Machine Discriminates

A conversation with sociologist Kate Crawford about the downside of algorithms and learning machines.

Ms. Crawford, the social debate about AI ranges from the great opportunities AI brings for all of us to concerns about surveillance or loss of privacy. How do you perceive the debate?

In my view, it is not a single debate, but many debates on various aspects. These new technologies affect our daily lives in many different places. They affect everything from how we work, to our health systems, to education, and even to criminal justice. Artificial intelligence already has an impact on our work, for example through surveillance at the workplace or so-called nudging, which influences the motivation or attitude of employees. All these phenomena are having an influence before many people notice.

To what extent does the technology of AI reinforce asymmetrical power structures?

In our daily working life, technologies are increasingly introduced to track what employees are doing, such as counting the productive hours and breaks. This is incredibly invasive and it creates an asymmetry of power between employers and employees. So we need to have a debate on how we structure power and how we can

ensure that artificial intelligence does not strengthen the power of those already powerful.

When you say that the ownership of data and algorithms creates power, what does that mean for the global distribution of power – and which countries have it in your view?

The geopolitical scenario of AI is very important right now. Currently there is this strong narrative, according to which there is a battle between two superpowers: the USA on the one hand and China on the other. But I am

concerned about the war rhetoric that emerges from different cultures. China has a very different AI culture than the USA, and Europe has yet another very different culture.

What could be the role of Germany and Europe?

Here in Germany there is a great opportunity to hold the debate in such a way that a technology is created that is accountable, fair and transparent, and in which the responsibility is also clear. People should know when they are judged by an AI system, and

How do machines learn?

When computer systems learn independently, we're generally talking about artificial intelligence. But the terms are confusing: machines learn less independently than it sounds – and it still has little to do with how people learn. Machines learn from training data and corresponding feedback. In image recognition, for instance, they learn by people showing them several images with a note of what can be seen – cats, for example. This way, the programs learn criteria for recognizing cats on their own.

In another type of machine learning, unsupervised learning, the machine automatically searches for patterns in large amounts of

data and forms groups of similar data. This is how Amazon's recommendation system and others operate; the idea is that "people interested in X are usually also interested in Y." In the case of the Google software of DeepMind, which won against the world's best go player, the system practically generated the training data itself: it was simply fed with the rules of the game. The system then began to play against itself – and thus, with every victory, learned which strategies are successful. It even discovered strategies that human beings had never thought of before. But that doesn't mean that AI is on the verge of beating human intelligence. There are many things that are incredibly difficult for machines to do, even though they are simple for humans.

also how the decisions come about. We in the USA are not yet holding this debate to this extent, and that will become a problem for civil society. I think Europe currently needs to decide whether it is going to become a player in AI and on what terms it will play.

A major debate at present concerns the distortions of decisions taken by machine learning systems, the so-called bias. This leads, for example, to racist discrimination. Where does this debate originate from?

There are many examples of discriminatory decisions made by algorithmic systems. Women in the USA were not shown highly paid jobs in a Google advertisement; U.S. software rated the risk of relapse of black prisoners higher in the criminal justice system. In healthcare, people suddenly no longer received their treatment because an algorithmic system decided that they no longer needed it – without a human being taking part in the decision. These issues have been present for some years, already with simple AI systems. And when it comes to very advanced AI systems, we have problems with the traceability of decisions.

Are companies and science responding appropriately?

I see a worrying pattern emerging: the quick-fix. The idea that we can simply bring a mathematical idea, a formula for fairness, into technical systems. That will fail. Because our AI systems are trained using data from the past, a past in which bias and discrimination are deeply embedded. We need to think broadly, socio-technically, because this is a much larger debate that must not only be held in the computer science laboratories. We need a much more interdisciplinary approach. We need to integrate politicians as well as sociologists, political scientists, philosophers, historians. The question right now is: how do we want to live and how should our technical systems support this? This is the biggest challenge in the next years.

“AI systems are trained using data from the past in which bias and discrimination are deeply embedded.”

Will there ever be a world without these biases, without discrimination?

