

# **Digital Futures Commission**

- final report



The Digital Futures Commission is an exciting research collaboration of innovators, policymakers, regulators, academics and civil society. Its aim - to put the needs and rights of children and young people into the minds and work plans of digital innovators, businesses, regulators and governments.

### **DIGITAL FUTURES COMMISSION**

Innovating in the interests of children and young people







Professor Sonia Livingstone



Dr Kruakae Pothong



Baroness Beeban Kidron

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Find out more about the commissioners at

Find out more about the research team at

https://digitalfuturescommission.org.uk/about/commissioners/

https://digitalfuturescommission.org.uk/about/researchers/

# What the Digital Futures Commission is all about

"So often, the digital world of children is stated in binaries – online or offline, good or bad actors, opportunity or harm. But the lived reality of children is much more complicated. At the heart of our research is what children and young people say – and they are consistent in their call: they want, need and love digital services and products, but these should be more respectful, private and safe. The Digital Futures Commission is built on the idea that there is a better digital world within our grasp. Now government and business must work to ensure that innovation is in children's best interests." (Baroness Beeban Kidron OBE)

"Can we imagine a digital future that includes children rather than treating them as an exception, problem or afterthought? The Digital Futures Commission asked what 'good' looks like for children in a digital world. Working with many experts, researchers and, of course, children, we highlight ways to design exciting possibilities for free play in digital contexts, share education data that benefit children's best interests in privacy-respecting ways and, bringing it all together, empower innovators to make the changes children want and deserve."

(Professor Sonia Livingstone OBE)

Inspired by the United Nations Convention on the Rights of the Child (UNCRC), which applies from birth to 18, we address and go beyond the hygiene factors of safety, privacy and security to rethink how technology can benefit children. We prioritise three themes: free play in a digital world, beneficial uses of education data, and designing for children's rights.

This work has provided fascinating insights and tools for today's complex digital world. The pages that follow show a snapshot of our work.

https://digitalfuturescommission.org.uk/about/

https://digitalfuturescommission.org.uk/our-work/

# What do children want from a digital world?

We asked children to write to the CEOs of the companies that produce the digital products and services they use. Here's what those in Year 5 (aged 9-10) told us:

### Dear Google

I usually search on you, and I often trust you a lot. You have very good tech. But your wifi isn't always the best. Please make less ads.

### Dear Netflix

I like that there are loads of different shows and that there are no ads. I think that you could improve by Not taking shows off because people might not have finished them.

### **Dear Ubisoft**

I think that your games are becoming a cliche and that maybe you should make some new material games that have new content.

### To creators

[Cookie Run: Kingdom]

Hello, this app is actually amazing! But after a while, it gets repetitive and a little boring...
It would be great if you would add little minigames that last because when an event ends, you can't do much!

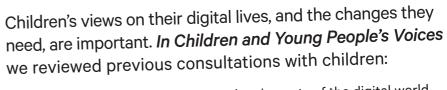
### Dear TikTok

Some people have been blocked. But people make more accounts.
And so many people show their faces or private information, and that should be restricted... Bve.

### **Dear Cookies**

I would like you to change the fact that you are looking at other people's searches. They just accept your terms and conditions because they can't be bothered to read them as they are so long. Please change this.





- Children have a lot to say about the elements of the digital world they engage with.
- They gain enormous agency, pleasure and value from the digital world...
- ... But they are frustrated when digital design, provision and regulation fail to meet their needs.



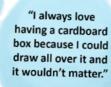
We consulted children and young people around the UK, in *Children's Rights through Children's Eyes*. Our work has been informed and enriched by what they told us:

- Our public consultation on play included children and young people (aged 3–18), parents and carers, and professionals who work with children.
- Our national survey of 7- to 16-year-olds asked about the quality of their play, the digital features that help or hinder them, and the changes they want.
- In a second national survey, we asked children about their data, data literacy and data rights at school.
- Finally, we held another consultation, asking children (aged 6–15) around the country about their rights in digital contexts to inform our guidance for innovators.

