EXPLORING THE UNKNOWN

Schools in the age of artificial intelligence and ChatGPT

Vodafone Stiftung Deutschland

Inhalt

A real game changer – and it's worth it!

Matthias Graf von Kielmansegg

Artificial intelligence (AI) is a current buzzword that has media professionals, scientists, the business community and politicians locked in a round-the-clock discussion across all available channels about how AI will change our lives in the future. The debate heated up in November 2022 when OpenAI launched ChatGPT, making an artificial intelligence tool easily accessible to the general public for personal experimentation. Now the discourse around AI is no longer restricted to academic and business environments. It has arrived in mainstream society, where people aren't just discussing AI, they're also engaging in discussion *with* AI.

For example, if you ask ChatGPT about the impacts of artificial intelligence on learning and teaching practices in German schools, it responds by mentioning the potentially positive effects of "customised" lessons that are geared more to pupils' individual needs, or "the use of effective interactive teaching materials". ChatGPT also says that "AI-supported chatbots can help students to answer questions and assist teachers with the management of assignments and tests". On the other hand, ChatGPT expresses concerns about data security and ethics. So it is clear that AI is not yet ready to take away the processes of appraisal, evaluation and decision-making from us just yet.

On a longer-term timeline, artificial intelligence undoubtedly has immense potential to influence and change schools in Germany in many ways. Taking a "wait and see" approach in case AI is just a new education fad that will fade into the background again is probably the most ill-advised course of action possible. But are education policymakers evaluating the opportunities and risks of AI in a systematic, sustainable and practical way? There is little evidence of this.

It remains to be seen whether journalists, accountants, lawyers and graphic designers will be replaced by AI in the future. One thing that many of these discussions about AI have in common is that they fail to recognise that the foundations for the professions of the future are already in place: and first encounters with artificial intelligence applications are already happening in classrooms. Vodafone Germany Foundation decided to take this as a starting point to gain deeper insights into popular sentiment on AI and ChatGPT in schools.

We didn't just want to single out the current impacts of artificial intelligence in education, but also aimed to consider what effects AI might have on future teaching and learning practices. We were particularly interested to hear the opinions of parents with children at primary or secondary school.

Our aim with this survey is to make a contribution to the current debate. We believe it has produced an exciting snapshot of the admittedly complex issues surrounding artificial intelligence and a series of interesting answers to the questions of whether teachers have a future, what skills schoolchildren will have to focus more on learning in the future as a result of the AI revolution and what role parents play in this connection. We're making it our mission to continue to track developments in opinion as experience with AI in schools unfolds.

I hope you will find our survey findings both interesting and instructive.

Sincerely,
Matthias Graf von Kielmansegg

Summary of survey results

54 % — The majority **(54 percent)** of respondents expect that AI will significantly change teaching in schools. The higher the respondents' level of education, the more they agree with this idea.

57 % — **57 percent** associate AI in schools with more of a risk than an opportunity and believe use of AI should be limited to administration and assistance tasks.

10 % — Only **10 percent** of Germans assume that AI will replace teachers at some point in the future because they also do not expect AI to be capable of conducting classes better than human teachers.

The parents are primarily concerned that the use of AI in schools could have a negative impact on the children's **creativity** and **learning skills**. They are less concerned about privacy. Parents of primary school children, in particular, are worried about the unclear origin of the information.

55 % — Respondents take the view that AI-based applications will increasingly pervade everyday life at school. **55 percent** of Germans and 66 percent of parents with primary school children want lessons on the use of AI applications to be included in the curriculum.

77 % — **77 percent** of Germans think that teachers have the responsibility to equip schoolchildren with the skills they need to use AI in a good and reflective way. The percentage that believes this is the parents' responsibility is lower (52 percent).

2/3 — Although the federal states are responsible for education policy in Germany, **two-thirds** of the respondents believe that the central government should regulate the use of AI in schools (federal states: **14 percent** / schools: **9 percent**).

Evaluation of survey results

The impacts of AI in schools

More than half of Germans (54 percent) already assume that AI will significantly change school teaching practices. Only around one-third (34 percent) believe otherwise (→ **Fig.1**).

Fig. 1:
AI-related changes in schools in coming years

Do you believe that artificial intelligence will change teaching practices in schools in the coming years?

|	Yes, definitely	Probably	Probably not	Definitely not	Don't know
Total	22	32	17	17	12
Parents with children in primary school	30	17	7	33	13
Parents with children in secondary school	24	19	23	21	13
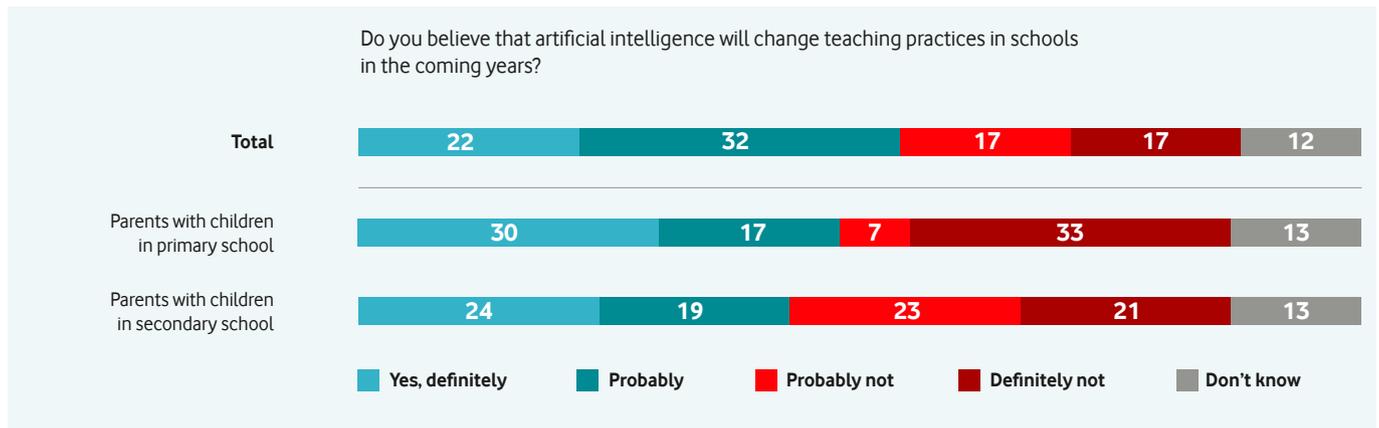
Figures in % | Base: German-wide population aged 18+ | n = 5,001

Regional differences are evident between the former East and West German states. Whereas 58 percent of respondents in the former West German states expect significant changes to education as a result of AI, the figure is lower in the former East German states at 48 percent, though it still represents the prevailing opinion. Agreement that AI will change teaching practices also increases significantly with the level of school education of the respondents. Only 45 percent of respondents with a lower secondary school leaving certificate or no certificate believe that AI will result in significant changes to education processes as compared to 58 percent of respondents with a university entrance qualification.

There is also a lack of consensus as regards when AI will change school education. Only 13 percent expect any changes to happen in the next two years, around one out of four expect them in 3 to 5 years (25 percent) or later (28 percent). One out of five (19 percent) do not expect any changes in school lessons, and 15 percent said they weren't able to gauge the effects of AI at this time. However, parents of primary school children represent a particularly large portion of respondents who do not assume that any changes will happen in the foreseeable future (41 percent).

Very few respondents (16 percent) stated that lessons at German schools have already changed as a result of AI in the last twelve months. Four out of ten were unable to give a verdict. The majority of parents of school-age children also answered the question in the negative. It is notable that almost one-quarter of parents with children at a secondary school were not able to judge whether changes will take place or not (→ **Fig. 2**).