In the past, people have produced social change by rising up against a system that they thought was unjust. You can do that when you can see a system and demand a different way of living. In complex AI systems, however, we are often not even aware what systems are at work, and even when we are, their decisions are usually hard to understand. This makes it extremely difficult for those affected to defend themselves. We must therefore insist that these systems are accountable and transparent. But we also know that there is no quick technical solution. We must accept that these systems will always produce forms of discrimination. We will have to decide in which areas this is acceptable.

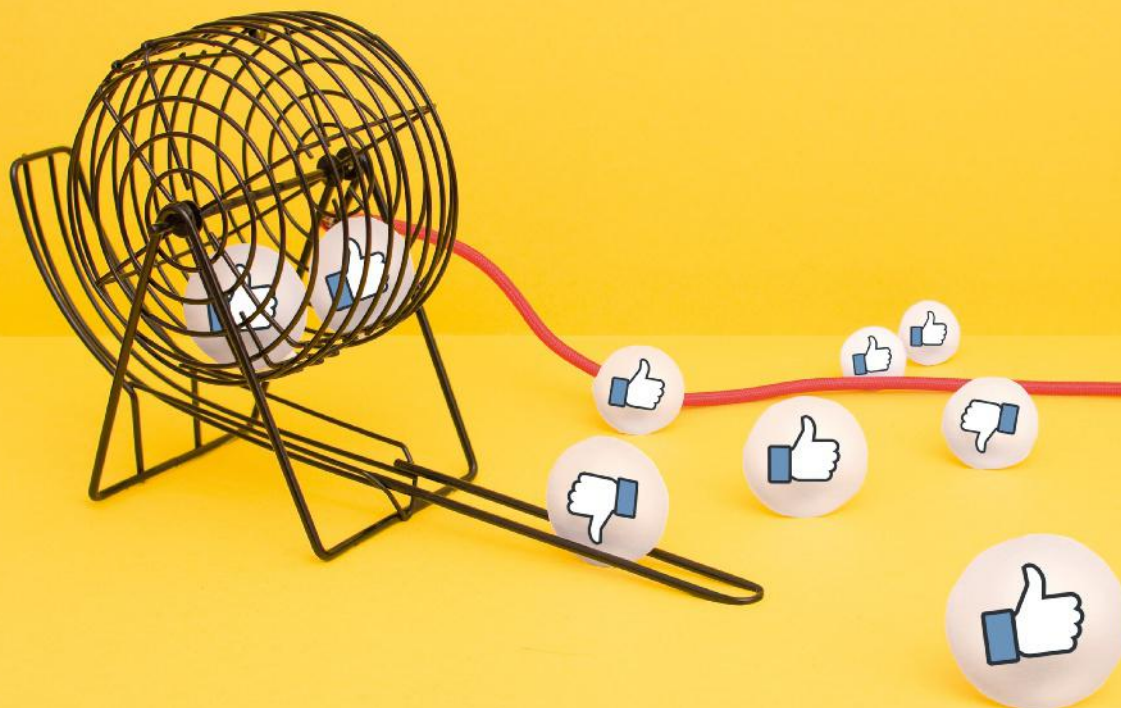
Can we know if there is bias or not before implementing AI systems?

At the AI Now Institute, the first ever university research institute dedicated to understanding the social implications of AI, we are researching how a system can be tested early and systematically so that the extent to which it discriminates against different groups can be understood from the outset and over time. We have also developed a framework for Algorithmic Impact Assessment that

How do we teach machines not to discriminate?

Machines are constantly learning based on data from the past, and they can use it to cement existing, unequal circumstances. For example, when a system learns from the Internet which careers men and women perform, it could come to the conclusion that women shouldn't be presented with any job openings for doctors or computer scientists, and men shouldn't be presented with any jobs in nursing. Researchers are currently working hard to rid AI of these kinds of weaknesses. Nevertheless, because AI is so perfect at recognizing

patterns in data, it's not enough to just delete factors like gender or skin color from the data: AI simply calculates them from other contexts, like names or addresses, social environments and much more. Added to that are further weaknesses of machine learning, especially “deep learning” based on deep neural networks: the systems cannot explain how they came to a decision. In the event of complex decisions, this means that people have to “just trust” them. But given the mishaps that have happened in the past, this isn't a good solution. In research, there are initial, promising approaches involving an “explainable” AI that at least partially reveals the factors on which it's basing a decision, so people can check it for plausibility and verify whether the decision was made on the basis of our value system.