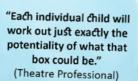
# A vision of free play in a digital world

The digital world is like a new and expansive playground for children. Yet children's right to play has been considered a 'forgotten right', constrained by negative adult attitudes to play, lack of play spaces, fear of risk and limited time for play. These constraints apply not only offline but also online.

To cut through today's anxious confusion about digital play, we took an unusual approach, grounding our work in the nature of children's play and the value of free play in childhood. Here's how we worked.

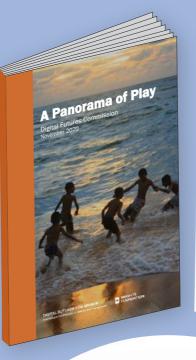


"It becomes its own sandbox environment ... it allows the imagination to go completely wild with it because it's not dealing with any constraints."



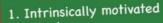
"My five-year-old, he takes everything out of the box ... and he will sit in the box and say, mama, I'm driving a car ... It's quite interesting how they use their imagination in various ways ... to play and have fun."

# A panorama of play

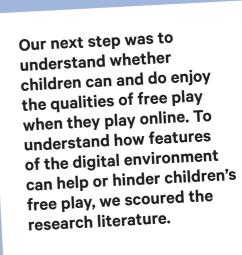


We drew on what children told us to extend and deepen the insights in A Panorama of Play, our review of the literature on free play through history and across cultures.

This resulted in 12 prototypical qualities of free or childled play. They may not be exhaustive, absolute or universal, but they are rooted in children's experiences and multidisciplinary research. They provide a language, and some ambitious expectations, for what 'good' looks like for children's free play in a digital world.



- 2. Voluntary
- 3. Open-ended
- 4. Imaginative
- 5. Stimulating
- 6. Emotionally resonant
- 7. Social
- 8. Diverse
- 9. Risk-taking
- 10. Safety
- 11. Sense of achievement
- 2. Immersive



# The kaleidoscope of play

# in a digital world

Our *Kaleidoscope of Play in a Digital World* found some joyful signs: immersive spaces in which children build diverse and imaginative worlds that may include open-ended play, movement in the real world and a wonderful expansion of social play.

Digital technology is ideally suited to create inclusive environments. But there is also persistent evidence of rapacious data collection, poor safety, commercial grooming and design strategies that entrap.

The idea of the 'kaleidoscope' captures how the interaction among people, products and places shapes children's free play. Every shake of the kaleidoscope remixes these factors, generating new patterns and possibilities. As with the simple cardboard box in traditional play, can we facilitate child-led opportunities in the digital world?







Playful by Design: Free Play in a Digital World includes a 'what works' analysis to identify which levers can enhance the qualities of children's free play and which digital features should be dialled up or down. This gave us our goals for designers and developers.

We applied these to eight products and services that children play with in practice – Minecraft, Roblox, Nintendo Wii, Fortnite, WhatsApp, Zoom, TikTok and YouTube – learning from the strengths and limitations this revealed

# Playful by design principles and design tool

The big task came next. With children and experts, we evaluated options for transposing the qualities of play into digital contexts – to find out how free play can thrive.

The Digital Future Commission's survey of children found that, compared with play in the physical world, the digital environment falls short on some essential qualities – intrinsic motivation, safety, risk-taking and voluntary play. Children also had ideas about how digital products could be better:

- 62% want more features that are easy to use
- 58% want more creative opportunities and age-appropriate features
- 56% want more affordable products
- 45% want more products without advertising
- 44% want better control over who can contact them online
- 42% want more products that make people feel included, enable intergenerational play and don't share their data with other businesses.

### Playful by Design tool

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**Be Welcoming** 



Prioritise digital features that are inclusive, sociable and welcoming to all, reducing hateful communication and forms of exclusion, and reflecting multiple identities.

**Enhance Imagination** 



Prioritise creative resources and imaginative, open-ended play over pre-determined pathways built on popularity metrics or driven by advertising or other commercial pressures. Enable Open-ended Play



Provide and enhance features that offer easy-to use pathways, flexibility and variety as these support children's agency and encourage their imaginative, stimulating and open-ended play.

Finally, we co-developed a tool for Playful by Design® that is both original and exciting, and also principled, evidence-based, responsive to children's views and thoroughly practical. It has been tested with 30 designers from companies of various sizes offering diverse products and services, children's media, social media platforms, educational games, safety tech and parenting apps.

