

# Report on the 6th International and Interdisciplinary Perspectives on Children & Recommender and Information Retrieval Systems (KidRec 2022) Workshop at ACM IDC 2022: Information Retrieval Systems for Children in the COVID-19 Era

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## Abstract

We summarize the outcomes of the most recent KidRec Workshop (June 2022), which was held for the first time in a hybrid, synchronous mode. The focus of the workshop was to understand the impact of the COVID-19 era on the design, development, and evaluation of Information Retrieval Systems for which children are the primary stakeholders.

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**Website:** <https://kidrec.github.io/>.

## 1 Introduction

Ever since the first International and Interdisciplinary Perspectives on Children & Recommender and Information Retrieval Systems (**KidRec**), co-located with ACM RecSys in 2017, we have aimed to bring researchers and (industry) practitioners together to build community around Information Retrieval Systems (**IRS**) designed with and for children. Thus far, we have sought to advance the understanding of what is good when it comes IRS for children including stakeholder perspectives (e.g. teachers) on how these systems can support children in leisure and educational contexts [Huibers et al., 2021; Fails et al., 2022]. This year we focused on the *COVID-19 era* and how the pandemic years affected children’s interactions and expectations of IRS, prompted changes related to the design and evaluation of IRS for children, and resulted in new facets and contexts to consider which are inherent to this unusual time [Pera et al., 2022].

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## 2 Workshop Organization & Presentations

ACM IDC, during which KidRec has been co-located since 2018, has provided a forum where expertise in Human-Computer Interaction, Child-Computer Interaction, Information Retrieval, Education, and Industry, to name a few, converge. Hence, as workshop organizers, a guiding principle has been to foster active interaction among the diverse participants. The first few years that was seemingly easier, as we met fully in person. At the core of the pandemic–2020 and 2021–we hosted the workshops online, taking advantage of Zoom and Miro<sup>1</sup> to facilitate engagement. For the first time, in this edition, we adopted a synchronous hybrid model where some participants joined online a group of attendees who were collocated in the same room. With that in mind, we reorganized the workshop to last only for half a day and invited short presentations of accepted contributions. In this way, we could accommodate differing time zones and avoid Zoom fatigue. We also invited short talks from experts to entice attendees to further share their perspectives on the impact the pandemic has had on children and research.

The two accepted contributions sparked discussion on children’s perceptions and how their data is (mis)used. [Beelen et al. \[2022\]](#) encouraged attendees to think about the concept of trust and its relationship with children interacting with conversational robots in their quest for digital information; particularly when robots are perceived in this context more as friends than teachers. [Wang and Zhao \[2022\]](#) argued for the need to carefully consider and critically evaluate the datification practices of social platforms (Instagram, YouTube, and TikTok), especially practices surrounding data about children and from child users.

The invited presentations examined the impacts of the COVID-19 era from different lenses: research, policy, and education. Emma Nicol (University of Strathclyde) presented a framework to examine, compare, and learn about the effects of past analogous crises on children’s lives to better comprehend the various ways that children are affected by COVID-19. Stephane Chaudron and Rossana Di Gioia (European Commission-Joint Research Centre) shared findings about children’s use of digital technology during the pandemic, specifically outcomes from a workshop they run involving 18 teenagers and young people from nine European countries discussing how to ensure children’s rights, safety and security when searching online and interacting with tools empowered by artificial intelligence [[Chaudron et al., 2022](#); [Lobe et al., 2021](#)]. Emiliana Murgia (University of Milano, Bicocca) discussed insights that arose from her work in the primary school classroom including personal observations of how children’s approach to using technology for learning revealed new deficiencies in the wide range of tools currently used to support classroom instructions.

## 3 Discussion & Takeaways

Throughout the day, we relied on a Miro board so that, regardless of the attendance modality of participants, we could collaboratively interchange ideas inspired by the presentations as well as thoughts on the impact of COVID-19 on search and recommendation systems for children. We summarize inferences made from this board below.