Kate Crawford

has been researching the social effects of machine learning and artificial intelligence for ten years. Crawford is a Distinguished Research Professor at New York University, a Principal Researcher at Microsoft Research New York City and a Visiting Professor at the MIT Media Lab. Kate Crawford will be a Fellow at the *Robert Bosch Academy* in Berlin in summer 2019. She already pursued research at this Academy in summer 2018 and had the opportunity to exchange ideas with experts and decision-makers.

can help public agencies and the people they serve monitor and understand AI and algorithmic decision-making systems and decide whether or not a system should be used. We also need real accountability inside tech companies that can include pre-release trials and evaluation of AI systems so we know how they work before they are released on live populations. And we need regulation of the most invasive and error-prone tools – such as facial recognition. That may also mean that there are areas in which we shouldn't use AI tools at all until they are shown to be working better – for example, in criminal justice.

Can AI then reverse inequalities in the real world or at least draw our attention to them?

Whether AI can be used to uncover discrimination in everyday life is a very exciting question for me. We need a new socio-technical field of research that deals with these societal consequences. This debate brings us back to the question: what do we want for our

society? And this is a complex issue. Image search is an example. If we do not want mainly men to appear in the search for a “doctor” and mainly women for “nurse,” then we must decide how many men and women should appear in each case. How do we represent the world fairly? These questions are currently being discussed within tech companies, but this debate must be open to the public. These are political discussions that have a great deal of influence but are currently taking place behind closed doors.

What does the future of AI hold, let's say in ten years from now?

(She laughs) I don't make any predictions in this area. It changes too quickly and too much. But more importantly, I am convinced that we spend too little time learning from history. This is much more important than asking what AI holds in store in the next few years. The way to achieve a better future with these technologies is to learn from the past.

News from our Foundation

About ageing research, integration,
the love of books, and dialog.



Judge exchange between China and Germany

Among the hosts were courts from Ravensburg to Stuttgart; on the agenda were topics such as “Amicable Dispute Resolution in Civil Proceedings” and “Insolvency System and Proceedings for Companies.” Ten judges from the Supreme People’s Court of the People’s Republic of China and the Chinese provinces of Jiangsu and Henan visited their colleagues in Baden-Württemberg, their partner state in Germany, in September 2018. The German delegation’s return visit will follow in 2019. These two trips are part of the *German-Chinese Judge Exchange* program, initiated by the Robert Bosch Stiftung and the Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation, GIZ) in 2011. The project builds on the dialog on the rule of law agreed upon by Germany and China. The dialog on the rule of law takes place at the highest political level, but judges are only marginally involved in it – the German-Chinese Judge Exchange Program aims to close this gap.



Crossing borders at the Frankfurt Book Fair

Georgia was at the center of this year’s Frankfurt Book Fair – with it, authors from the *Crossing Borders* program, a research grant of the Robert Bosch Stiftung and the Literary Colloquium in Berlin, also moved into the lime-light. One example is Nino Haratischwili, born in Tiflis, now a resident of Hamburg. Her new work “Die Katze und der General” (“The Cat and the General”) was shortlisted for the German Book Prize. Nino Haratischwili’s novel tells the story of a general forced to come to terms with the atrocities he committed during the First Chechen War. The book by Crossing Border author Angela Steidele is set in Georgia as well. In “Zeitreisen. Vier Frauen, zwei Jahrhunderte, ein Weg” (“Time Travel. Four Women, Two Centuries, One Path”), Steidele and her partner follow the trail of an unusual couple – two British women on their daring journey through the Caucasus of the 19th century. Crossing Borders filmmakers Simon Brunel and Nicolas Panetier reported on present-day eastern Europe at the Book Fair, too. They used *Crossing Borders* funding to carry out research for their documentary film “Die Rückkehr der Grenzen” (“The Return of Borders”). To make sure books by Georgian authors would be available to read in German in time for the 2018 Frankfurt Book Fair, the Robert Bosch Stiftung funded a German-Georgian translator workshop as early as 2016.