"I think having cards ... that get you thinking about different ways to approach something or different methods of researching kids would be really helpful." (Design researcher, large public broadcaster, UK)

### Adopt Ethical Commercial Models



Reduce compulsive features designed to prolong user engagement or cultivate dependency on games, apps or platforms, so children's immersive play is intrinsically motivated and freely chosen.

### **Ensure Safety**



Ensure children's play in online spaces is safe by design, including giving them control over who can contact them and supplying help when needed.

### Allow for Experimentation



Recognise that exploration, invention and a degree of risk-taking is important in children's play, and that the burden should not always fall on them to be cautious or anxious, or to follow rules set by others.

### Be Age Appropriate



Respect the needs of children of different ages by providing age-appropriate opportunities for play, while also allowing for safe intergenerational play.

"You should actually take that feature, whatever you are designing, and go up against all of [the principles] and see how you actually fit each of them." (Design researcher, large toy company, international)

"The deck is useful for making the invisible, often malleable design process more concrete for novice designers. It also feels productive ... to concretely guide two or more teams to the same language, processes, goals [and] outcomes." (Digital producer, large non-profit children's media producer, USA)

Playful by Design® centres on seven principles for designers and developers: Using the Playful by Design® Tool cannot be a tick-box exercise. For instance, children love immersive play, yet to adults, this can look like compulsive play if you don't build in features that ensure it is openended and voluntary. What is also challenging is whether designers can make safe digital products and services for children yet allow them to push boundaries, navigate uncertainty and take risks, as play experts believe they need to.

# Playful by Design impact

**The Playful by Design®** tool offers a practical guide to redesigning children's opportunities for digital play. We are excited that the Tool is already being appreciated:

"What a fantastic resource. We've come across a lot of these resources.

This one is exceptional! It's been carefully curated in terms of the tool's design process." (Jessie Johnson, Design Council)

"The DFC's Playful by Design cards can help novice and experienced designers challenge assumptions, expand their thinking, prompt reflection, and design more purposefully to support children's play while respecting their rights at the same time." (Michael Preston, Joan Ganz Cooney Center, Sesame Workshop)



"What I love about them is how they can introduce a concept without judgement or finger-pointing. They offer a playful way to encourage game makers to think about children in their game designs. Also, they provide a useful set of measures to highlight games that already stand out for delivering ambitious child-centric experiences."

(Andy Robertson, journalist and author of the book, Taming Gaming)

"It is crucial for digital play to be designed in a way that respects children's rights and promotes their wellbeing in a digital world. That's why we're thrilled at the LEGO Group to have contributed to the Playful by Design Tool developed by the Digital Futures Commission." (Anna Rafferty, The LEGO Group)



To access the online MIRO board or order your pack of cards, visit  $% \left( 1\right) =\left( 1\right) \left( 1\right)$ 

digitalfuturescommission.org.uk/playful-by-design-toolkit/

# Beneficial uses of education data

"Times Tables Rock Stars makes it fun and competitive." (Girl, 10)

"The downside [of Google Classroom] is that children could make their own classroom, and you don't know what they could be posting." (Boy, 9-10)

"You are rewarded Dojo points if you do excellent homework or complete tasks to a certain level. I don't think it helps learning because kids just want the points." (Girl, 13)

"Not great. I don't find [HegartyMaths] useful. Videos are too long and confusing." (Boy, 15)

Data are collected from children all day long – at home, in the street, during their leisure time, and while they learn at school. This data is personal, even sensitive, and can be analysed to reveal a huge amount about each child.

We began our work on education data concerned that this data is too rarely shared to benefit children. But we quickly discovered that sharing children's data is fraught with risk, mainly because data governance is weak.

The problem is most stark at school, where children have little choice about the data being collected. Education technology (EdTech) is paid for with public funds.

Yet the case for benefit might seem clear – efficient administration, learning analytics, personalised and assistive technology, big data processing for public policy – it's not clear that these benefits being delivered.