**Opportunities.** Some positive observations referred to obvious matters such as the extended use of technology during the COVID-19 era, in terms of users and the amount of time they used

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<sup>1</sup><https://miro.com/>

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technology. While this could potentially have some negative consequences, there are advantages in seeing younger children and parents being supported in having better access to technology. Children noted that IRS supplied easy access to knowledge. Participants recognized a more systematic and increased use of technology for educational purposes. This, along with the predictability of what children were searching for, permitted identifying child usage and uses, which could in turn direct the future design of IRS that can adapt to meet children’s needs. In addition, few of the children appreciated having some form of private space away from their peers while feeling safe and enjoying the comfort of their homes. Therefore, it is worth exploring interfaces for IRS to grant and foster children a similar sense of comfort, friendship, and support even when working independently from home without and away from parental or teacher supervision.

**Drawbacks.** The pandemic highlighted that the technological divide has not vanished and, in some cases, has exacerbated issues for children. Teachers carried a large burden—including the heavy responsibility of trying to help children figure out how to use the technology effectively during the pandemic. The increased use of technology resulted in a loss of autonomy, with technology use limiting the scope and range of creative activities, pedagogies, and practices that teachers were able to employ in helping children learn. The burden on teachers was not confined to technical and educational aspects, but also bubbled over to providing emotional support for children (and sometimes their parents). Moreover, it was not just educational material that children had increased access to: exposure to undesirable material, commercial content, and societal pressures to access popular platforms not designed for children (e.g. social media platforms) were indeed factors to be mindful of. Education mediated via technology evinced privacy concerns among adults, but it is worth remarking that children are worried about privacy issues as well [Vasiliki et al., 2022].

**Design.** The pandemic seemed to have further spotlighted teachers (and parents) as major stakeholders and with that the need to involve them explicitly in the design, assessment, and deployment of IRS, particularly systems intending to support learning. It also emerged from the discussions the importance to give a voice to children in the design process while being attentive to children that would be interacting with IRS without support or mediators (peers, parents, or teachers). Ethical concerns have long been an aspect guiding the involvement of children in the design of technology to and for them. Nevertheless, the pandemic revealed new considerations in the area, connected to the use of microphones and videos not only during the design phase but on the IRS systems themselves.

**The Search Experience.** Miscellaneous notes and observations revolved around the need to—above all else—make systems usable by children, i.e., make sure they met their specific usability requirements. There were suggestions for implementing questionnaires to evaluate each child’s level of trust in the system itself and the information it retrieves. Better support for query formulation and reformulation were approached by brainstorming ways that children could effectively be prompted for clarification concerning their information request. This led to a discussion of different modes of interacting with IRS, such as using intermediaries like a robot or using conversational search approaches. These research areas would benefit from future exploration, mainly in seeking to support children in their information discovery tasks.

**Learning from Uncertainty.** A pivotal aspect repeatedly mentioned throughout the workshop was uncertainty. What happens “after” the pandemic with IRS for children? Looking at the education domain, attendees wondered whether IRS (and other educational technologies) would be relegated or, instead, incorporated to support instruction regardless of the teaching modality

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(e.g. online vs. traditional in-person classroom). What have the various stakeholders learned from this experience that will assist them in dealing with future crises or major changes? As a community of researchers and practitioners, are we now ready to study the dynamics and impact of what happened, perhaps even compare effects across countries adopting different coping strategies, and decide how and what to focus on and share to foster growth and resilience?

## 4 Let's Continue the Conversation

Creating a **framework** that could guide the design and evaluation of IRS for children has always been one of the main goals of KidRec. With each iteration, we have incorporated pillars to reflect the multiple considerations and stakeholders influencing this matter. Inspired by observations from workshop attendees on the COVID-19 era, we identified salient dimensions requiring attention to be considered to expand the framework in future KidRec editions:

