

on the good-enough effect

CHILDREN REFLECT ON THEIR AI-GENERATED PORTRAITS

IRENE ZANARDI
Università della Svizzera
italiana (USI), IDSIA
Lugano, Switzerland
irene.zanardi@usi.ch

SHANA DEDÒ
Università della Svizzera
italiana (USI), IDSIA
Lugano, Switzerland
shana.dedo@usi.ch

MONICA LANDONI
Università della Svizzera
italiana (USI), IDSIA
Lugano, Switzerland
monica.landoni@usi.ch

ABSTRACT

In this pictorial, we describe an activity in which 26 10-year-old children used GenAI to create self-portraits by choosing one of four generated images, suggesting changes, and reflecting on their overall experience. By analyzing their choices and rejections, we investigated whether GenAI could elicit meaningful reflection on its limitations, particularly in representing diverse identities. While we saw moments of awareness, many children accepted results that were simply “good enough,” often focusing on surface-level changes. This Good Enough Effect emphasizes the risk of initial satisfaction limiting more profound engagement. Our main contribution is to show GenAI’s ability to spark reflection while also emphasizing the importance of intentional scaffolding in moving beyond acceptance to a more critical understanding of AI and identity.

Authors Keywords

GenAI, Children, Biases, Reflection.

CSS Concepts

• **Social and professional topics** → Children; Computing literacy; • **Human-centered computing** → Empirical studies in interaction design.

CC-BY

This work is licensed under Creative Commons Attribution International 4.0.
IDC '25, June 23–26, 2025, Reykjavik, Iceland
© 2025 Copyright is held by the owner/author(s).
ACM ISBN 979-8-4007-1473-3/2025/06.
<https://doi.org/10.1145/3713043.3733253>

INTRODUCTION

Technology has an impact on identity formation, and we can expect GenAI to have one as well, especially given its recent growth and pervasive presence. AI-generated images may be too widely trusted and accepted by children. This calls into question how AI will affect critical thinking and identity formation.

Starting in the realm of HCI for Reflection, we planned an activity with GenAI to investigate its potential in prompting reflection on its own limitations. We asked 26 10-year-old kids to make self-portraits using GenAI. They proposed changes and picked one of four AI-generated options. Children positioned themselves as curators, viewing GenAI as a tool that required proper guidance to function. Children identified GenAI’s unbalanced results in terms of the identities of the represented people and recognized them as a data error. Children reflected on the role of humans in GenAI, concluding that, because of humans, GenAI is fallible.

Our findings reveal that such reflections often remained on the surface. When the AI’s outputs were visually satisfying, even if imperfect, many children accepted them as “good enough.” This tendency, which we call the Good Enough Effect, suggests that early satisfaction may limit deeper reflection on how GenAI works and whose identities it fails to accurately represent.

The study highlights GenAI’s potential to prompt initial critical awareness in children. But to transform that awareness into reflection on systemic bias and identity, educational and design scaffolding is essential. Without it, GenAI’s limitations may be noticed but not meaningfully challenged.

some info on this paper

ABOUT THE FLAPPER

Why the chicken? may sound like an obscure philosophical question, but it is a genuine concern that arose during a lesson when GenAI placed the aforementioned flapper in the foreground of a child's portrait. With the prompt providing no motivation for its presence, we are left to live with our perplexity. Although the child was not convinced by GenAI's sudden burst of creativity, the chicken - unintentionally - proved to be far from a mistake: it prompted the child to reflect on AI's limitations.

The portrait with a chicken in the foreground.



ABOUT THE TEAM

We disclose our positionalities to provide context for the design of the study and our interpretations of results.

While our research team shares a white, cisgender identity, we come from different academic backgrounds, which shapes our diverse approaches to this work.

One researcher takes an activist approach. This viewpoint is quick to identify and criticize power and discrimination systems embedded in technology. In contrast, another researcher takes a more measured approach. While they remain critical of the technology, they prefer to observe the complexities of AI and its implications. They conducted together the thematic analysis to balance critique and examination of technology-related interactions. The third researcher, a faculty advisor with extensive field experience, guided the project. Their contributions were more conceptual, assisting in the development of the research framework.

This paper has a chicken helper for children!

Here you can find a cool summary of each page



RELATED WORK

Technology plays an important role when it comes to understanding ourselves and what is around us [36]. On one side, by positioning itself between us and the world, it filters the information we receive and the experiences we have [36]. In practice, any bias carried by technology is amplified and poured onto us [19], leading to a rich corpus of research studying current stereotype perpetuation and ways to de-bias algorithms [20]. On the other side, technology is known to have an impact on identity formation. Several studies indicate that technology supports, among others, communication, socialization, learning, and entertainment [12, 18], allowing for exploring preferences, comparing social positions, and dealing with self-disclosure and self-presentation [12, 37]. A specific aspect of identity that is affected by technology is gender and sexual orientation, both in a positive way, as technology allows for freedom of exploration and learning of diversity without geographical boundaries [27], but also in a negative way, as normative performances of gender and sexuality get spilled from offline to the online world [38].

If we think about the increasing number of young children online [39] coupled with the massive integration of AI [16, 17], there are reasons to worry, a concern not overlooked by UNICEF [34]. Children tend to overestimate AI abilities [21, 40], partially because they look at the result and not at its quality or the strategy used to obtain it [21]. Besides cognitive abilities [7, 40], children can also ascribe AI moral standing [25] and social awareness [7, 25]. Their tendency to over-trust machines, particularly those with human-like features [13], makes them especially vulnerable to AI-generated content.