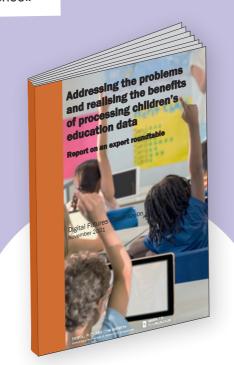
## Governance of data for children's learning

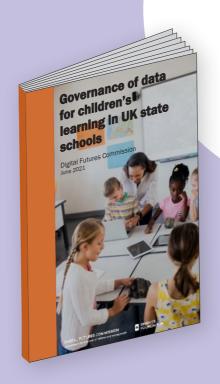
Governance of Data for Children's Learning in UK State Schools is based on a socio-legal analysis of data protection frameworks in state-funded schools.

- EdTech providers have considerable flexibility in interpreting the law, with little oversight over their compliance. They can access real-time learning data from children to inform product development and share with third parties
- There are uncertainties or inconsistencies in the interpretation and application of data protection laws. These are exacerbated by the complex relationship between EdTech providers and schools, and the lack of consistent, sector-specific guidance and enforcement by the Department for Education (DfE) and Information Commissioner's Office (ICO).

Although the principal value of data lies in the insights and predictions that result from data analysis, these benefits of EdTech aren't proven; some are genuine, others are over-sold. What's needed? We brainstormed recommendations with experts (see: Addressing the Problems and Realising the Benefits of Processing Children's Education Data).

 Urgent problems exist with the implementation of data governance regimes that regulate access to children's data collected at or through school.



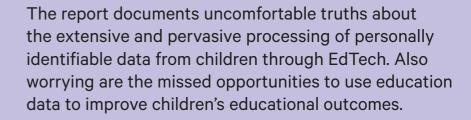


# Education data reality:

# The challenges for schools in managing children's education data

**Education Data Reality** explored the experiences of schools, data protection officers (DPOs) who work in or with schools, local authorities working with schools and EdTech providers.

- 56% of 6- to 17-yearolds say their school asked them to use Google Classroom or Microsoft Teams in the previous year.
- Only one in five say their school has talked to them about what data is processed by EdTech.
- Nine in ten children consider it unacceptable for apps they use at school to share information about themselves and their classmates with other companies.



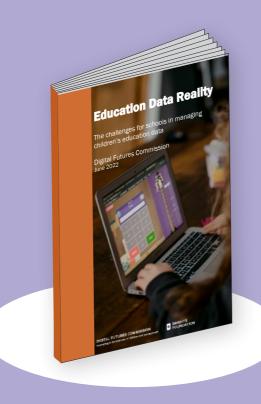
"We collect basically everything you can about a student ... down to things like the doctor's contact details ... then you have to have information about their parents and their carers, so you get personal information on other people as well."

(Vice-principal and school teacher)

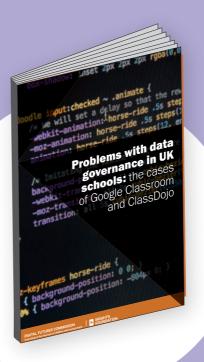
"We can draw learning data together.
We can measure that against protected characteristics, so I now know who my highest-performing group of students in the school is. I know where my disadvantaged students are, and I can target intervention on them. Whereas before, it was a lot of gut feeling, a lot of subjective information."
(Head of school)

"What infuriates me, because it's a poor use of time, is that the bottom layer, the schools, have to do a DPIA [Data Protection Impact Assessment] for each piece of software that they purchase ... Why isn't it something that the people who are selling the software do?" (School DPO and former teacher)

"[Times Tables Rock Stars] say we're just the processor. But then they have this thing where they say we use the data for what we want, including they'll give it to the government or use it for research purposes. And you get this feeling that the schools aren't the ones with the power because they're under pressure to deliver educational provision." (Local authority DPO)







- On a typical day,
   personal data are
   collected from children
   and used for commercial
   purposes, including
   developing new
   products, marketing and
   advertising.
  - EdTech's opaque privacy policies and legal terms do not always comply with data protection regulations.

- e EdTech collects far more personal data than schools or families expect, and processes, shares and profits from these data in many ways they do not
- Schools have the responsibility but not the resources to control EdTech's data processing of students' data.

know about.