The majority of Germans (57 percent), irrespective of whether they considered the introduction of AI in schools to be probable or not, believe that the use of AI in schools poses a risk. Only one-third (35 percent) believe that AI in schools is an opportunity (→ **Fig. 3**).

Fig. 2:
Changes at schools as a result of AI in the last twelve months
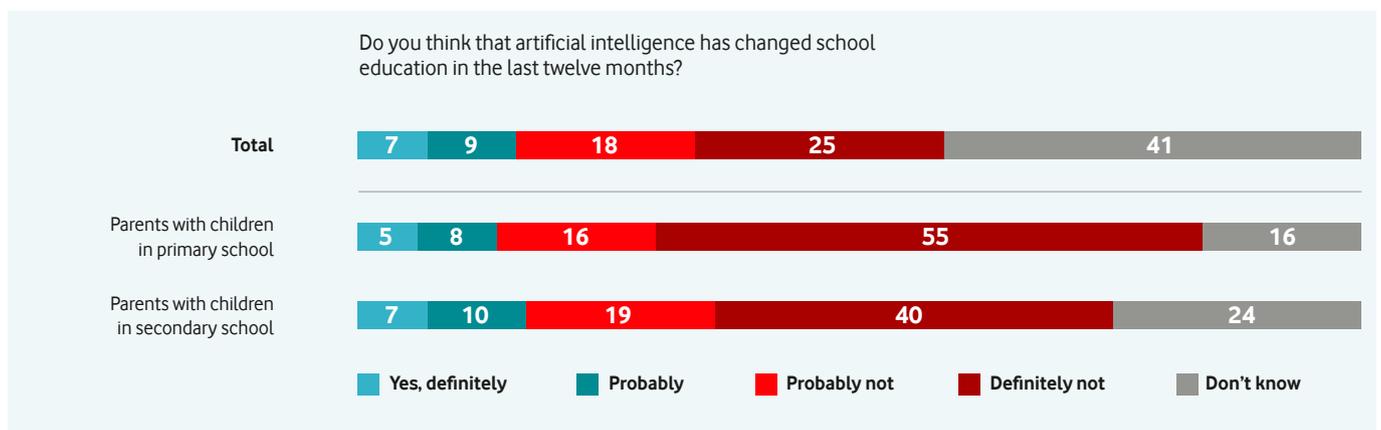
Figures in %; data collected on: 25.3.2023 | Base: German-wide population aged 18+ | n = 5,022

Fig. 3:
AI in schools – risk or opportunity?
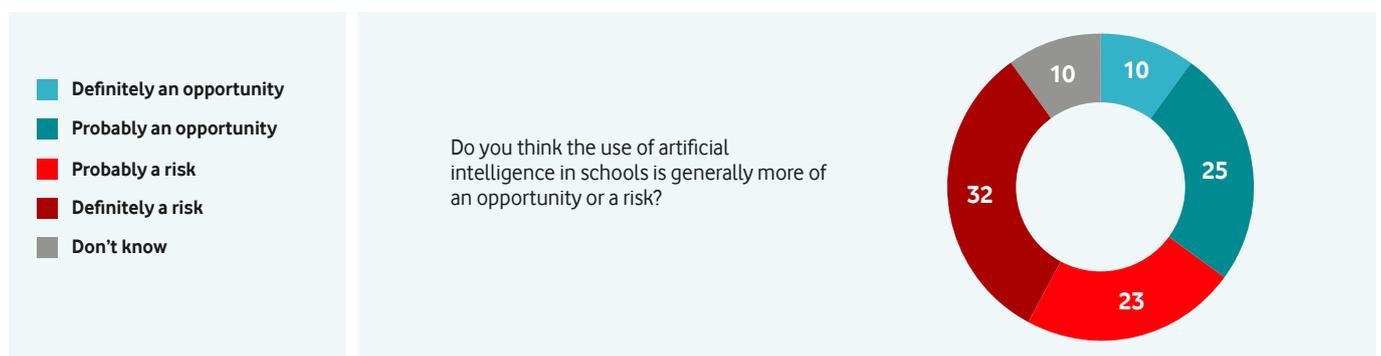
Figures in %; data collected on: 25.3.2023 | Base: German-wide population aged 18+ | n = 5,019

More than 60 percent of parents with school-age children are of the opinion that AI in schools represents (more of) a risk. Only 14 percent of parents of primary school children and 11 percent of parents with secondary school children believe that AI in schools definitely represents an opportunity.

Attitudes to the potential impacts of AI in schools

The vast majority of Germans (79 percent) do not believe that AI is capable of giving better classes than human teachers. Still, one out of eight believes that it might be (→ **Fig. 4a**). In fact, as many as 24 percent of parents with primary school children see opportunities associated with AI in school.

The sentiment in response to the question of whether AI will one day replace human teachers was very clear: 85 percent of respondents think not, and only one out of ten thinks it might (→ **Fig. 4b**). Nine out of ten parents of school-age children do not expect human teachers to be replaced by AI.

Fig. 4a:
Statements on the impacts of AI in schools
Better lessons

To what extent do you agree with the statement:

"Artificial intelligence might, under some circumstances, provide better school lessons than human teachers"?

Strongly agree
Agree
Disagree
Strongly disagree
Don't know
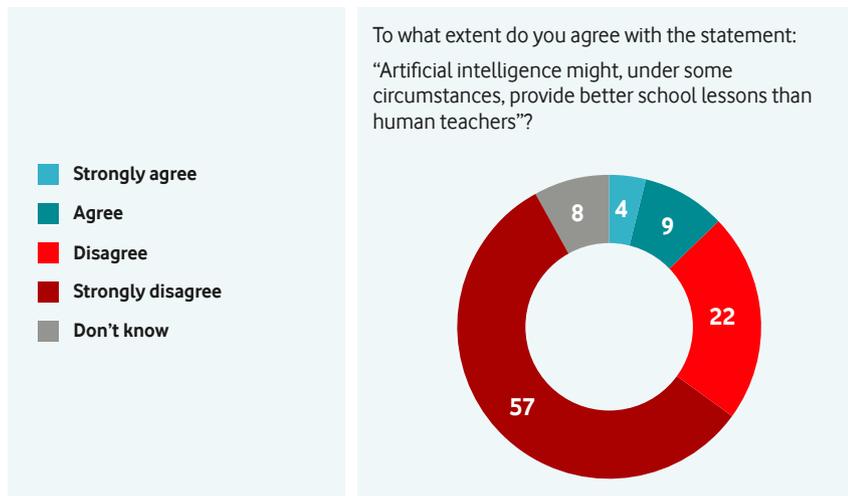
Figures in %
Base: German-wide population aged 18+ | n = 5,019

Fig. 4b:
Statements on the impacts of AI in schools
Replacement of teachers

To what extent do you agree with the statement:

"Teachers will be replaced by some form of artificial intelligence at some point in the future"?
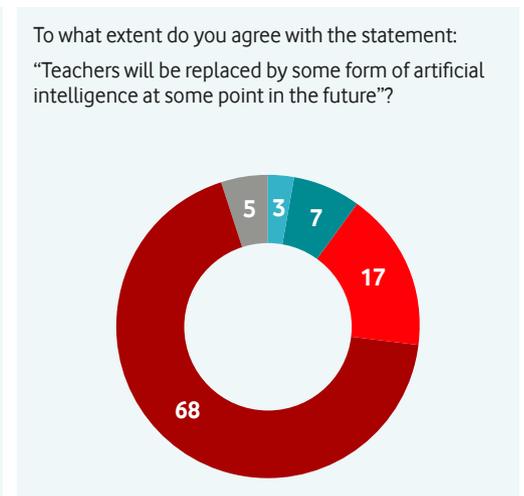
Figures in %
Base: German-wide population aged 18+ | n = 5,001

Only one out of five expects a positive effect from AI on the children's learning behaviour and two-thirds do not expect any positive effects (→ **Fig. 5a**). Even though an above-average number of parents with primary school children (25 percent) assume there will be positive effects, in general, parents are concerned about children's learning behaviour deteriorating if AI is used in schools.

