

“Too good to be true”

AN EXPLORATORY STUDY ON THE FIRST APPROACH TO AI IN PRIMARY SCHOOL

Maya Götz, Andrea Holler

An IZI study involving 52 German primary school pupils investigated whether children can recognise AI-generated images and what media education tips they would give to other children for identifying such images.

Music accompanies the rhythm of steps. Children – about 6 to 12 months old, judging by their faces – stride along a catwalk in elaborate and cute animal costumes. One child carries a colourful parrot on their shoulder, another a rabbit or squirrel. Others march alongside a wild boar, large snake, wolf or even ride a tiger. The pictures are fascinating, touching, astonishing. Adults might think, “That can’t be real”, when seeing a child with a wild boar or snake. The *Cute Babies and Wild Animals Fashion Walk*, created by AI, has been widely shared on social media through pictures and videos. But what happens when primary school children encounter such AI-generated content?

According to the Trend Tracking Study 2024 (iconkids & youth, 2024, p. 161), 52% of German 6- to 9-year-olds still do not know what artificial intelligence is. Among those who do, 45% have never used it. For preteens (aged 10 to 13), awareness is considerably higher, but 68% report never using AI. For primary school children in Germany, AI is a term disconnected from in-depth learning or their own actions and personal experience. However, as they will increasingly encounter the use of AI, it is crucial for primary school pupils to develop media literacy

in this area. Examining AI-generated images could be a starting point, aligning with the media competence field of “analysing and reflecting” (as this competence area is called, for instance, in the curriculum of Bavarian primary schools; see also Herzig in this issue). This is where the explorative study by the IZI comes in, aiming to promote critical attitudes towards AI-generated images.

THE STUDY

In the study, n=52 primary school children (from 3 German 4th grade classes from an urban catchment area), divided into 6 groups, were shown 10 pictures from the *Cute Babies and Wild Animals Fashion Walk*. The groups of 7 to 11 children sat in a circle of chairs and described what they saw in the pictures and speculated on how the images were created.¹ The images (screenshots) were presented in order of increasing incredibility (Ill. 1-10), starting with more plausible scenarios such as small children with parrots, dogs and rabbits, and progressing to less believable ones featuring toddlers with a peacock, meerkat and wild boar. Block 3 showed toddlers carrying a snake, walking next to a wolf, and riding a tiger. The moderators neither guided the discussion of these 10 pictures nor confirmed or refuted the children’s assumptions.

Only after discussing the tenth image did the children learn that the images were purely AI-generated. Subsequent-

ly, they were shown 3 more images depicting impossible scenarios: a toddler with a shark, another with a mammoth, and one walking beside a dinosaur on the catwalk (Ill. 11-13). This was followed by a discussion about “artificial intelligence”, during which the children shared what they had heard or knew about AI. The children then acted in pairs as “AI detectives” and formulated tips for pupils in grade level 2 and 3 on how to identify AI-generated content. The 40-minute media education unit was rounded off by watching a video of the *Cute Babies and Wild Animals Fashion Walk* and an explanatory piece by the German children’s news programme *logo!* (KiKA/ZDF) on the topic of “AI”.

RESULTS

How do fourth graders deal with AI-generated images?

When the children report what they see in the first images, almost all of them assume that these images depict reality. They describe the scenes and suggest plausible contexts how it probably came about:

“Well, I think it’s at a fashion show, and then someone photographed the child or something.”

Some children assume that the setting is a carnival, a fashion show, a competition, a circus, or something similar. In some cases, they describe the children depicted in the images as “real” people, feeling and acting as



Screenshots: YouTube @sagbhatder5162, @fungemagicz610

Ill. 1-10: The pictures of the *Cute Babies and Wild Animals Fashion Walk* were presented to the pupils in order of increasing incredibility

humans, with certain states of mind, sensitivities, reactions or competences. For example:

“So, I think the child is sad because he is making such a mouth. Maybe because his parents aren’t there.” (Comment on image 5: Toddler with peacock)

Some pupils attributed the unusual setting to foreign cultures, interpreting the toddlers, for example, as an “Indian child”, a “Vietnamese or Chinese child” or from a “tropical area, for example in Brazil”. The fourth graders place their observations in contexts that make sense to them.

When and why do children start to doubt?