The cases of Google Classroom and ClassDojo

Schools are unequally positioned when negotiating contracts with big EdTech companies or even being told what data-driven technology they rely on.

**Problems with Data Governance in UK Schools** reports on two socio-legal technical case studies of products widely used in UK schools – Google Classroom and ClassDojo. It showed that:

- EdTech has a relatively free hand in developing profitable products, shaping the curriculum with little public scrutiny of educational benefits or harms.
- In several European
   countries, regulation and
   public scrutiny are resulting
   in improved safeguards. But
   in the UK, children have no
   choice but to use EdTech,
   which risks their commercial
   exploitation, among other
   data-related risks.

# Seeking critical, regulatory and practical

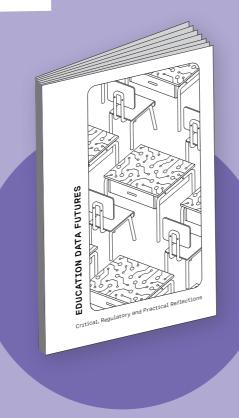
### ideas for a data-rich future

Robust data governance will address the problems of education data processing challenges and build trust in data-driven technologies and their resulting insights. This will open new education data possibilities in children's best interests and the public interest.

To form a view on how to share data in the public interest, we brought together experts, including the data protection regulator, academia, the private sector, non-governmental organisations and civil society, to define and address the challenge of beneficial uses of children's education data as they see it.

Some prioritised academic sources; others practical experience or professional insights. Some were neutral; others were more critical or political.

The result is *Education Data Futures*, a rich set of up-to-date and punchy essays that, taken together, contribute uniquely to a child rights-respecting pathway for using education data that benefits everyone. We invite you to dive in and read the essays!





https://educationdatafutures.digitalfuturescommission.org.uk/



### **Announcing a**

## **Blueprint for Education Data**

Our reports diagnosed a series of problems with education data governance, which make life difficult for schools and create regulatory uncertainty for businesses. With most education data in corporate hands, data sharing for public, community or children's benefit is impractical. Yet EdTech is big business, part of a global economy valued at US\$187 billion. And data processed from children while they learn enters a heavily commercial global data ecosystem with unknown future consequences.

The Digital Futures Commission proposes a blueprint for child rights-respecting data governance and practice. This sets out actions for the government, the data protection regulator and businesses to mitigate the risks to children's safety, security and privacy, and to unlock the value of education data in children's interests and the public interest. It focuses on three priorities for the government and the regulator, the ICO.

- Strengthen existing legal frameworks and enforcement to protect data about children in education: the government should reference the UNCRC in existing and future laws and policies relating to children's education data and the ICO should robustly enforce the data protection laws, including the Age Appropriate Design Code (AADC).
- 2. Introduce certification for EdTech used in school settings: the DfE should require that EdTech used in schools fulfils defined educational purposes and develop an EdTech certification scheme based on 10 key criteria. These include compliance with relevant standards, high privacy protection throughout the virtual learning journey, control over use of data for R&D, and children's data subject rights.
- Create a trusted data-sharing infrastructure to serve children's best interests
  and the public interest: looking to the future, we need a more comprehensive
  operational model of education data sharing for the public and children's
  benefit. We call on government to take the first steps on this road.

### **Guidance for innovators**

Designing for children is not easy because children are diverse, given their evolving capacities, abilities or disabilities and personal circumstances.

Child-centred design and child-computer interaction communities have long prioritised design practices to make children's products and services meet children's needs. But not only do children use products or services intended for them; they also participate in all kinds of digital spaces, often in unanticipated ways.

The Digital Future Commission's ambition is that all providers of digital products and services that impact children have children in mind and embed children's rights into their provision.

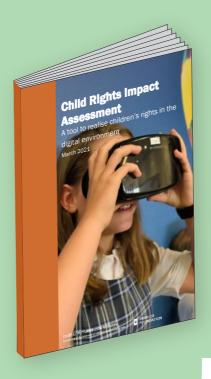
What does this mean in practice?
We take our lead from the UN
Committee on the Rights of the
Child's authoritative statement,
General Comment No. 25, on how to
implement the UNCRC in relation to
the digital environment.