Respondents were more critical about the impact of AI in schools on the children's general judgement (70 percent). Only 17 percent expect their judgement will improve (→ **Fig. 5b**).

Fig. 5a:
Statements on the impacts of AI in schools
Learning behaviour

Do you believe that the use of artificial intelligence in schools will have a positive or negative effect on the children's learning behaviour?

- Definitely positive
- Probably positive
- Probably negative
- Definitely negative
- Don't know

4
16
22
43
15

Figures in %
Base: German-wide population aged 18+ | n = 5,002
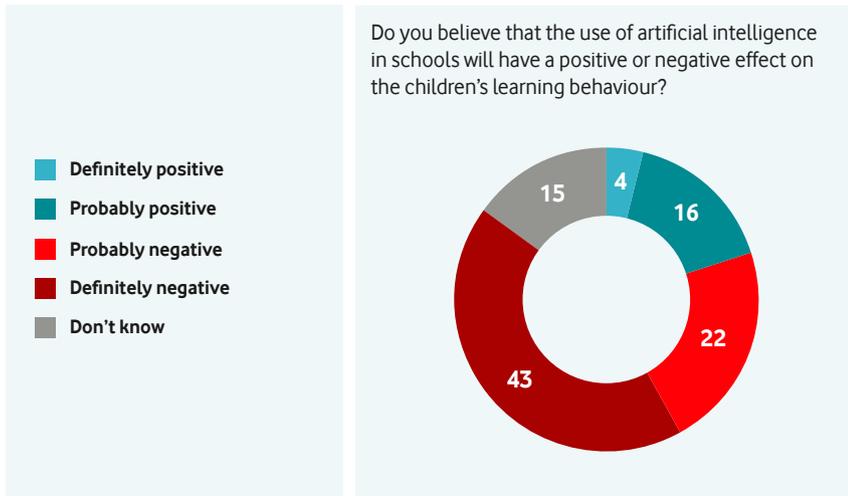
Fig. 5b:
Statements on the impacts of AI in schools
General judgement

Do you believe that the use of artificial intelligence in schools will have a positive or negative effect on the children's judgement?

13
4
13
21
49

Figures in %
Base: German-wide population aged 18+ | n = 5,002
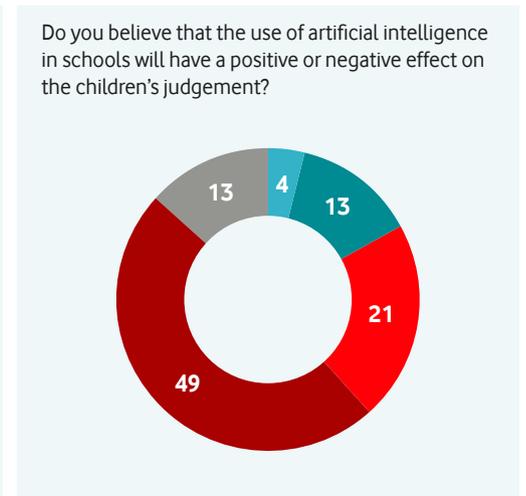
While the somewhat more positive picture tends to continue among parents with children in primary school – here 31 percent expect the influence to be more positive than negative – parents with children in secondary school are more critical than the general public: 74 percent expect AI to have a negative effect on the children's judgement.

Another issue is whether the use of AI at school is an effective way to prepare the children for their later life. Here, a clearly differentiated picture emerges among the population. While the majority (53 percent) disagree with the statement, 37 percent are of the opinion that AI could be useful. (→ **Fig. 6**). Approval is less strong in more the rural regions of Germany.

Fig. 6:
Use of AI in schools to prepare children for adult life

Total
10
15
34
22
19

- Yes, definitely
- Probably
- Probably not
- Definitely not
- Don't know

In your opinion, would the use of artificial intelligence in schools be a sensible preparation for later life?

Parents with children in primary school
27 | 13 | 8 | 45 | 7

Parents with children in secondary school
13 | 23 | 16 | 43 | 5

Population

Very low
8 | 17 | 19 | 46 | 10

Figures in % | Base: German-wide population aged 18+ | n = 5,002
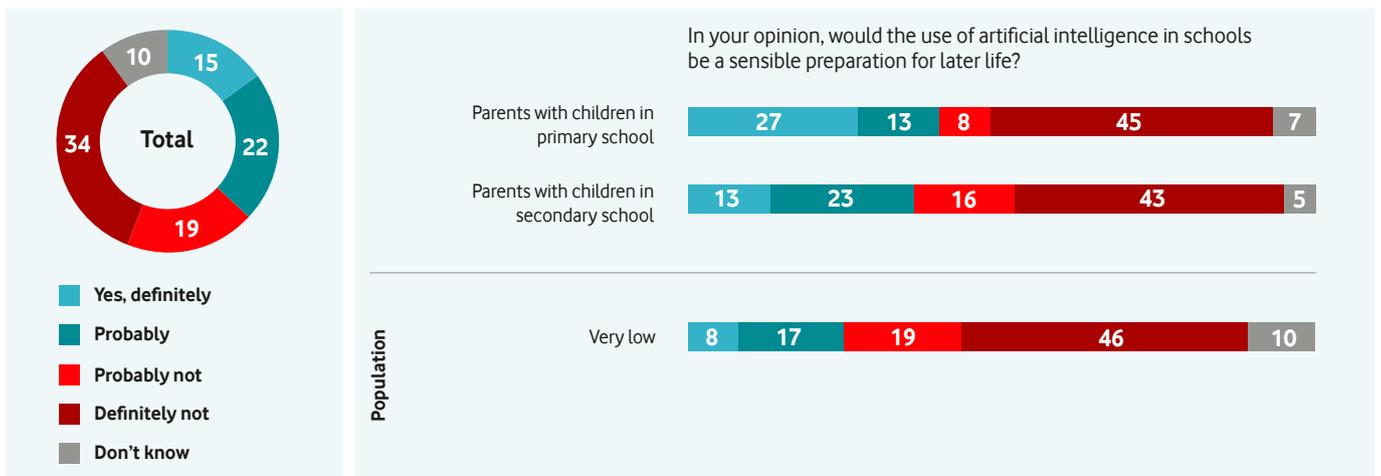
Possible applications for AI in schools

Beyond far-reaching impacts such as the replacement of human teachers, the respondents see some quite significant potential applications for AI in the school environment. These primarily relate to teacher assistance, such as the assumption of administrative tasks (39 percent) or the checking of schoolwork (28 percent), as well as the provision of support to the children (→ **Fig. 7**).

**Fig. 7:**
Possible applications for AI in schools

For which of these purposes do you think artificial intelligence could most likely be used in schools?