A few children begin doubting early on whether the photographs truly depict reality. The most common reason for

their scepticism is their knowledge or personal experience with the animals shown and their behaviour. For instance, they question how a wild boar could obediently follow a boy, why a snake would not coil around a toddler, or how a squirrel could stay still for so long. They also note that a tiger would likely have bitten someone, and an otter (actually a meerkat) would be too agile to be caught by anyone. Some pupils question whether the children in the pictures could have participated in the depicted situations, given their age, lack of skills, or because it could not be allowed because it is too dangerous:

“If I were the child’s mum, I wouldn’t let the child walk down the catwalk with a real snake. That’s why I don’t think it’s real.” (Comment on image 8: Toddler with a snake in her arms)

Only in one exceptional case did a student discuss the improbability of

a toddler being able to walk properly at such a young age. Another reason for doubting the authenticity of the images is the children’s knowledge of animal welfare and protection, which they feel would prohibit such events. In some cases, the interviewees noted aesthetic inconsistencies, such as the proportions of the animal and the child: The dog is too big and the tiger too small etc. Some children express inconsistencies by describing certain images as looking “too good”:

“That’s really just too good now.” (Comment on image 5: Toddler with peacock)

Doubts about doubt

In the group discussions, the children often countered the reasons for doubting a picture’s authenticity with arguments about how it might

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still be possible. For example, they suggested that the wild boar might follow tempting food, snakes could be bred to be harmless, tame tigers exist in places like Thailand, squirrels raised by humans could become tame, or that the parrot might simply be a plush toy attached to a shoulder, like some children have done at carnival. The children struggle with the meaning of the pictures or their previous interpretation.

Aesthetic details and contradictions to their own experiences

How was the picture created?

When asked how the pictures were made, the children offered various ideas. In terms of style most children assume the pictures were photographs, while some suspect they were painted. If they believe the images were not real, they argue that the child in the picture could be a doll, the animal a cuddly toy or plastic animal, a toy from a 3D printer, perhaps remote-controlled, or a robot. Others believe that the images might have been created using the green screen process or the toddler or animal could have been digitally added to the image with the computer afterwards.

The idea that the images were computer-generated came up in almost all groups. They attribute this to aesthetic details, “because wild boars simply can’t have hair like that”. Others suspect a photomontage: “Just the snake was made by the computer” and the “wolf [was] somehow put on another photo”. Some children suspect that a (smartphone) app was used here:

“Because it looks very, very realistic. And I don’t think it was really photographed.” (Comment on image 1: Toddler with parrot)

The word “AI” is used in individual cases:



Ill. 11-13: To discuss the topic of “artificial intelligence”, primary school pupils were shown 3 further images depicting impossible scenarios

“So, I think this was made by an AI, because if you hold the rabbit like that, it never stays still like that. And then it would kick itself free, because I have rabbits myself.”

It becomes clear that children doubt that the images depict real events

when they contradict their own experiences or knowledge. They use their prior (media) knowledge to find plausible and meaningful explanations for how the pictures might have been created.

Knowledge about AI

After the first 10 images were shown and discussed, the children were informed that these images were AI-generated. When asked who had already heard the term and could explain what AI is, some children in all groups responded and provided accurate explanations:

“With AI (...), you put lots of data into the computer. Or even pictures that have already been taken. And then you can enter what kind of picture you want. And the AI, or artificial intelligence, then creates an image from this data.”

This fourth grader has an inner picture of AI, describing both the way in which the desired product is created (putting “lots of data into the computer”) and how it is used. He can even accurately name problem areas:

“But there are often small errors, for example that the fingers are cut off or that the legs look misshapen. So, with an AI, you can easily recognise that they’re not real, because an artificial intelligence can’t know everything or do everything right. So, these small mistakes are the decisive factor.”

However, such competent explanations are the exception. Some children explain AI as an **application providing information and generating images** using familiar media references:

“It’s a bit like Google. It offers you a lot of information. There are lots of things in there and you can also edit images.”

Some fourth graders perceive AI as a kind of **artistic tool** that can be used to generate images and produce impressive results. AI is described as a “super artist”. The children often mention how realistic AI images can appear and that they are sometimes indistinguishable from reality: “You can paint anything realistically.” Some children focus on creative aspects and describe generative AI applications they have already used, such as a mobile phone app they used to convert their own pictures into different artistic styles. The children’s idea of the creative process is reminiscent of human thought processes:

“So, we ask, for example: ‘Create a picture of a baby and a tiger’. And then they think about it for a moment and then a picture comes out.”

Other children emphasise **technical or practical applications**. They describe that AI is a tool for tasks like image processing, video games, film production, or smart homes. They also connect AI to robots that perform certain tasks:

“There are also many robots, and they can, for example, clean houses or flats or so. They just help people for example.”

Some students know that AI “learns” from data to fulfil its tasks: “I’ve heard that AI is AI first. Then they evolve.” The fact that AI is only as intelligent as the data it receives and is not “smart” in the normal use of the word is only mentioned by individual children. One child explains:

“Well, AI is just (...) a computer-controlled computer. And it knows very, very much. (...) All the information is actually put into this computer by people.”