- Explore the *context* in which IRS are used and how that influences future design strategies.
- *Privacy* and *safety* in the context of research of IRS for children. Not just at data collection stages to guide design but also once systems are deployed.
- *Adoption* and the many factors that influence it; from stakeholder's perceptions to costs of investing in new tools.
- Look beyond the technology itself towards the *digital competences* needed to best take advantage of IRS.
- *Emotions* triggered in children by increased exposure to undesirable online material, such as lack of trust and fear of their privacy being violated. Children have experienced decreased levels of autonomy due to them being over-supported by parents when searching online at home, which was aggravated by the forced distance from their peers, inducing a sense of vulnerability teachers and parents need to address with the aid of suitable *scaffolding* tools.
- *Usability* and accessibility are central in the path towards making children independent in their learning of how to search. Usability encompasses easy-to-use tools to support children to elicit and express their information needs, as well as intuitive SERP to guide them towards "good" resources. Attention should be paid when defining facets of usability to be accounted for to avoid a one-size-fits-all approach and instead focus on children's different development stages, abilities, skills, and preferences, along with innovative interfaces beyond GUI.
- *Inclusivity* is paramount as inequality is one of the side effects of the COVID-19 crisis that has made the digital divide even wider. Consequently, it is imperative to train teachers to respond to children's needs while ensuring children's right to have access to relevant digital content is actively pursued by including inclusivity as part of the overall concept of relevance.

We aim to continue to discuss open issues, dilemmas, and possibilities related to IRS for children. Archival material can be found on the KidRec website<sup>2</sup>. Moreover, you can join the conversation or share these of interest for future workshop editions at: [kidrec-group@boisestate.edu](mailto:kidrec-group@boisestate.edu).

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<sup>2</sup><https://kidrec.github.io/>

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## References

- Thomas Beelen, Ella Velner, Roeland Ordelman, Khiat P Truong, Vanessa Evers, and Theo Huibers. Designing conversational robots with children during the pandemic. In *6th International and Interdisciplinary Perspectives on Children & Recommender and Information Retrieval Systems (KidRec) Information Retrieval Systems for Children in the COVID-19 Era.*, 2022. URL <https://arxiv.org/abs/2205.11300>.
- Stephane Chaudron, Rosanna Di Gioia, et al. Artificial intelligence and the rights of the child—young people’s views and perspectives. 2022. URL <https://op.europa.eu/en/publication-detail/-/publication/0991ec6a-ed1f-11ec-a534-01aa75ed71a1/language-en>.
- Jerry Alan Fails, Monica Landoni, Theo Huibers, and Maria Soledad Pera. Report on the 5th workshop on international and interdisciplinary perspectives on children & recommender and information retrieval systems (kidrec 2021) at idc 2021: the teacher lens. In *ACM SIGIR Forum*, volume 55, pages 1–6. ACM New York, NY, USA, 2022.
- Theo Huibers, Monica Landoni, Maria Soledad Pera, Jerry Alan Fails, Emiliana Murgia, and Natalia Kucirkova. What does good look like? report on the 3rd international and interdisciplinary perspectives on children & recommender and information retrieval systems (kidrec) at idc 2019. In *ACM SIGIR Forum*, volume 53, pages 76–81. ACM New York, NY, USA, 2021.
- Bojana Lobe, Anca Velicu, Elisabeth Staksrud, Stephane Chaudron, Rosanna Di Gioia, et al. How children (10-18) experienced online risks during the covid-19 lockdown-spring 2020. *Key findings from surveying families in 11 European countries*, 2021.
- Maria Soledad Pera, Monica Landoni, Emiliana Murgia, Theo Huibers, and Jerry Alan Fails. 6th kidrec workshop: Information retrieval systems for children in the covid-19 era. In *Interaction Design and Children*, pages 696–699, 2022.
- Charisi Vasiliki, Chaudron Stephane, Di Gioia Rosanna, Vuorikari Riina, Escobar Planas Marina, Sanchez Martin Ignacio, Gomenz Gutierrez Emilia, et al. Artificial intelligence and the rights of the child: Towards an integrated agenda for research and policy. Technical report, Joint Research Centre (Seville site), 2022.
- Ge Wang and Jun Zhao. What they say and what they do: The need to unpack the datafication practices in children’s recommendations. In *6th International and Interdisciplinary Perspectives on Children & Recommender and Information Retrieval Systems (KidRec) Information Retrieval Systems for Children in the COVID-19 Era.*, 2022. URL <https://www.tiffanygewang.com/publication/paper-placeholder-9/paper-placeholder-9.pdf>.