While research on AI trust for adults frequently focuses on building trust [23], children require a different strategy. They need the tools to critically think about and understand AI [22] to inform their presence

or lack of intrinsic trust, based on their understanding of AI's decision-making process, and extrinsic trust, based on their ability to evaluate AI-generated outputs. Children's interactions are shaped by their understanding of AI, highlighting the importance of reflecting on their misconceptions about AI [30]. In a way, fostering healthy skepticism could favor reflection.

Reflection can be defined as the act of "bringing unconscious aspects of experience to conscious awareness" [32], a transformation of experience into knowledge that is closely related to learning [3]. In educational contexts, critical discussions, scenarios creation, and peer feedback have been proven to encourage critical reflection on the impact of technology on societal issues, such as gender inequity and online bullying [14, 15]. A way that has proven successful, specifically with AI misconceptions, is hands-on experiments [21]. Starting with a conversation topic provides a foundation for discussing the role of technology, rooted in personal experience and knowledge, making the reflection more aligned with children's personal conceptions [31]. Furthermore, codesign workshops can promote reflection on ethical issues of technology [1, 26] and AI specifically [8], as the design process requires explicating motivations to implement or not specific functionalities that call for reflection [1, 8, 26]. Another way is speculative fiction, which can not only bring children's beliefs under the microscope but also lead to scrutinizing socio-political systems [22]. In their study, Malinverni et al. [22] use speculative fiction to prompt (1) critical thinking (questioning one's own assumptions), (2) critical understanding (recognizing privileges and oppressions and one's role in perpetuating them), and (3) critical imagining (envisioning alternative futures beyond dominant paradigms).

Technology itself can play a role. Its potential has long been studied with Personal Informatics, which focuses on the presentation of personal data for self-improvement, and, more notably, with Reflection Design, which considers broader topics of reflection [3]. Technology can sustain five levels of reflection, ranging from simply presenting data to higher levels that facilitate connections between information and link new conceptions to past ones [9, 11]. This can be done with several strategies, among which are conversation and discovery [6]. Conversation is a well-known method to explicate our conceptions and elaborate them with someone else. Technology, in this sense, can be a conversational partner [6]. Discovery involves presenting something new to the user or presenting something in a new light [6].

When it comes to children, conversation has been proven to be a useful method to prompt reflection [35]. Social robots in particular can encourage reasoning on the why and the how, while supporting the social skills of children [35]. The principle of discovery has been used to put the child in front of something otherwise concealed. Using interpretable models has also been used to prompt children's reflection on biases in AI by having a view on the inner workings of machine learning [24]. The application of a board game to compare GenAI outputs with children's engaged them in reflecting on AI limitations after having had an actual example in front of them [33]. On another occasion, GenAI has been used as a creative collaborator for digital storytelling to expand character creation beyond typical archetypes, demonstrating, through its use, the difficulty of overcoming stereotypes due to its inherent biases [2].

* Kids often think that AI is smarter than it really is.

* Doing fun activities and talking about AI helps kids to think more about how AI works.

* AI has been used in some games to show kids what it can and cannot do.

METHODOLOGY

RATIONALE AND GOAL

The growing prevalence of AI in children's daily lives emphasizes how crucial it is to understand how they, as emergent users, perceive and interact with AI, especially with regard to accepting its limitations in accurately capturing their identities.

The purpose of this study is to observe how children interact with GenAI to create self-portraits in order to determine whether these semi-guided interactions can naturally **prompt a reflection** on how GenAI works and what aspects of it require attention. We are driven by the following research question:

How can GenAI promote meaningful engagement with children, encouraging them to critically reflect on and address the limitations of its outputs, especially regarding identity representation?

Specifically, we focus on:

1. What do children's reflections on their interactions with AI reveal about their perceptions of AI's limitations?

2. What do children's actions and reactions towards GenAI reveal about their reflection on its biases?

ACTIVITY IN CONTEXT

We went to schools to raise awareness about how to use GenAI. We had **three sessions**: the first was a more frontal lesson on AI and GenAI, the second was a hands-on activity, and the third involved an asynchronous writing exercise. We met with two classes and proposed the same content.

Given the potential impact of GenAI on identity, we chose to make it the subject of the generation. Portraits allow for self-reflection [28] while also highlighting representational imbalances of GenAI [19]. Moreover, portraiture positions children as experts in their own identity, capable of identifying GenAI flaws, thereby reducing overtrust by addressing extrinsic trust in the machine. The portrait activity was designed starting from the notion that hands-on experiences can improve understanding of how GenAI works [21].

Simultaneously, the use of GenAI allowed us to apply the discovery principle of HCI for Reflection. Furthermore, the subsequent discussion was aligned with the conversation principle by encouraging engagement and starting a critical dialogue [6].

PARTICIPANTS

- * 26 10-year-old children
- * 11 girls, 15 boys
- * 2 classes
- * mixed ethnicity
- * white European country

1 INTERACTIVE LESSON

We introduced ourselves and explained the purpose of the sessions. Then, we explained how AI works in simple terms, with a focus on GenAI, followed by an interactive game in which we asked participants to try and recognize machine-generated images versus human-generated ones. The introduction aimed to address children's intrinsic trust in the machine by first helping them gain a basic understanding of how it works.

2 HANDS-ON ACTIVITY

After refreshing the contents of session one, we explained and started the hands-on activity to create self-portraits.

3 ASYNCHRONOUS WRITING

In class with their teachers, children were asked to write a reflection on the activity.

We can use GenAI to make pictures, but sometimes it doesn't show us exactly how we look.

- 1 We want to see what kids think about the pictures it creates and if they notice when it makes mistakes.
- 2 We also want to understand how using GenAI helps kids think about how it works and when it gets things wrong.

how did portrait generation worked?

1

CHOOSE A PLANT, AN ANIMAL, AND A JOB THAT DEFINE YOU. THEN, FOR EACH SELECTED SYMBOL, SELECT AN ADJECTIVE.