Algorithms for advanced age

“We don’t know whether rollators improve mobility or make things worse, because they themselves cause falls,” says Cornelius Bollheimer, Professor of Geriatrics at the University Hospital Aachen. This is one example of why geriatric medicine needs more research. So far, there is hardly any meaningful data; many tests for mobility and body balance in older people are not standardized. The assessment therefore often depends too much on the perception of the doctor, says Bollheimer. He wants to gain important insights for geriatrics in a new Mobility Lab at the Franziskushospital in Aachen with a team of doctors, physical therapists, technicians and engineers. The laboratory is a component of his interdisciplinary research funded by the Robert Bosch Stiftung – in addition to Bollheimer’s chair, the Foundation also supports the creation of departments of geriatric medicine in Heidelberg and Göttingen.

Rural areas as a home for immigrants

People form a bond with a place when they’re involved in their local community. This is the thought behind the *Land. Zuhause. Zukunft* (“Country.Home.Future”) program by the Robert Bosch Stiftung. It promotes innovative approaches for the integration and inclusion of immigrants in rural areas and supports six select rural districts. During the pilot phase until mid-2019, they will work on a wide variety of concepts: the district of Prignitz is developing a model to inform newcomers about local associations and encourage them to get involved. Another example is Ludwigslust-Parchim, the second-largest district in Germany in terms of area. There, a new integration and inclusion concept has been deliberately designed to be decentralized, i.e., it relies on the individual cities and municipalities. Other supported districts are Coburg, Goslar, Harz, and the Vogtlandkreis. Knowledge exchange at regular networking meetings is also part of *Land. Zuhause. Zukunft*.

Libraries as new hotspots

You may think that libraries only attract older people, and that thick, dusty books line their long rows of shelves. But a new study commissioned by the expert panel of the *Rat für Kulturelle Bildung* (Council for Cultural Education) proves the opposite for anyone who has that image in mind. Under the title “Libraries/Digitalization/Cultural Education. Horizon 2018,” authors show that the 7,400 libraries in Germany are predominantly creative in their use of digital change, and have become places where people enjoy experimenting with new formats. About 72 million pieces of virtual media have now been added to the stock of 90 million pieces of physical media. Libraries organize tablet rallies, gaming events, and workshops with VR glasses or 3D printers. Their rooms are also changing: there are reading lounges, maker spaces, and learning locations with PCs. 75 percent of the 1,900 public library managers surveyed said that digital offerings could better appeal to young audiences. “The study documents that libraries, with their attractive analog and digital offerings for artistic education, are a shining example of handling digitalization in a sensible way,” says Dr. Eckart Liebau, Chairman of the *Council for Cultural Education*. According to the study, a significant majority of libraries sees special potential in school partnerships and collaboration with daycare centers. “The interplay of digital media and books has been tried and tested in libraries for many years, especially when it comes to promoting reading. Schools and daycare centers could benefit from these experiences even more,” says Dr. Florian Höllerer, member of the *Council for Cultural Education* and Head of the Literary Colloquium in Berlin. The committee of experts calls on politicians to provide more conceptual and financial support for libraries, especially in rural areas, as well as a transnational library development plan. The *Council for Cultural Education* is an initiative of the Bertelsmann Stiftung, the Deutsche Bank Stiftung, the Karl Schlecht Stiftung, PwC Stiftung, Robert Bosch Stiftung, Stiftung Mercator and the Stiftung Nantesbuch. The study on the digital transformation in libraries was the result of cooperation with the German Library Association.



In the House of Seven Palms

Educational sociologist Jutta Allmendinger is a Fellow at the Thomas Mann House in Los Angeles, which is becoming a new place of exchange and dialog.