"We have the right to speak up, and people should listen." (Year 7, Yorkshire)

"When I used to have my phone, I was able to skip the ads no matter how long they were... You have an option to stop this ad, or stop seeing this ad." (Year 9, Essex)

"But you also have the right not to be exploited. So ... terms and conditions should be easier to understand." (Year 8, Essex)



### **Child Rights Impact Assessment**

Child Rights Impact Assessment (CRIA) is an established tool, and it can help businesses anticipate the impact that their digital tools and services could have on children.

The Digital Futures Commission report, Child Rights Impact Assessment: A Tool to Realise Children's Rights in the Digital Environment, found that the CRIA is gaining increasing momentum in digital policies. But our interviews with digital innovators found that they need more practical resources and guidance to follow CRIA's 8 steps in practice:

- Identify guiding questions by taking a holistic approach to children and children's rights.
- Conduct an initial check to determine the need for a full impact assessment.
- Collaborate across departments or specialisms to collate the information needed.
- Gather relevant evidence, including consulting children, to ensure their views are heard.

- Anticipate and assess beneficial or harmful effects on children's rights.
- Mitigate potential negative impacts by modifying proposals or identifying alternatives.
- Set out clear processes to monitor and evaluate the proposal.
- 8. Publish a transparent and childfriendly report to explain how the CRIA has been applied.

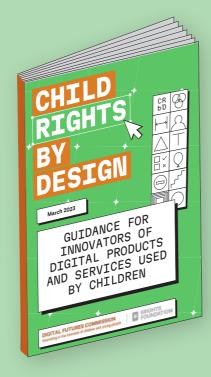
Designers need to know about children's rights and how they are affected by particular design choices and policy frameworks.

So we built them a toolkit for Child Rights by Design.

### **Child Rights by Design**

Child Rights by Design: Guidance for **Innovators of Digital Products and Services** Used by Children shows what 'good' looks like for children in a digital world. It synthesises the 54 articles of the UNCRC into 11 compelling design principles for digital products and services.

childrightsbydesign.digitalfuturescommission.org.uk



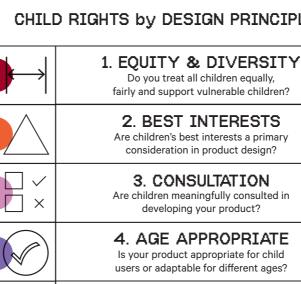
We consulted innovators, practitioners, experts and children to make develop the guidance and make it practical. Designers told us of their everyday dilemmas about how to consult children, meet the needs of different age groups, balance protection and participation, and know when they have got it right.

To find answers for them, we drew on the collected wisdom of many rights-based, ethical and value-sensitive organisations, and on our second consultation with children and young people from around the country. Both Playful by Design® and the Blueprint for Education Data provided telling use cases.

The resulting toolkit sets out principle-based design considerations to help digital innovators embed children's rights into digital products and services. For each principle, the guidance offers:

- An account of how specific child rights apply to digital products and services
- · Distilled insights from expert sources and links to relevant legislation
- Reflections from children and young people
- 'Stop and think' questions to ask, mapped to the Design Council's 'Double Diamond' process
- Suggested sources of design inspiration and tools.

### CHILD RIGHTS by DESIGN PRINCIPLES



### 4. AGE APPROPRIATE

Is your product appropriate for child users or adaptable for different ages?

### 5. RESPONSIBLE

Do you review and comply with laws and policies relevent to child rights?

### 6. PARTICIPATION

Does your product enable children to participate in digital publics?

### 7. PRIVACY

Have you adopted privacy-by-design in product development and use?

#### 8. SAFETY

Have you adopted safety-by-design in product development and use?

#### WELLBEING

Does your product enhance not harm children's physical & mental health?

#### 10. DEVELOPMENT

Does your product enable children's learning, imagination, play and belonging?

### 11. AGENCY

Have you taken steps to reduce compulsive and exploitative product features?

Child Rights by Design concludes with an 11-point checklist for innovators, which gives them a 'To Do' list for their work and sources of guidance to support it.