Administrative tasks	39
Explaining things that are unclear	28
Checking academic performance (e.g. schoolwork)	28
Assistance with homework / exercises	26
Automated syllabus	17
Supporting the self-organisation of pupils	17
Help with finding topics	15
Substitute for teachers	6
None of the above / Don't know	28
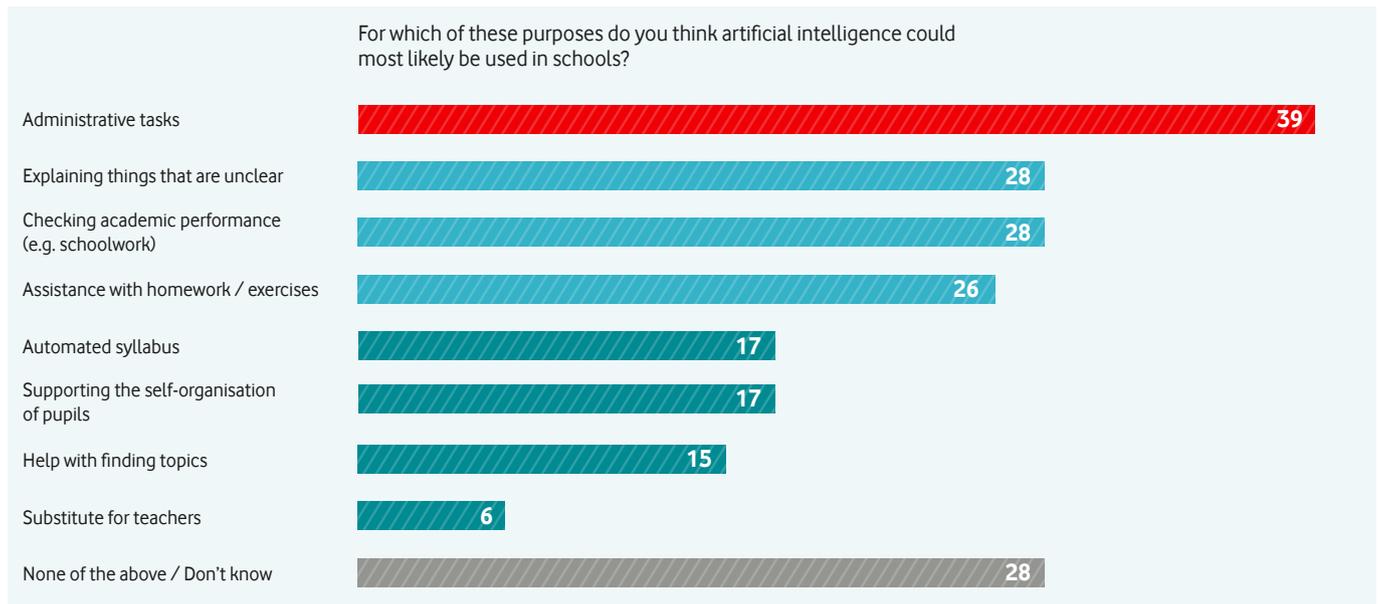
Figures in % | Base: German-wide population aged 18+ | n = 5,001

The significance of ChatGPT in the school environment

10 percent of parents with children in secondary school stated that their children currently use ChatGPT, whereby almost as many parents (8 percent) didn't know whether their children currently used ChatGPT or not. ChatGPT is obviously not yet in widespread use among primary school children (2 percent) (→ **Fig. 8**).

Fig. 8:
Use of ChatGPT when learning

Does your child/ do your children use the ChatGPT AI app when learning (e.g. for homework)?

|	Yes	No	Don't know
Total	9	82	9
Parents with children in primary school	2	93	5
Parents with children in secondary school	10	82	8
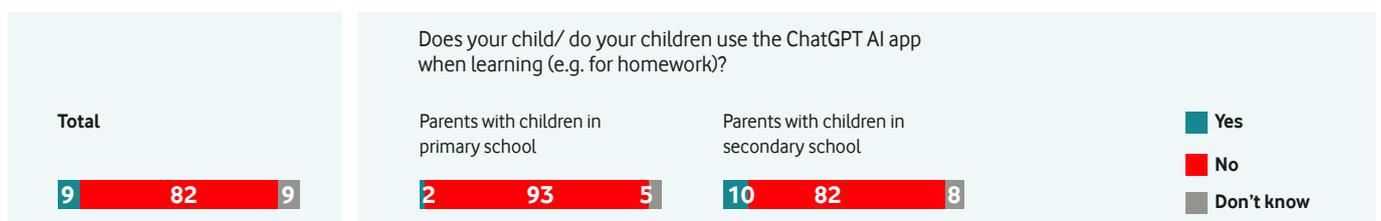
Figures in % | Base: Parents of children up to the age of 18 | n = 1,501

One out of five respondents believes that ChatGPT will render homework in the traditional sense redundant since it will no longer fulfil its educational purpose. However, the vast majority (70 percent) do not think this has happened yet. Here, too, parents of primary school children are clearly divided. Whereas almost one-third (32 percent) tended to agree, two-thirds definitely disagreed (→ **Fig. 9**).

Fig. 9:
Does ChatGPT render traditional homework redundant?

Does the artificial intelligence app ChatGPT, which can provide human-like answers to questions, eliminate the need for traditional school homework?

	Yes, definitely	Probably	Probably not	Definitely not	Don't know
Total	8	12	12	58	10
Parents with children in primary school	11	21	1	66	1
Parents with children in secondary school	10	12	12	56	10
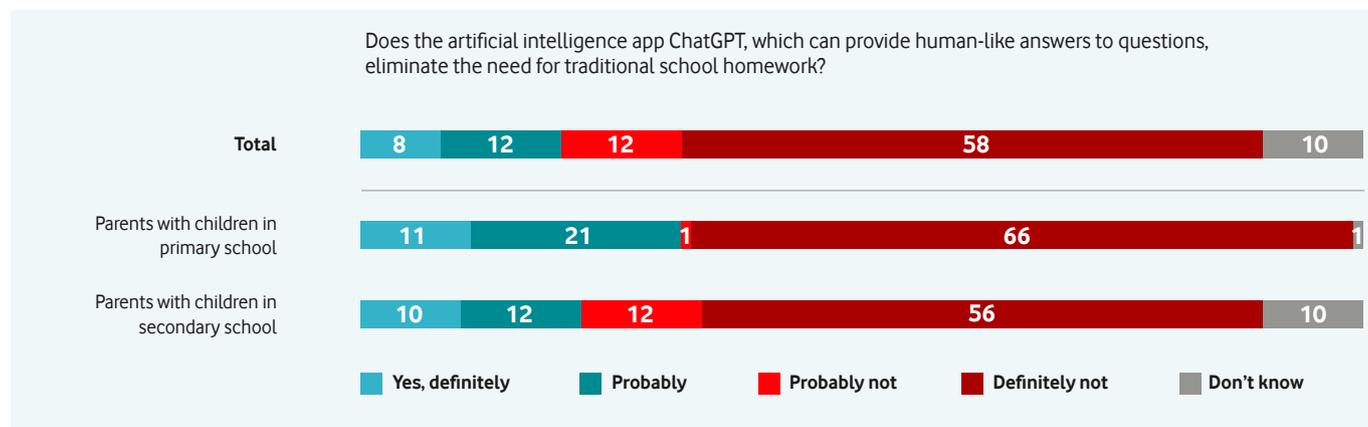
Figures in % | Base: German-wide population aged 18+ | n = 5,002

It seems reasonable to assume that this is related to the lower average age of primary school children's parents, since their biographies are shaped to a greater extent by digitalisation and they adopt more focused positions on the relevant issues.

When asked whether ChatGPT should be used in schools the general population proved to be more receptive to the idea than the parents of school-age children. 39 percent of Germans were in favour compared to only 23 percent of primary school parents and 33 percent of secondary school parents, whereby the majority of those in favour believe that a suitable framework should be in place. In all groups the majority of respondents rejected the idea of using ChatGPT in schools (53 percent of the general population), and parents with school-age children tended to be more sceptical (→ **Fig. 10**).

A wide spectrum of concerns about the possible use of ChatGPT in classrooms were expressed. The most pressing concern for members of the general population was loss of creativity (53 percent), whereby parents of primary school children were also concerned about a negative impact on their children's development. What is striking here is the strong concern about the origin of the information provided by ChatGPT (58 percent). The issue of privacy was less significant than the other concerns **(→ Fig. 11)**.