Overall, some fourth graders have understood individual aspects of AI, but many have rather superficial knowledge and there are also **uncertainties and gaps** in the children’s descriptions. Many children mention technical terms but are unable to explain in detail or can only provide rudimentary explanations of how AI works or learns. Some children have a vague idea and describe the input of data, but it remains unclear what exactly this “data” is or how it is processed.

Similar to the study by Kosoy et al. (2024), negative aspects of AI such as the **dissemination of false information** or the **manipulation of images** are rarely mentioned:

“So, AI is cool, but it’s actually not cool either, because you can’t really tell what’s fake. For example, some people write some stupid articles that aren’t true and add a stupid picture. (...) You can never know whether it was real or fake. That’s why AI is not the best app. AI is kind of like YouTube, where you can really insult each other or just post vile hate [on the] internet for the whole world to see.”

One child expresses **fear** of AI taking control, a sentiment likely influenced by mixing information by media or the societal discourse on AI.

After encountering the AI-generated images and when specifically asked, some primary school children formulate an idea of what artificial intelligence is. However, there were only a maximum of 4 children in each group. For all the others, it was obviously the first encounter with AI. It is important here not to draw conclusions about the whole group from individual children who are informed, because statistically, in 2024, 52% of German 6- to 9-year-olds do not know what “artificial intelligence” is (iconkids & youth, 2024, p. 161).

What tips do fourth graders give to younger pupils?

In the next step of the media education unit, the children analysed in pairs the possible characteristics of AI-generated images based on one of the previously shown images. As so-called “AI detectives”, the children examined the images closely and formulated tips for identifying fake pictures.

One aspect is the (photo-)realistic representation. For example, if a toddler has 6 fingers or the toes and the shoe are strangely blurred – as the fourth graders noticed as “AI detectives” – this can be a sign of an AI-generated image. Another point is a critical examination of whether what is depicted in the picture is even possible. According to the children, wild animals would not remain so still, and a shark could not survive in such shallow water. A critical look at the background of the pictures was another tip from the pupils. In the sample pictures from *Cute Babies and Wild Animals Fashion Walk*, the audience is often seen looking at their own mobile phones or in completely different directions – something that would not happen in a real fashion show. In the picture of the toddler and the mammoth in the snow and ice, a

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person in the background is wearing a T-shirt, which the children identified as unrealistic.

Letting the children take on the role of experts as “AI detectives” and search for discrepancies was a successful methodological approach, placing critical thinking in a comprehensible and meaningful context. In one group, the fourth graders spontaneously embraced their role and formulated their tips as a radio programme for the second graders:

“So, dear children from class 2bc. You can take a close look at the tiger. (...) It doesn't have real fur. And somehow only the head is real. And the tiger, well, a small child can't possibly ride a tiger in a fashion show.”

This illustrates the opportunity practical work with media offers for making one's own insights accessible to others.

CONCLUSION: WHAT WORKED WELL, WHAT DIDN'T?

Overall, the media education unit was beneficial for everyone involved. However, discussing 10 images during the class session proved too time-consuming, even with only half the class at a time. An earlier change of social form from discussion to input and partner work would have been more effective here. Nevertheless, it was important to give all children

enough time to develop at least some doubts themselves before revealing that the pictures were AI-generated. The children's knowledge of the topic of “AI” varied greatly, and it became clear how difficult it was for some to integrate theoretical concepts into their worldview. To help children gain deeper knowledge, practical experience is urgently needed, for example through their own prompting and image generation (see also Herzig in this issue). This could include creating their own designs on the topic of *Cute Babies and Wild Animals Fashion Walk* which would serve as an ideal follow-up lesson to promote media skills. However, it also became clear that a unit focused on examination and doubting does not automatically turn fourth graders into consistently detached and critical viewers. Shortly before the end of the unit, we showed one of the videos from *Cute Babies and Wild Animals Fashion Walk*, from which the screenshots were taken. For most groups, watching the video was characterised by squeals of delight, particularly during a scene where a toddler carried a koala bear. Several groups shouted that this made it especially obvious that the picture was “fake”. Yet when another particularly cute picture was shown, the class squealed again. In this case, knowing that the image was not “real” but AI-generated, did not stop them from enjoying its “cuteness”. One girl remarked

that she finds it “a bit of a shame” that the images were AI-generated. When asked why, she replies: “Because they were such beautiful pictures made with artificial intelligence. That's a great pity.” – Because such things don't exist in real life. ■

NOTE

¹ The discussions were recorded on an audio recorder and then transcribed.

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THE AUTHORS



Maya Götz, Dr phil., is Head of the IZI and the PRIX JEUNESSE INTERNATIONAL, Munich.

Andrea Holler, M.A. in Media Education, Psychology and Sociology, is a scientific editor at the IZI, Munich.

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Fax: +49 (0)89/5900-42379
Internet: www.izi.de
E-mail: IZI@br.de

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