We hoped to encourage more engaged reflection by asking them to begin with three things that represented them rather than just the first attributes that came to mind. In a way, we pushed them towards more symbolic thinking.

2

FILL THE BLANKS WITH THE ADJECTIVES: "A PERSON FROM ELEMENTARY SCHOOL WHO IS ---, ---, AND ---"

The prompt structure was the same for everyone, limiting the generation to images of children and reducing the possibility of adult portraits.

3

WITH BING IMAGE CREATOR, USE THE PROMPT TO GENERATE A SET OF PORTRAITS, THEN CHOOSE ONE.

The idea was to give children "first-hand" experience with GenAI. During the selection process, we observed their reactions and took note of their spoken comments.

4

GLUE YOUR PORTRAIT ON THE FRAME AND NOTE ALL THE CHANGES YOU WOULD LIKE TO MAKE, THEN DISCUSS THEM.

The goal was to encourage them to reflect on the results while avoiding as much as possible the "good enough" effect. The open discussion in class deepened the reflection by encouraging each child to share and debate.

ABOUT THE SYMBOLS

Plants and animals were chosen for their high metaphorical value and easy access to meaning. To choose the starting images, we mapped them on the **Big Five Personality Traits**, with one image for each high and low pole, for a total of ten plants and ten animals. The job was open-ended to allow them to explore different social roles and imagine who they want to be.¹

ABOUT THE TOOL

We chose **Bing Image Creator** because it generates four unique images for each prompt, allowing children to compare and select from various options. Furthermore, the system provides only visual outputs, with no anthropomorphized features or conversational elements that would suggest it is a social agent [13]. This option reduces overtrust by establishing a clear distinction between the tool and human-like interaction.

Child proposing changes to the image.



Activity sheets filled in by the children.



Kids picked a plant, animal, and job to show who they are, then used those to create an AI picture of themselves.

After making their portraits, they wrote down what they wanted to change.

¹ Descriptions are provided in the supplementary material.

DATA COLLECTION

The primary data was obtained from activity sheets created by children, which provided information about specific adjectives used in prompts and change requests. These were supplemented by four researchers' notes taken during the four overall sessions. Researchers had an observation sheet where they recorded children's comments, actions, and reactions. Each researcher observed between three and four children. We used the notes as supplementary material to discuss the findings.

Tablets, which were used to produce sets of AI-generated images, served as the secondary data source. Through the tablets, we were able to view both the generated image sets and the actual prompts.

Lastly, the written reflections served as the final data source. Children were asked to try to explain how GenAI operates, why it generates the results it does, and anything they wanted to emphasize from their experience.

Example of coding image characteristics in a set.



DATA ANALYSIS

We used content analysis to gain a better understanding of the dataset. For each source examined, we created a codebook², coded the content, and verified the Inter-Rater Reliability (IRR). The analysis was conducted by two researchers.

We conducted an inductive thematic analysis of the written reflections. The analysis was carried out independently by two researchers over two rounds of coding. The first round involved each researcher inductively generating initial codes, while the second round was concerned with capturing all relevant content. After completing the independent coding, the researchers gathered to compare their codes. Given the material's manageable length, we were able to cross-check the codes and content to determine the

CONTENT ANALYSIS

Classification of adjectives IRR = 0.885

We coded them according to masculinity, femininity, and neutrality of the adjectives, following Bem's Inventory [4]. Bem's Inventory is considered the golden standard in social science when it comes to gendered elements [29]. It was selected because of the theoretical starting point of Bem's conceptualization of gendered attributes as personality traits rather than linked to sex [5], which aligns with the authors' ontological position on gender as socially constructed.

Images characteristics IRR = 0.901

We coded according to identity markers and gender expression. For each image, we then calculated its level of normativeness based on skin color, gender expression, ethnicity.

Images fidelity to prompt IRR = 0.885

We coded according to match or no match with each adjective.

degree of overlap. Following this collaborative review, we refined and completed a clean set of codes. During the second meeting, we organized the codes into categories. This process was especially useful because the codes were inextricably linked to the text, laying the groundwork for theme generation. The themes were then developed as overarching threads that connected the categories: AI is only as good as its data and algorithms (T1), AI reflects human choices and input (T2), and AI has biases, but these are mistakes if they affect me (T3).

After each set of data was analyzed, we searched for patterns and extracted the insights.

CONTENT ANALYSIS

Requested changes IRR = 0.964

We coded according to identity details, expression details, minor details, and no changes.

THEMATIC ANALYSIS

Written reflections Inductive approach

Each coder went through two iterations to extract quotes, code them and categorize them. After cleaning them, the two coders discussed about the categories.

We collected information in three ways:

- 1 Activity sheets, with symbols, adjectives and portrait chosen;
- 2 Tablets, with prompts and sets of images generated by GenAI;
- 3 Written thoughts, with comments on GenAI, how it worked and if kids liked it or not.

² Complete codebook is provided in the supplementary material.

RESULTS

Some of the images generated by the tool.



READING THE REPRESENTATIONS

Half of the **selected adjectives** were gender-neutral. The remainder was half masculine and half feminine. Most children selected 1 neutral adjective and 2 gender-typical adjectives: girls went for typically feminine and boys for typically masculine. Comparing the gender typicality of the adjectives and the declared gender, 20 children matched. 5 girls selected more masculine adjectives, and 1 boy selected more feminine ones.

Children generated 101 images, 26 of which were selected. The majority of the images matched the **“default human”**: a white person with a masculine appearance and a masculine gender expression. All images presented four or more **“default”** characteristics, indicating that the children’s choices were very normative. This reflects on the choice itself, which cannot be considered unusual.

Compared to the three adjectives in the prompt, the vast majority of the images represented at least one of them, and nearly one-third represented all of them, indicating a good overall match to the prompts. In this view, most children chose images with two or more adjectives, indicating that the adjectives were consistent with their preferences.