**Fig. 10:**
Use of ChatGPT in schools?

In your opinion, should ChatGPT, an AI app that can provide human-like answers to questions, be used in schools?

Total	5 / 32 / 53 / 10
Parents with children in primary school	7 / 16 / 72 / 5
Parents with children in secondary school	9 / 24 / 58 / 9

■ **Yes, under all circumstances**　■ **Yes, under certain circumstances**　■ **No**　■ **Don't know**
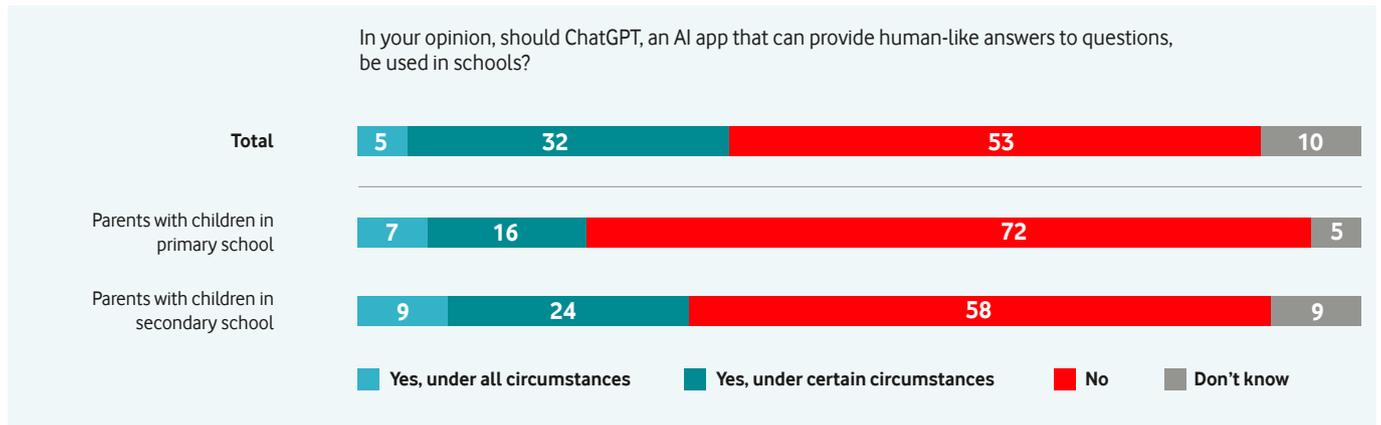
Figures in %; data collected on: 25.3.2023 | Base: German-wide population aged 18+ | n = 5,028

Fig. 11:
Potential negative impacts of the use of ChatGPT in schools

Which of these potential impacts is the most persuasive argument against using ChatGPT, an AI app that can provide human-like answers to questions, in classrooms?

Legend:
- ■ Decrease in creativity
- ■ Loss of independent learning skills
- ■ Development of dependency on ChatGPT
- ■ Unclear origins of the information provided by ChatGPT
- ■ Reduction of social interaction
- ■ Not enough privacy
- ■ Additional screen time
- ■ None of the above / don't know

Total: 53, 43, 38, 38, 32, 10, 8, 16

Parents with children in primary school: 52, 46, 49, 58, 35, 1, 11, 6

Parents with children in secondary school: 54, 39, 31, 39, 36, 14, 8, 19

Figures in % | Base: German-wide population aged 18+ | n = 5,001

The use and regulation of AI in schools

The general population believes that the issue of "AI in schools" should be in the hands of the central government, even though the federal states have responsibility for education policy. Two-thirds of the general population and almost three-quarters of parents with primary school children share that view. Only one out of seven thinks it is a matter for the federal states to decide, and less than 10 percent believe schools should be responsible (→ **Fig. 12**).

The task of acquiring sufficient digital competence to be adequately prepared for the use of AI in the school environment is primarily accorded to teachers. However, one out of two respondents with primary school children also thinks that they, as parents, share that responsibility. The group of parents with children in secondary school think that parents and children are roughly equally responsible for acquiring digital competence (→ **Fig. 13**).

Fig. 12:
Responsibility for the regulation of AI in schools

In your opinion, who should regulate
artificial intelligence applications in schools?

	Central government for Germany as a whole	Each federal state for their own schools	Each of the schools individually	Other	Don't know
Total	65	14	9	3	9
Parents with children in primary school	73	13	10	1	3
Parents with children in secondary school	56	13	12	2	17
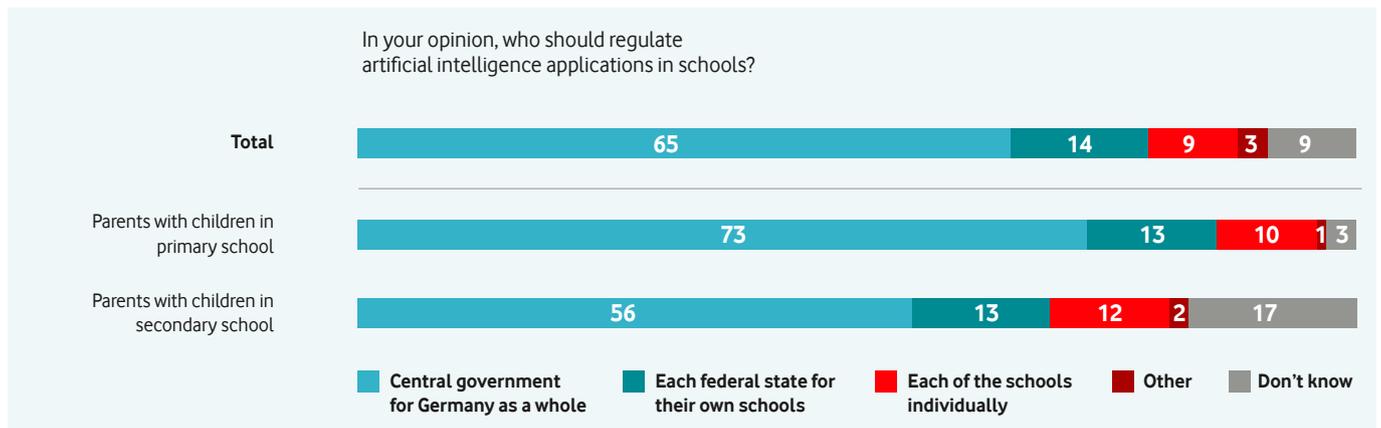
Figures in % | Base: German-wide population aged 18+ | n = 5,000

Fig. 13:
Improvement of children's digital competence by …

In your opinion, who should be improving their digital competence to prepare
for the use of artificial intelligence in the education system?