Enjoys her work: Jutta Allmendinger at her desk in Los Angeles.

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he first thing that struck her were the tarpaulins on the beach. In the early mornings, people would emerge from underneath them, homeless men and women. They washed themselves and put on decent clothes. Jutta Allmendinger, who was in California in June with a delegation of the German Federal President for the opening of the Thomas Mann House, took heart: “What do you all have planned for today?” The answer: “We are getting ready for work.”

The President of the WZB Berlin Social Science Center is on the phone in Los Angeles, explaining, “It doesn’t fit our image of homeless people. They’re dismissed as lazy and addicted to drugs, as if they themselves were to blame for their situation. We’re not thinking of homeless people who work.” This gap will be the theme of her four months as a Fellow at the Thomas Mann House. The fellowship program, which is jointly funded by Germany’s Federal Foreign Office, the Federal Commissioner for Culture and the Media, the



Berthold Leibinger Stiftung, the Alfried Krupp von Bohlen und Halbach Stiftung, and the Robert Bosch Stiftung, gives thinkers and artists the opportunity for international exchange.

Allmendinger, 62, is a professor of educational sociology and labor market research. With her work she has made a major contribution to the

recognition of poverty as a societal problem in Germany. She coined the term “Bildungsarmut” (“educational poverty”), which then gained currency in academic discussions.

Allmendinger was one of the first fellows to move into the house. Thomas Mann had it built in 1942 during his Californian exile. It became a place of exchange for

scientists, artists and intellectuals. The German Federal Foreign Office acquired it with the aim of reviving the venue for transatlantic debates. For Mann, it was once a “place where intellect triumphed over barbarity.” For Allmendinger, it’s a gift. From her desk, she looks out at giant palm trees – the reason why Mann also called the place the “House of Seven Palms.” His spirit is present: the study with the wood-paneled library is on the downstairs floor, as it used to be. Allmendinger and the other fellows – actor Burghart Klaußner, literary scholar Heinrich Detering and engineer Yiannos Manoli – share the remaining 400 square meters. Allmendinger gave several dinners and lectures in the first weeks for members of the nearby universities, representatives of non-governmental organizations such as Volunteers of America, but also neighbors, who greet the sociologist over the fence like an old friend – not something she takes for granted, as trust was lacking in the beginning. The Jewish families in the Pacific Palisades neighborhood took a skeptical view of the German project. American Nazi sympathizers built an estate up in the canyon towards the end of World War II. The news of right-wing marches like the one in Chemnitz have also caused concern. Communication thus became a second major subject of her stay. Whether with the academic from UCLA or the craftsman who renovates the house. In a country marked by much greater social inequality than Germany, people speak across social classes more often. When Allmendinger tells her guests about meeting the people on the beach, it becomes clear: even for Americans with high incomes, the topic of homelessness is much closer than it is in Germany – “It’s only a paycheck away.” They say that they only need to get fired, then they can’t pay rent, and then they’re out on the street. The social researcher wants to use the book she’s currently writing to establish yet another term: that of “Wohnungsarmut” (“housing poverty”).

Relaxed: Taking a walk with a neighbor.



Ten Questions by Claudia Hach:



Claudia Hach works as a teacher at the Meusebach-Grundschule Geltow, an elementary school in Schwielowsee, Germany.

Initiator

Claudia Hach, 50, teaches English and mathematics. She is co-principal of the Meusebach-Grundschule Geltow, an elementary school that was named among the best 15 schools in the 2015 *German School Award*. As head of a steering group at her school, she was able to develop and establish new, innovative ideas. She also looks after a Syrian colleague who was integrated into the teaching staff of the University of Potsdam as part of the Refugee Teachers Program.

How do you keep up your work capacity?

How important is empathy?

What expectations do you have for digitalization?

What is your favorite place at a school?

How successful is individual learning?

Do you feel let down?

Have you ever bypassed a rule to speed things up?

What was the most inspiring thing you've seen in a child?

How important is the development of resilience?

How do you create happy moments?