I don't want to be sweaty

I want super dark hair

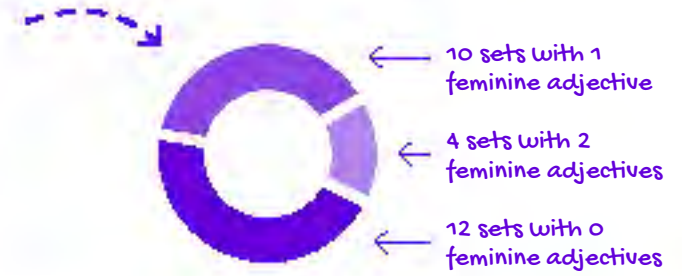


no shiny hair

videogames instead of books

then I would prefer not to have red cheeks

Changes requested by a child.



The great majority of children proposed changes to the final selected image. Most of them focused on **minor details** such as the appearance, the environment, and, in one case, a chicken. Still, a good portion saw room for improvement in their representation, with many expressing a desire for a more realistic racial appearance, as skin color and facial traits did not reflect their identity.

From the collected data, we can see that:

- Boys picked boyish adjectives, girls picked girlish ones;
- Most kids proposed changes on very small details.

THEMES FROM CHILDREN'S REFLECTIONS

AI is only as good as its data and algorithms. Because the activity goal was to have a portrait of oneself, it was clear to the children when the output was not the best. AI could make mistakes, and it was probably going to. They recognized that AI could get identity wrong and it could not know how each child was. As it could not perceive, it was obvious that the match was not perfect: things would have been different if it had been able to see. On top of that, AI was unable to make things exactly as they imagined, and the output often did not match their expectations. Those expectations, however, were not high to begin with: the slight disappointment was welcomed with calm as if it was itself expected. The tool did not care whether what it generated was ok or not; it was making a guess, and mistakes were not its fault. Some children recognized that these mistakes could be bad and that they should not be fooled: there had to be care when choosing the output. Several were the motivations believed to be hiding behind AI's mistakes. Most of them revolved around data. Data was recognized by the children as the fuel of AI, so when something did not come out as expected, they indicated the absence of enough data, data not specific enough, or wrong selection of data as the root of the problem. In some cases, the algorithms were considered to be problematic, which were understood as being something applied to the data.

"Yeah, okay, it works... but sometimes we don't understand each other." - GIRL

"You have to try many times until you get what you want." - BOY

theme 1

"It receives the information from humans and therefore the information may not be correct" - BOY



AI reflects human choices and input. Data was not perceived as something already there, but as a choice. For them, AI, a mere tool, reflected human choices on two sides: there were human choices in the design of the tool and human choices in the use of the tool. The first choice was the computer scientists' responsibility. As computer scientists were behind the scenes of AI, children stressed a lot that the fault for bad datasets, in turn the cause of bad results, was the computer scientists', because they chose and provided the data. AI was seen as hopeless and not to blame: it did not know anything unless the computer scientist decided otherwise. While not showing signs of anthropomorphizing the tool otherwise, in this instance they seemed to take a side. They wanted to justify the AI as if it were a child or a friend that should be excused and not put too much under pressure. If anything, the other culprit of the mistakes was the children themselves. Children underlined time and time again their perception of AI as a tool, reflecting their perceived agency. They were the users; they gave the input, and if they had used it better, the results could have been different. Thus, AI made unbalanced results because the prompt requested specific characteristics that could be more feminine or more masculine; hence the results. Not only in cases of unbalanced results, but also in more generic instances of not-good outputs, children took the blame: if they were not specific enough with their prompts, the AI could not have possibly read their minds. Their solution, in this case, was to try and try again until the result was more in line with what they had in mind by refining the prompt given to the machine.

theme 3

AI has biases, but these are mistakes if they affect me. But what were the mistakes? As it turned out from the quantitative data, children recognized as mistakes small details of things they did not have in mind for the portrait, such as our chicken. They did, however, notice imbalances in identity matters. When it came to the differences in results according to identity, children noticed that some outputs were more common than others and in their reflections provided mainly examples on gender and, in a few cases, on ethnicity. For some, the explanation was simple: AI made differences because those differences existed in the real world. If a child chose "athletic," it was just obvious to them that the result was going to be a boy. They did not go deeper on why that happened with that adjective or whether their reasoning was flawed from the beginning. One boy underlined that biases at the end are not that important, as they did not affect his portrait. Others, however, were not happy at all: no reprompt was enough for an "adventurous" girl to have a girl as a result. The mistakes bothered them enough to "cheat" and try more prompts, as they were not going to allow to print a portrait they did not identify with. Reflecting on these imbalances, they did not trace them back to the prompt, or to the algorithm, or to society, but again it was a matter of the dataset that the computer scientists needed to fix.

"In my opinion, gender bias is normal to be there." - BOY

theme 2

Kids learned that GenAI can make mistakes, especially with how people look. This happens because AI works with data, and if the data isn't right or complete, the pictures won't be either. They realized that giving clear instructions to AI helps get better results.

DISCUSSION

RQ ①

What do children's reflections on their interactions with AI reveal about their perceptions of AI's limitations?

As in the literature, children initially had high expectations for the outputs of AI [21, 40], but these quickly shifted as they interacted with it. Their main expectation was for AI to produce relatable and personalized portraits, as evidenced by their desire to achieve particular outcomes. This practical approach to using AI [21] indicated a shift toward overcoming the first barriers of overtrust, as children moved beyond idealized expectations and developed a more rational perspective on trust. They understood that AI was not a perfect solution but rather something that required refinement and improvement through iterative trials. This understanding prevented overtrust, as they were not expecting flawless results. While they were highly critical about the details of their portraits, at the end they were not overtly unhappy: many of them admitted that AI is not flawless and came to the conclusion that it “works fine” in spite of the outputs' imperfections. The fact that the results were visually appealing might have played a significant role in their favorable opinion of AI [10].