By embedding these principles into the design of the digital environment, children's lives will be significantly improved. As designers do not work alone, the Child Rights by Design toolkit should be included in professional training programmes – in business schools, computing, engineering and design schools. It should also be encouraged by the government, promoted by regulators, valued by investors, called for by civil society and recognised by the public.

We know children will welcome it.

"It'd be better for my privacy if apps don't use or keep my number/personal information."

(Year 9, Yorkshire)

"I'd like to request a better moderation system on YouTube videos." (Year 5, Greater London)

"My mum and dad only really think about games that are appropriate for me if they're appropriate for kids... I think I should have some choices in what's appropriate for me." (Year 3. Greater London)

### Don't include

LOCATION
TRACKER WITH NO
PERMISSION

TARGETED ADDS AND
NOT INAPPROPRIATE

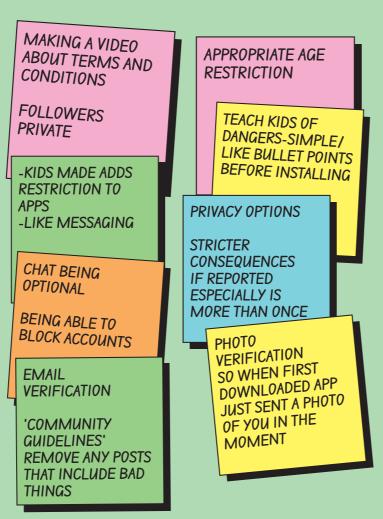
"FAKE AGE"

ANONYMABILITY

### Wishlist for change

(13- to 14-year olds, Essex)

### Features to include



### **Key outputs and publications**

Colvert, A. (2021). The Kaleidoscope of Play in a Digital World: A Literature Review. Digital Futures Commission, 5Rights Foundation.

Cowan, K. (2020). A Panorama of Play:

A Literature Review. Digital Futures

Commission, 5Rights Foundation.

Day, E. (2021). **Governance of Data for Children's Learning in UK State Schools.** Digital Futures Commission, 5Rights Foundation.

Day, E., Pothong, K., Atabey, A., & Livingstone, S. (2022). Who controls children's education data? A socio-legal analysis of the UK governance regimes for schools and EdTech. Learning, Media and Technology, 1–15. https://doi.org/10.1080/17439884.2022. 2152838

Hooper, L., Livingstone, S., & Pothong, K. (2022). Problems with Data Governance in UK Schools: The Cases of Google Classroom and ClassDojo. Digital Futures Commission, 5Rights Foundation.

Kidron, B., Pothong, K., Hooper, L., Livingstone, S., Atabey, A., & Turner, S. (2023). **A Blueprint for Education Data.** Digital Futures Commission, 5Rights Foundation. Hyperlink to follow

Livingstone, S., Atabey, A., & Pothong, K. (2021). Addressing the Problems and Realising the Benefits of Processing Children's Education Data: Report on an Expert Roundtable. Digital Futures Commission, 5Rights Foundation.

Livingstone, S. & Pothong, K. (2021). Playful

by Design: A Vision of Free Play in a Digital World. Digital Futures Commission, 5Rights Foundation.

Livingstone, S. & Pothong, K. (eds) (2022). Education Data Futures: Critical, Regulatory and Practical Reflections. Digital Futures Commission, 5Rights Foundation.

Livingstone, S. & Pothong, K. (2022).
Imaginative play in digital environments:

Designing social and creative opportunities
for identity formation. Information,
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We have blogged about our emerging ideas, interviews with experts and consultations with children as the work unfolded. You can find our blog posts using the QR code or link here.

digitalfuturescommission.org.uk/blog/

### www.digitalfuturescommission.org.uk



The Digital Futures Commission conducted this work in the UK, where we consulted children, interviewed innovators and mapped relevant legislation. However, while context matters, our results are not restricted geographically. The challenges are global, as are children's rights and the scope of many businesses that impact children's digital lives. Our work has built on good practice emerging internationally, and our hope is that it will inspire others.

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### **DIGITAL FUTURES COMMISSION**

Innovating in the interests of children and young people