Legend:
- Teachers
- Schoolchildren
- Parents
- Other
- Nobody / don't know

	Teachers	Schoolchildren	Parents	Other	Nobody / don't know
Total	77	42	52	7	17
Parents with children in primary school	70	32	55	12	20
Parents with children in secondary school	74	44	42	10	17
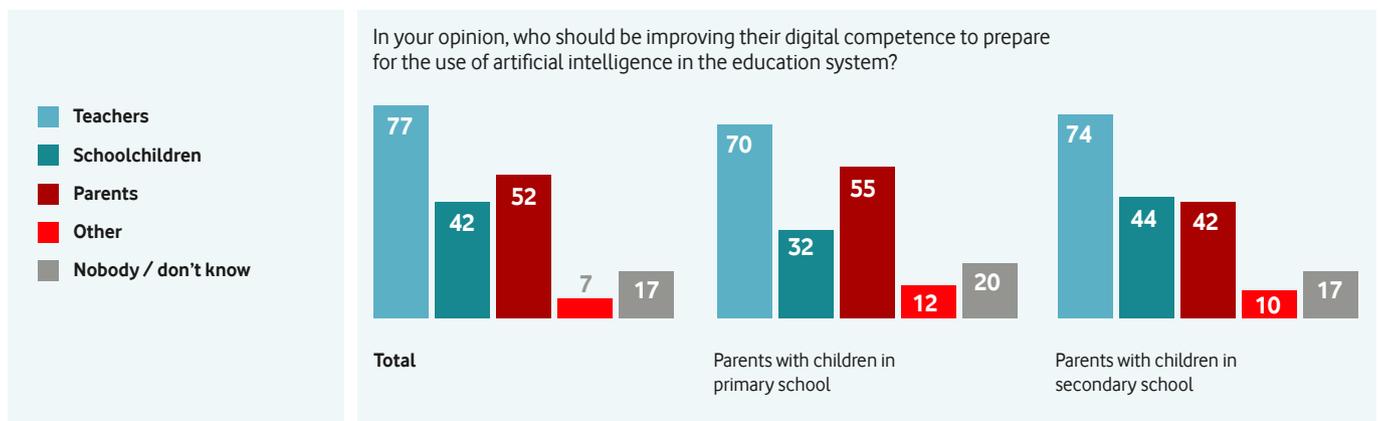
Figures in % | Base: German-wide population aged 18+ | n = 5,002

Children's skills to be prioritised in the case of AI being used in schools, according to the majority of respondents, are critical thinking and the ability to evaluate sources. Here, too, privacy is a less significant issue. It is interesting that the promotion of creativity – considering that loss of creativity was a major concern in connection with the use of AI – is not a focus here (→ **Fig. 14**).

Just over half of respondents (55 percent) are in favour of including education on the use of AI apps in the curriculum. This idea was particularly supported by parents of primary school children, and almost half of the people in this group believe it is essential (48 percent).

However, another significant portion of the population (23 percent) fundamentally rejects the inclusion of AI in the curriculum. An even higher number of parents of school-age children rejected the idea (around 30 percent), which is probably due to the fact that an additional subject would increase the children's already considerable workload at school (→ **Fig. 15**).

Fig. 14:
Skills to be taught

Figures in % | Base: German-wide population aged 18+ | n = 5,004
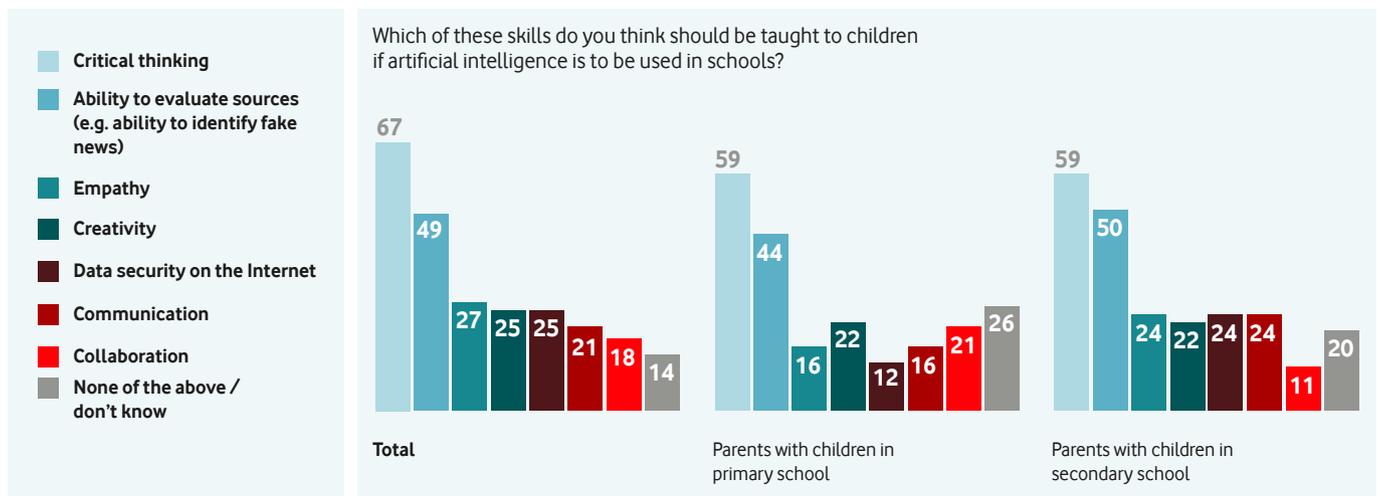
Fig. 15:
AI applications as part of the school curriculum

Figures in % | Base: German-wide population aged 18+ | n = 5,001
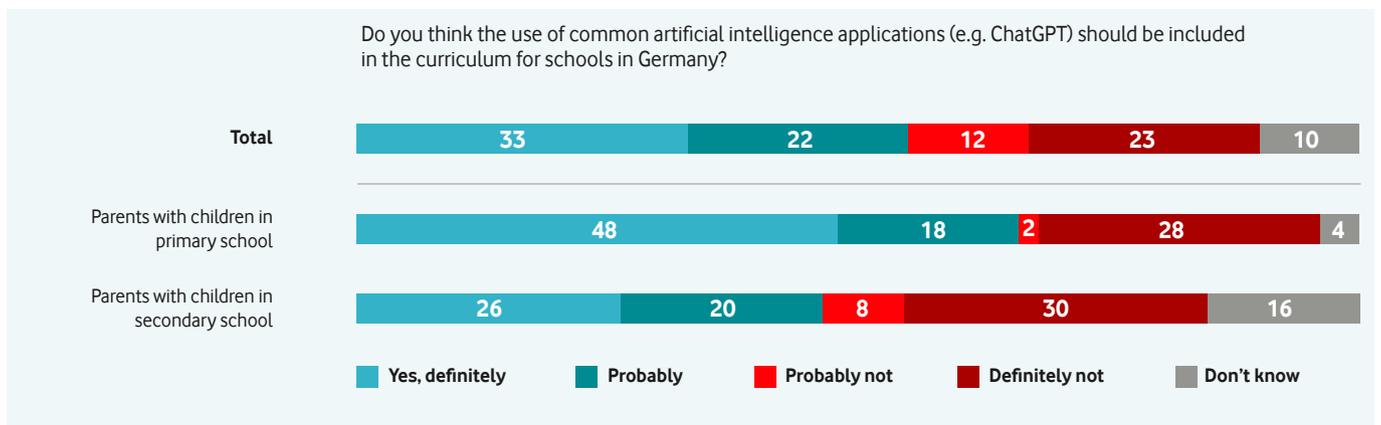
The use of artificial intelligence in schools is associated with new challenges for everyone involved. AI applications can lead to significant performance assessment distortions unless comprehensible rules and processes exist, particularly in connection with schoolwork that is not directly supervised by a teacher (homework, term papers, reports etc.).

Reflecting this, the vast majority (74 percent) of respondents believe that a redefinition of independently produced academic work is necessary (→ **Fig. 16**). Although parents – especially parents with school-age children – are more reticent (38 and 23 percent reject it respectively), the majority of this group, too, is in favour.

Fig. 16:
Is a redefinition of independent academic work necessary?

In your opinion, should independent academic work be redefined in light of the increasing use of artificial intelligence?