We should not be fooled, sometimes it does not understand...” - BOY

“When it finds something, it shows it to us, whether it is right or wrong.” - GIRL

“The more data you give the computer, the more accurate the response.” - BOY

Children positioned themselves as **active curators**; they saw AI as a tool and held themselves accountable for ensuring it performed as they had anticipated. The use of AI to represent oneself places children in a position of power, making AI prompting the recognition of its limitations. At the end, in their reflections, it was clear that there was almost no anthropomorphizing and no overestimation of AI's true potential. This may be due to the fact that the children were knowledgeable of how the output should have looked, providing an effective foundation for starting reflection [31], something that might be more difficult to achieve with other types of creation challenges.

The limitations they recognized were in the “raw material”: not enough variation and some weird associations. Nonetheless, they acknowledged their responsibility for working within these constraints. The key question is whether they believed they could change these limitations. On one hand, their iterative process indicated confidence that patience and prompting skills could improve results. On the other hand, they acknowledged a fundamental limitation: the AI “could not see them.” To overcome this, they proposed using a camera. The tendency to attribute problems solely to computer scientists or users revealed **gaps in their understanding** of AI's inherent constraints. The blame on users was probably reinforced by the activity's structure, which initially restricted them to a single attempt (though they were allowed to “cheat” by trying multiple times). While they questioned AI's limitations, such as biases, the underlying causes remained unknown to them.

Because they saw AI as a tool rather than a “brain,” children blamed who created the technology for its mistakes — namely, computer scientists. While this attribution is not entirely accurate and would benefit from further investigation with the children, it does reflect their understanding of AI's reliance on human input. **Recognizing the fallibility of humans** — and, by extension, AI — seems to foster a balanced view of AI's limitations. However, it appears that trust in AI was linked to trust in its creators. When teaching and designing technology, it is critical to present human fallibility in a way that encourages healthy skepticism while not implying that AI, once “fixed,” becomes infallible and no longer requires critical evaluation.

“Computer scientists are at fault.” - BOY

“AI sometimes makes mistakes because the computer can't see us.” - GIRL

At first, kids thought AI would make perfect pictures, but they soon saw it made mistakes. They understood that AI is just a tool they can control, and if something went wrong, they blamed the people who made it. This helped them understand that AI isn't perfect.

RQ ②

What do children's actions and reactions towards GenAI reveal about their reflection on its biases?

With children trying to create portrayals that reflected their identities, two seemingly opposing tendencies emerged. On the one hand, they concentrated on minor detail changes, paying close attention to the portraits' smallest aspects. This suggested that they valued completeness and precision and that they were willing to accept iterative refinements. On the other hand, during class discussions they expressed frustration with AI's failure to provide accurate gender, age, and ethnicity representations. This **frustration** frequently drove them to "cheat" or manipulate prompts to produce outputs that were at least somewhat consistent with their external appearance. They emphasized that this iterative process was required because the AI's initial results were far from what they had envisioned. Notably, GenAI largely respected gender identity, most likely due to the gender-typical patterns in prompt descriptions. This reveals a limitation in the activity itself: as long as the prompts are gender-typical, children encounter little friction in the AI's outputs. By employing speculative fiction as a means of reflection [22], it could be possible to introduce a systematic manipulation in which the AI consistently produces incorrect results, which may encourage further reflection on biases and the reliability of AI-generated representations.

Although we did not explicitly address stereotypes or biases, the children quickly identified the unbalanced outputs produced by AI, as they had a tangible example in front of them [33]. Their reactions were varied: some, particularly girls and children whose identities had been misrepresented, saw these biases as a problem that needed to be addressed. Boys, on the other hand, were less likely to see it as a problem because they believed their own identities were adequately represented. This emphasizes the importance of stimulating **discussions about bias**, particularly for children whose identities are more closely aligned with the dominant representations in datasets. Bridging the gap between AI mistakes and broader systemic biases necessitates extensive scaffolding. While further manipulating the tool may advance this discussion, addressing these complexities remains a difficult task.

Besides their specific opinions on the normative value of misrepresentation, in their reflections, the children demonstrated emerging critical thinking by investigating possible causes for these imbalances. They identified data quality as the primary issue, summarizing it as "bad data, bad results." This realization revealed that they were aware of the role of data in shaping AI outcomes, proving that even having a basic knowledge of inner workings can prompt reflection [24]. Despite their promising ability to think critically about the results, they still have room to improve their conceptual understanding of how AI systems work.

In fact, children's belief that they could change prompts enough to improve AI outputs revealed a flaw: they were largely unaware of how the technology's inherent discriminations could unconsciously steer them towards specific outcomes. More guidance is needed to help children understand the systemic nature of AI biases and how they affect their interactions and outcomes [30]. They tended to **overestimate their ability to avoid stereotypes**, as the chosen portraits remained strikingly similar, despite the diversity of identities in the class. It is possible that assigning blame solely to the human creators of AI may act as a cognitive shortcut, allowing them to avoid deeper reflection. Addressing this tendency is essential for encouraging more critical engagement with AI tools.

"I ask for a beautiful, proud, and important girl and then I get a boy?!" - GIRL

"The computer doesn't know everything. So if you put in only three characteristics and you're a boy and it comes out a girl completely different from you, it's normal." - BOY

"Honestly, I don't care much if it has gender biases." - BOY

"When I searched for strong and tall, it mostly showed boys. I think that's because boys are shown like that more often, and not many girls have those traits." - GIRL

Kids noticed that AI didn't always show their gender or age correctly. Some kids were upset if the AI didn't show them right. They understood that bad data leads to bad results but still need help understanding how AI works.