	Yes, definitely	Probably	Probably not	Definitely not	Don't know
Total	58	16	6	10	10
Parents with children in primary school	47	9	4	34	6
Parents with children in secondary school	53	16	6	17	8
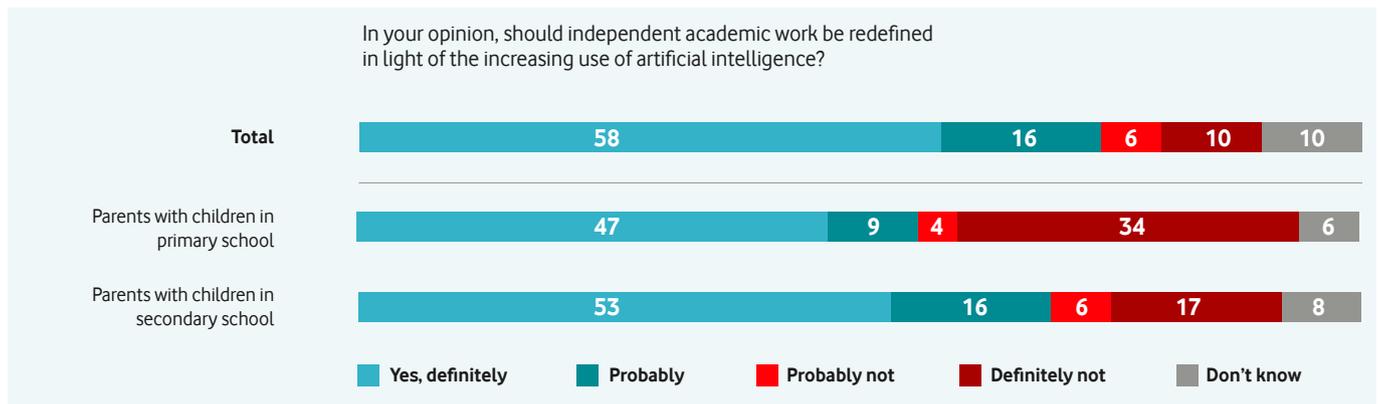
"State teacher training programmes lack the resources to cope alone."

Heinz-Peter Meidinger is President of the German Teachers' Association (Deutscher Lehrerverband). In an interview with the Vodafone Germany Foundation, the "most famous lobbyist for the teaching profession in Germany" (SPIEGEL) talks about the key to successful education processes, warns against excessive expectations of AI and demands a significant budget for schools so they can pay for third-party training programmes.

Vodafone Germany Foundation:
Mr Meidinger, you have decades of experience as a teacher and, for almost 20 years now, you have headed various umbrella associations in the education sector. You have experienced and driven numerous innovations and changes in the German education system. To what extent will artificial intelligence change teaching and learning practices?

Heinz-Peter Meidinger: We're still at the very beginning of the AI journey, so it's impossible to foresee its impacts or dynamics. AI will certainly change teaching practices and schools – both the lessons themselves and the children's learning strategies. I sincerely hope teachers will have access to additional support when it comes to individual tutoring, or providing assignments that take different levels of proficiency into account, or assignments that respect different levels of prior knowledge. It is also impossible to say at this time how useful AI will be in the assessment and correction of assignments and exam papers.

VGF: The vast majority or 85 percent of respondents in our current survey believe that teachers will continue to be indispensable in the future, despite the rapidly increasing significance of artificial intelligence. Does that make you feel relieved? And do you think human teachers will be working with "AI teacher bots" in the future?

Heinz-Peter Meidinger: I think this majority opinion is absolutely correct and understandable. The "human factor", the personal relationship between teachers and pupils, always has been and always will be the key to successful education processes. No one is more effective at motivating children to engage with a subject than a teacher who is enthusiastic about their vocation and the subjects they teach. Learning success also depends on whether children and young people feel valued as individuals, not just in their role as pupils, but also as human beings with individual hopes and expectations, problems and frustrations.

AI can provide teachers with additional methods, support and diagnostic tools in the future. However, the teacher must remain responsible for lesson design.

VGF: You recently emphasised that children will still have to understand the subjects they are learning at school in the future. AI apps such as ChatGPT can't give the children that understanding, but they can help them to achieve it. How do you think this will affect the children's academic performance?

Heinz-Peter Meidinger: If they are integrated into lessons in a targeted way, AI apps like ChatGPT can initiate, structure and personalise learning processes. However, we have to be aware of the limitations of AI and be capable of scrutinising and assessing its results. People who believe that AI can speed up thinking and understanding processes are wrong. AI is not a replacement for learning, which is essential to grasping a subject, and to understanding an assignment and its result. Educational researcher E. Weinert once described education as an intelligently networked knowledge base that provides orientation and gives people the skills to tackle new tasks. AI can support the education process and the development of an intelligently networked knowledge base, but it can never replace it.

VGF: A large majority or 76 percent of respondents believe teachers should have more digital skills. A similar number of them believe that the use of artificial intelligence should be a part of the teacher training process. Can state teacher training programmes cater to this and what role do stakeholders such as foundations, the private sector and companies play?

Heinz-Peter Meidinger: Developments in AI are so fast paced that teacher training programmes will automatically lag behind.

This makes it all the more important to have an adequate number of teacher training opportunities supporting the digital transformation of schools. I'm mainly thinking about how digital media and AI can be used in a targeted and beneficial way in specific lessons.

State-funded providers of courses for teaching professionals do not have the resources to cover these training requirements on their own. I hope that all schools will receive a significant budget so that they can take advantage of third-party training offers for their own teachers. I'm thinking about universities, but also foundations. And I'm sure that the schools have enough specialist expertise to assess the quality of these training offers themselves. ■

"I'm optimistic on the whole"

Dr Oliver Ziehm is chairman of the North Rhine-Westphalia Grammar Schools Parents' Association (Landeselternschaft der Gymnasien in Nordrhein-Westfalen e.V.), the largest parents' association in this federal state. In an interview with the Vodafone Germany Foundation he recalls the introduction of calculators at schools, puts responsibility for AI-related issues on the shoulders of parents and explains what high and low tide have to do with ChatGPT.

Vodafone Germany Foundation (VGF):
Dr Ziehm, in your role as chairman of the North Rhine-Westphalian Grammar Schools Parents' Association, and as a father of four children, you support the digital transformation of schools. In our recent survey 57 percent of respondents expressed scepticism about the introduction of AI in schools and view it as more of a risk than an opportunity. Do recent AI developments in the education sector make you feel optimistic?

Dr Oliver Ziehm: I'm generally optimistic about the use of AI in the education sector and, for me, it's a clear opportunity. However, it will still have to be scrutinised and we will have to ensure that key skills are not lost, e.g. scientific curiosity, inquisitiveness, critical faculties, diligence. 50 years ago there was widespread outrage when pocket calculators were first introduced in schools. People were particularly concerned that children would lose the ability to do mental arithmetic. The pocket calculator is most certainly the reason why children today have such poor mental arithmetic skills. On the other hand, they are now able to make calculations that only academics could per-

form in the past, and they are probably also able understand more complex phenomena.

When the Internet found its way into schools a decade ago there were equally justified concerns that knowledge would no longer be compiled or sources verified with the same diligence because students could simply copy texts out of Wikipedia and the like. On the other hand, the Internet provides faster access to knowledge. Before it arrived students had to spend days in libraries doing research. If the Internet is used to access knowledge faster and tap into a broader array of information and insights, it is a gain. However, if it encourages people to be lazy, e.g. to replace in-depth research with copying and pasting Wikipedia texts, it's a risk. The same can be said of AI, though the potential impacts are far more exponential than those of the Internet. ChatGPT can do homework tasks, such as the characterisation of a figure in a novel or differential calculus, in a matter of seconds. If you have fast access to knowledge you are able to learn more knowledge faster. On the other hand, it can also be tempting to cease the pursuit of knowledge.

VGF: Ghostwriting, plagiarism, fraud — around 65 percent of respondents in our study stated that they expected AI to have a negative impact on children's learning behaviour in schools. What can and should children be learning today in school?

Dr Oliver Ziehm: School curricula today should include the same things they did before the arrival of AI. In other words, children should be able to write an essay, take part in an oral debate, describe a process, perform a complex calculation or write a term paper that takes several days to complete. However, AI is associated with a new challenge: making sure that the children have actually written the texts and performed the calculations themselves. This necessitates a combination of school assignments that are performed independently and supervised performance assessments in school, e.g. oral tests or presentations.

Another "must" in conjunction with the use of AI is a critical examination of all the results it produces. ChatGPT either failed or achieved very low grades in an attempt to solve Bavarian upper secondary school leaving examination questions. Many results of ChatGPT queries can be incorrect and in some cases dangerous, and that may not immediately be evident to the user. On the other hand, it is also necessary for children to learn how to use AI productively and constructively: How should I use ChatGPT and other apps, what tools are available and how can I programme my own AI apps? AI could help to identify learning deficits in schoolchildren and help them to work on their weaknesses. Imagine AI were to analyse an essay and then help the child to overcome failings such as punctuation mistakes ("Here are some exercises on the correct use of punctuation") or an incorrectly structured characterisation ("A characterisation must be structured as follows").

VGF: ChatGPT is currently the most widely known AI app and there is some controversy about its use in schools. Italy has banned ChatGPT because of privacy concerns. What are your recommendations on ChatGPT for parents?

Dr Oliver Ziehm: I think that banning ChatGPT or AI at schools or in a federal state will be about as effective as banning high and low tide, or day and night. Having said that, Pandora's box is now open. Our children have to learn how to think critically about using this tool, be aware of the undisputed risks and know how to deal with them. We parents need to have that same knowledge. We need to bring ourselves up to speed on the subject so that we can talk about it with our children.

VGF: Our survey revealed that 52 percent of respondents support the idea of parents improving their digital skills. You know about parents' needs, hopes and concerns. What support would you like to see for parents so they are equipped to deal with AI apps such as ChatGPT?

Dr Oliver Ziehm: The introduction of AI at schools represents an incredibly disruptive leap in education – and the changes it is associated with are far more exponential than the changes associated with the calculator or the Internet – so schools should provide parents with information about the possibilities, opportunities and risks associated with AI. ■

"Artificial intelligence will improve our academic performance"

Professor Doris Weßels is a researcher and lecturer at the Kiel University of Applied Sciences, co-founder of the multi-university "Teaching and Learning Writing with Artificial Intelligence" Virtual Competence Centre and one of the country's most renowned AI experts. In an interview with Vodafone Germany Foundation, she shares practical tips on the responsible use of artificial intelligence applications for schoolchildren and teachers, explains why responsibility for IT-related issues at schools and higher education institutes falls to the management, and why ChatGPT and AI will make us smarter, not dumber.

Vodafone Germany Foundation (VGF):
Professor Weßels, you proposed several future scenarios in an article for the Forschung & Lehre magazine last December. You wrote that AI chatbots will become personal learning assistants and teachers will function as coaches. 79 percent of the people taking part in our survey think that AI will not be able to teach children more effectively than a human teacher. How does the teacher's role have to change so that real benefits can be achieved with AI in the classroom? How can prospective teachers prepare for this change?

Professor Doris Weßels: It isn't about pitting AI chatbots and human teachers against each other, but about a new form of collaboration with man and machine working constructively together and making the best possible use of the available synergies. As teachers, we have to create the framework for this new teaching and learning space. We will slip into the role of architects and designers of virtual and analogue learning spaces. In this role, we will be performing three essential teaching functions: curating content, configuring the AI learnbot for personalised learning and planning personal interactions in the learning process as community organisers.

Projects that combine teaching and learning forms with social (learning) events that sustainably support the learning process with their high experiential value will become more significant.

VGF: There are significant concerns about the effects of AI on children's independent academic performance due to plagiarism, cheating and not writing their own assignments. Do we need to redefine the term "independent academic performance"?

Professor Doris Weßels: Yes! Why do we develop analogue or digital tools? To relieve ourselves of tasks we hate doing and use the additional time we gain as a result to engage in new forms of human activity. Even before ChatGPT we delegated tasks – repetitive ones, for instance – to software tools, and we didn't hesitate to take advantage of the opportunities associated with digitalisation and automation. In the writing process, we can use ChatGPT as an AI-based writing implement for the fast and simple generation of first drafts. We then read, correct and amend those drafts. Our "independent academic performance" is at a higher level than it was when we were writing these papers without an AI partner.

VGF: ChatGPT is the most well-known AI app right now, and its use in schools is the subject of controversial debate. Italy has banned ChatGPT due to privacy concerns. What kind of a structural framework for the use of ChatGPT would you like to see in Germany?

Professor Doris Weßels: We need a way to clearly identify AI-generated content (texts, images, animations or videos) that is distributed without attribution to a human

being and without their responsibility for factual accuracy. So a labelling obligation for this form of AI-generated content is necessary. We have to be able to clearly differentiate between facts and fiction. However, the central question is: What can I believe, what is "true" and what is "false"? And this is where it gets difficult because we encounter a basic problem associated with generative AI systems like ChatGPT that are based on AI models of transformer architecture. System-inherent features are so-called hallucinations (the generation of text that is not based on the input context or the training data, but rather reflects the model's own biases or assumptions), distortions in the form of diverse training data-specific biases and alignment to human preferences. There are currently no solutions to these problems because, for system-related reasons, we cannot train these kinds of AI models to adhere to the facts. However, linking them to search engines would help.

VGF: You described ChatGPT as a "big swindler". 57 percent of respondents in our current survey are sceptical about the introduction of AI in schools and believe it is associated with more risks than opportunities. What can we do to ensure that AI enlightens us in a positive way in the future, rather than hoodwinking us?

Professor Doris Weßels: Shouldn't we really be asking ourselves why people are so easily hoodwinked in the first place? It's definitely true that we need to educate both schoolchildren and teachers so that they understand the potential and limitations of generative AI systems like ChatGPT. I recommend four things: educate, try out, accept, act.

VGF: 77 percent of respondents in our survey said that teachers should acquire the necessary skill set to use AI in an informed and responsible way. However, the majority also believe that parents should share that responsibility (52 percent). 67 percent also think that the use of AI applications should be included in the teacher training curriculum. What are your tips and advice for teachers and parents on using ChatGPT?

Professor Doris Weßels: My motto is don't be afraid, try it out. It's the only way we can form our own opinions about the app, and it improves our digital competence at the same time. I also think it's important for teachers to become "power learners" by training more, and in shorter cycles. The education sector should not be allowed to become even more detached from the technological developments that children are encountering in their everyday lives.

That is naturally associated with a lifelong learning process for us, as teachers. Our education doesn't end when we receive our degree certificate. I still think it's tragic that, even in 2023, IT has not yet been made a compulsory subject at all of our schools.

It is up to the management of the schools and universities to ensure that their teachers receive the necessary training. They need to create this framework and recognise that not only large sectors of the economy, but also organisations in many areas of the education sector are also "IT-driven organisations". Responsibility for IT must also be firmly anchored at the top management level of schools and universities because of its strategic importance. In the AI age this cannot be done "on the side". Qualified personnel with a high level of IT/ AI expertise are necessary. ∎

Survey profile

Overall responsibility for survey methods and implementation
Civey GmbH

Random sample
Civey GmbH performed an online survey involving 5,000 German citizens aged 18+ and around 500 parents of children up to the age of 18. Quotas and weightings were applied to ensure representative results, and an average statistical error rate of 2.5 to 2.6 percent for German citizens aged 18+ and 4.1 percent for parents of children up to the age of 18 was taken into account in the overall result. The survey population was 5,000 German-speaking adults aged 18 and over in private households in Germany. The sampling was done as a quota sample. The quotas were designed in such a way that the sample's essential characteristics correspond to the structure of the population.

Survey type
Online-based panel survey

Survey timeline
23 March to 25 March 2023

Imprint