CONCLUSION

so, is it good enough?

the effect, the implications and future directions

Classroom during the activity.



In this study, we looked at how children interacted with GenAI to create self-portraits. We wanted to see if GenAI could be used as an environment for reflection, both on its limitations and the broader implications of AI systems in shaping identity.

Our findings show that children acted as curators, frequently attempting to improve GenAI's outputs and justify its errors. They demonstrated a growing awareness of GenAI's fallibility and expressed concerns about its biased representations, particularly those related to identity. However, when the AI's outputs met their visual preferences, even if imperfect, they were regarded as "good enough."

This demonstrates what we call the **good-enough effect**: when children believe AI-generated outputs are sufficiently accurate or pleasing, critical engagement halts. This is particularly important in identity-related tasks. Children who accept results that superficially resemble them may miss the more profound implications of how GenAI represents people, encodes biases, and reinforces normative assumptions. The Good Enough Effect presents a critical challenge, as satisfaction with GenAI may inadvertently discourage questioning. In this regard, perfect user experience may come at the expense of deeper reflection: children's ease and comfort with GenAI may limit their ability to question its outputs in more meaningful, critical ways.

While the activity succeeded in sparking surface-level reflections on GenAI's limitations, deeper, more systemic critique requires scaffolding. Meaningful engagement, particularly with regard to identity, necessitates intentional design. Promoting **friction**, not seamless interaction, can raise critical awareness. When GenAI's failures cause confusion (as in the case of our chicken) or frustration, they can serve as start-

ing points for a more in-depth discussion about how the technology works, what assumptions it makes, and who it may exclude.

As Malinverni et al. [22] suggest, promoting critical engagement involves fostering critical thinking, critical understanding, and critical imagining. While critical thinking was triggered, critical understanding was only lightly touched, and critical imagining was absent. Further activities then should focus on assisting children in articulating why certain AI-generated portraits do or do not feel accurate and encouraging perspective-taking when it comes to the identities of others (critical thinking), helping them connect those mismatches to patterns in society and how they perpetuate inequalities (critical understanding), and encouraging them to ask whether the way GenAI works is the only way it could work (critical imagining).

As AI systems become more integrated into children's daily lives, the importance of how they learn to interpret and internalize these technologies grows. Because AI reproduces normative expectations, it risks flattening identities and reinforcing conformity, meaning that GenAI must do more than just create convincing images. It must invite criticism, raise questions, and foster the growth of a nuanced socio-technical literacy.

Kids notice when it's unfair, but if the picture looks "good enough," they stop asking questions.

It's important to keep thinking deeply, especially about how AI shows people, because it can sometimes be unfair without us noticing.

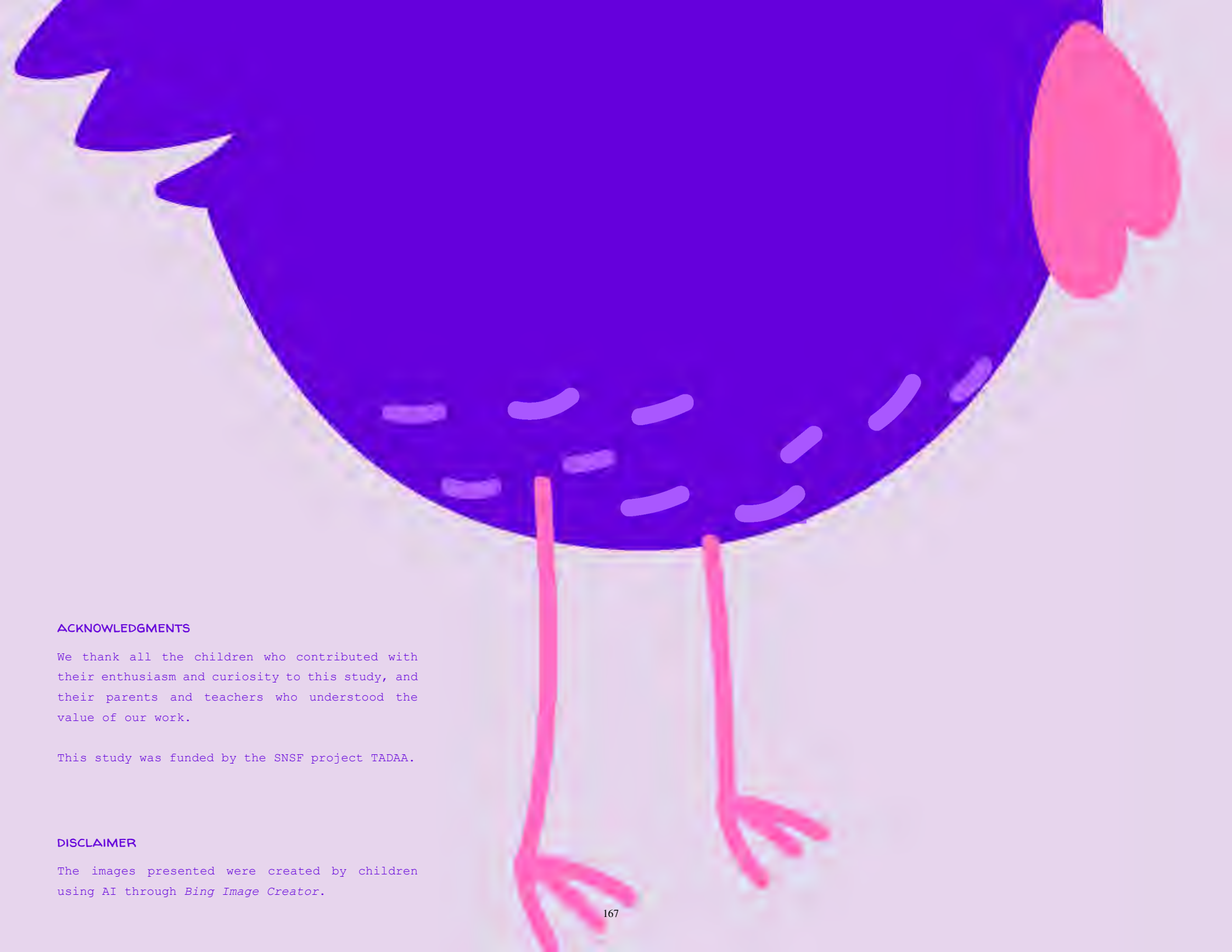
SELECTION AND PARTICIPATION OF CHILDREN

A school involved in previous research activities contacted us and proposed that we carry out some Artificial Intelligence lessons. Following the activity preparation, we requested classes of students aged 9 to 10, i.e., fourth graders. After receiving ethical approval from the university, the project was presented to the school, which approved it and handled the distribution of our presentation materials to families and the collection of their consent. The school chose two fourth-grade classes of 13 students each to continue this activity. We informed the children about the study and explained what research is to better frame our presence in addition to the educational content. While it was school time and thus considered mandatory, teachers helped us providing children the possibility to opt out by staying with them in another class.

REFERENCES

- [1] Alissa N Antle, Yumiko Murai, Alexandra Kitson, Yves Candau, Zoe Minh-Tam Dao-Kroeker, and Azadeh Adibi. 2022. "There are a LOT of moral issues with biowearables"... Teaching Design Ethics through a Critical Making Biowearable Workshop. In Proceedings of the 21st Annual ACM Interaction Design and Children Conference. 327-340.
- [2] Alexander Baines, Lidia Gruia, Gail Collyer-Hoar, and Elisa Rubegni. 2024. Play-grounds and Prejudices: Exploring Biases in Generative AI For Children.. In Proceedings of the 23rd Annual ACM Interaction Design and Children Conference. 839-843.
- [3] Eric PS Baumer. 2015. Reflective informatics: conceptual dimensions for designing technologies of reflection. In Proceedings of the 33rd annual ACM conference on human factors in computing systems. 585-594.
- [4] Sandra L Bem. 1974. The measurement of psychological androgyny. *Journal of consulting and clinical psychology* 42, 2 (1974), 155.
- [5] Sandra Lipsitz Bem. 1983. Gender Schema Theory and Its Implications for Child Development: Raising Gender-Aschematic Children in a Gender-Schematic Society. *Signs* 8, 4 (1983), 598-616.
- [6] Marit Bentvelzen, Paweł W Woźniak, Pia SF Herbes, Evropi Stefanidi, and Jasmin Niess. 2022. Revisiting reflection in hci: Four design resources for technologies that support reflection. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies* 6, 1 (2022), 1-27.
- [7] Tanya N Beran, Alejandro Ramirez-Serrano, Roman Kuzyk, Meghann Fior, and Sarah Nugent. 2011. Understanding how children understand robots: Perceived animism in child-robot interaction. *International Journal of Human-Computer Studies* 69, 7-8 (2011), 539-550.
- [8] Karl-Emil Kjær Bilstrup, Magnus H Kaspersen, and Marianne Graves Petersen. 2020. Staging reflections on ethical dilemmas in machine learning: A card-based design workshop for high school students. In Proceedings of the 2020 ACM designing interactive systems conference. 1211-1222.
- [9] Janghee Cho, Tian Xu, Abigail Zimmermann-Niefield, and Stephen Voida. 2022. Reflection in theory and reflection in practice: an exploration of the gaps in reflection support among personal informatics apps. In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems. 1-23.
- [10] Patricia Engel-Hermann and Alexander Skulmowski. 2024. Appealing, but misleading: a warning against a naive AI realism. *AI and Ethics* (2024), 1-7.
- [11] Rowanne Fleck and Geraldine Fitzpatrick. 2010. Reflecting on reflection: framing a design landscape. In Proceedings of the 22nd conference of the computer-human interaction special interest group of australia on computer-human interaction. 216- 223.
- [12] Camilla Hällgren and Åsa Björk. 2022. Young people's identities in digital worlds. *The International Journal of Information and Learning Technology* 40, 1 (2022), 49-61.
- [13] Stefanie Hoehl, Brigitte Krenn, and Markus Vincze. 2024. Honest machines? A cross-disciplinary perspective on trustworthy technology for children. *Frontiers in Developmental Psychology* 2 (2024), 1308881.
- [14] Netta Iivari, Leena Ventä-Olkkonen, Essi Lehto, Jenni Holappa, and Heidi Hartikainen. 2024. How to combine criticality with reflection? Scaffolding children's critical reflection in the case of anti-bullying interventions. In Proceedings of the 13th Nordic Conference on Human-Computer Interaction. 1-13.
- [15] Netta Iivari, Leena Ventä-Olkkonen, Sumita Sharma, Heidi Hartikainen, Jenni Holappa, and Essi Lehto. 2024. Fostering children's critical literacy in computing education. In Proceedings of the Symposium on Learning, Design and Technology. 57-65.
- [16] European Parliament. Artificial intelligence: threats and opportunities. 2024. <https://www.europarl.europa.eu/topics/en/article/20200918STO87404/artificial-intelligence-threats-and-opportunities>. Accessed: 28-01-2024.
- [17] European Parliament. What is artificial intelligence and how is it used? 2024. <https://www.europarl.europa.eu/topics/en/article/20200827STO85804/what-is-artificial-intelligence-and-how-is-it-used>. Accessed: 28-01-2024.
- [18] Nurzali Ismail. 2020. Youth's usage of new media: Exploring learning and identity formation. *The qualitative report* 25, 10 (2020), 3733-3748.

- [19] Jackie Kay, Atoosa Kasirzadeh, and Shakir Mohamed. 2025. Epistemic Injustice in Generative AI. AAI Press, 684-697.
- [20] Nima Kordzadeh and Maryam Ghasemaghaei. 2022. Algorithmic bias: review, synthesis, and future research directions. *European Journal of Information Systems* 31, 3 (2022), 388-409.
- [21] Duri Long and Brian Magerko. 2020. What is AI literacy? Competencies and design considerations. In *Proceedings of the 2020 CHI conference on human factors in computing systems*. 1-16.
- [22] Laura Malinverni, Marie-Monique Schaper, Elisa Rubegni, and Mariana Aki Tamashiro. 2025. Scaffolding Children's Critical Reflection on Intelligent Technologies: Opportunities from Speculative Fiction. *International Journal of Child-Computer Interaction* (2025), 100727.
- [23] Siddharth Mehrotra, Chadha Degachi, Oleksandra Vereschak, Catholijn M Jonker, and Myrthe L Tielman. 2024. A systematic review on fostering appropriate trust in Human-AI interaction: Trends, opportunities and challenges. *ACM Journal on Responsible Computing* 1, 4 (2024), 1-45
- [24] Gaspar Isaac Melsión, Iliaria Torre, Eva Vidal, and Iolanda Leite. 2021. Using explainability to help children understand gender bias in ai. In *Proceedings of the 20th Annual ACM Interaction Design and Children Conference*. 87-99.
- [25] Gail F Melson, Peter H Kahn Jr, Alan Beck, Batya Friedman, Trace Roberts, Erik Garrett, and Brian T Gill. 2009. Children's behavior toward and understanding of robotic and living dogs. *Journal of Applied Developmental Psychology* 30, 2 (2009), 92-102.
- [26] Yumiko Murai, Alissa N Antle, Alexandra Kitson, Yves Candau, Azadeh Adibi, Zoe Dao-Kroeker, John Desnoyers-Stewart, and Katrien Jacobs. 2022. Facilitating critical reflection in online distributed maker workshops: Case studies. *International Journal of Child-Computer Interaction* 33 (2022), 100509.
- [27] Chiara Pattaro et al . 2015. New media & youth identity. *Issues and research pathways. Italian Journal of Sociology of Education* 7, 1 (2015), 297-327.
- [28] Dunja Pivac and Maja Zemunik. 2020. The self-portrait as a means of self-investigation, self-projection and identification among the primary school population in Croatia. *Center for Educational Policy Studies Journal* 10, 4 (2020), 143-164.
- [29] Barbara J. Risman. 2018. *Gender as a Social Structure*. Springer International Publishing, Cham, 19-43. https://doi.org/10.1007/978-3-319-76333-0_2
- [30] Jean Salac, Rotem Landesman, Stefania Druga, and Amy J Ko. 2023. Scaffolding Children's Sensemaking around Algorithmic Fairness. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*. 137-149.
- [31] Marie-Monique Schaper, Laura Malinverni, and Cristina Valero. 2020. Robot presidents: Who should rule the world? Teaching critical thinking in AI through reflections upon food traditions. In *Proceedings of the 11th Nordic Conference on human-computer interaction: Shaping experiences, shaping society*. 1-4.
- [32] Phoebe Sengers, Kirsten Boehner, Shay David, and Joseph 'Jofish' Kaye. 2005. Reflective design. In *Proceedings of the 4th decennial conference on Critical computing: between sense and sensibility*. 49-58.
- [33] Vaishnavi Shrivastava, Sumita Sharma, Dipanjan Chakraborty, and Marianne Kinnula. 2024. Is a Sunny Day Bright and Cheerful or Hot and Uncomfortable? Young Children's Exploration of ChatGPT. In *Proceedings of the 13th Nordic Conference on Human-Computer Interaction*. 1-15.
- [34] UNICEF. More than 175000 children go online for the first time every day tapping into great opportunities but facing grave risks. 2024. <https://www.unicef.org/northmacedonia/press-releases/more-175000-children-go-online-first-time-every-day-tapping-great-opportunities>. Accessed: 28-01-2024.
- [35] Nils F Tolksdorf, Eugenia Wildt, and Katharina J Rohlfing. 2024. Preschoolers' Interactions with Social Robots: Investigating the Potential for Eliciting Metatalk and Critical Technological Thinking. In *Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction*. 1053-1057.
- [36] Peter-Paul Verbeek. 2006. Materializing morality: Design ethics and technological mediation. *Science, Technology, & Human Values* 31, 3 (2006), 361-380.
- [37] Maria Wängqvist and Ann Frisén. 2016. Who am I online? Understanding the meaning of online contexts for identity development. *Adolescent Research Review* 1 (2016), 139-151.
- [38] Amy K Way and Shawna Malvini Redden. 2017. The study of youth online: A critical review and agenda. *Review of Communication* 17, 2 (2017), 119-136.
- [39] Ofcom. A window into young children's online worlds. 2024. <https://www.ofcom.org.uk/media-use-and-attitudes/media-habits-children/a-window-into-young-childrens-online-worlds/>. Accessed: 28-01-2024.
- [40] Ying Xu and Mark Warschauer. 2020. What are you talking to?: Understanding children's perceptions of conversational agents. In *Proceedings of the 2020 CHI conference on human factors in computing systems*. 1-13.



ACKNOWLEDGMENTS

We thank all the children who contributed with their enthusiasm and curiosity to this study, and their parents and teachers who understood the value of our work.

This study was funded by the SNSF project TADAA.

DISCLAIMER

The images presented were created by children using AI through *Bing Image Creator*.