

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

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Abstract

We summarize outcomes from the 2021 KidRec Workshop, co-located with the ACM Interaction Design and Children conference. The theme of the 5th edition of KidRec was *Search and Recommendation Technology through the Lens of a Teacher*. During the workshop, we discussed why teachers are one of the main stakeholders when designing information retrieval tools for the classroom and how to involve them as part of the research and development process to ensure that the resulting tools are suitable and supportive for learning.

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

1 Introduction

This year, students, faculty, industry practitioners and researchers, including representatives from the European Research Centre, Consortium Beroepsonderwijs, Wizenoze, and universities worldwide, gathered for the 5th edition of the International and Interdisciplinary Perspectives on Children & Recommender and Information Retrieval Systems (**KidRec**) workshop [Landoni et al., 2021], co-located with ACM IDC 2021. The theme of this year’s workshop was *Search and Recommendation Technology through the Lens of a Teacher*. Motivated by the central role teachers play in selecting and using technology to support classroom instruction, we invited researchers, practitioners, and teachers to participate in the workshop. This allowed us to better identify the challenges and opportunities that arise when the teachers become primary stakeholders to inform the design, development, and use of information retrieval technology in the classroom.

In the rest of this manuscript, we highlight the accepted contributions, summarize discussions that took place among workshop attendees, and share future directions that researchers and practitioners can follow in order to continue to build the KidRec community and advance knowledge pertaining to information retrieval tools designed with and for children and teachers.

2 Interactive Panels

Below, we briefly discuss the accepted contributions (all peer-reviewed) which were showcased during two interactive panels. The authors gave a brief presentation (up to 10 minutes) followed by Q&A. The panels concluded with an invited talk. To encourage dialogue and foster ideas to consider during group discussion planned for later in the workshop, attendees were asked to note interesting ideas on sticky notes in a shared electronic whiteboard, and to actively participate in the Q&A after each presentation.

In their contribution entitled *Involving Preschool Teachers in the Design of Technology: Challenges and Issues*, [Valguarnera and Landoni \[2021\]](#) detailed their experience working with teachers in order to collaboratively design and test technology for the classroom. The importance of working with teachers as co-researchers was also highlighted during the presentation by [Murgia et al. \[2021\]](#), entitled *All Together Now: Teachers as Research Partners in the Design of Search Technology for the Classroom*. The presentation by [Allen et al. \[2021\]](#), titled *CASTing a Net: Supporting Teachers with Search Technology*, shined a light on how technology for the classroom could support the teachers themselves, not just the students. In particular, the presenters argued in favor of furnishing a behind-the-scenes portal for teachers to empower them by providing a window into the spelling, writing, and concept connection skills of their students.

In the presentation by [Wouters et al. \[2021\]](#) (*Search Technology through the Lens of a Vocational Teacher*) the focus moved from the primary school teacher to the vocational teacher and vocational education in general. The presenters described the role played by Stitching Consortium Beroepsonderwijs as a provider of didactic and pedagogic information in this area, and how they use the search solution and the collection of Wizenoze. Most notably, they identified that there are considerable opportunities in deploying a novel platform for teachers and students in the vocational education sector.

The last two presentations centered on stereotypes that may be propagated by the technology used in the classroom and how parents supported instruction during Covid-19. [Raj et al. \[2021\]](#) (*Pink for Princesses, Blue for Superheroes: The Need to Examine Gender Stereotypes in Kids' Products in Search and Recommendations*) provided motivating examples supporting concerns on search and recommendation systems manifesting gender stereotypes and outlined an agenda for future research addressing the phenomena. Rosanna Di Gioia and Stephane Chaudron discussed outcomes from their KiDiCoTi (Kids' Digital lives in Covid-19 Times¹) project. In particular, they showed that during these challenging times, children miss social contact and had a hard time keeping up with schoolwork. Parents also struggled, especially with teaching at home and combining teaching and work. It came across from the reported results that parents and children should be provided with more guidance and support (mental, physical, and socio-economical), and that new ways of teaching should be implemented that are customized for the home environment.

¹<https://ec.europa.eu/jrc/en/science-update/kidicoti-kids-digital-lives-covid-19-times>

3 Discussion: Sticky Notes

Following the interactive panels, participants worked in small groups and leveraged the previous discussions focused on five distinct areas: teaching in a blended environment, information discovery in a blended school environment, comparing and contrasting information discovery tools in the classroom, the changing role of teachers, future research directions focused on teachers, and other ideas. We specify blended environments as those where teaching occurs not just in classrooms, but also at home, online. The collaborative process for organizing the discussion included using a shared Miro board.² Through this collaborative activity, an additional subcategory emerged: *Frustrations*. In the following subsections, we give a brief synopsis of each category followed by a summary of the primary takeaways.

3.1 Categories

The following categories were discussed first as small groups, and then summarized and discussed as a full workshop to distill big ideas and draw correlations between the small group discussions.

Teaching in a Blended Environment: It was clear that flexibility was needed and that there was no single solution that would meet everyone's needs. In blended environments, attendees noted that the level of involvement was inversely proportionate to children's age (younger children generally require more parental involvement). This led to discussions of needing to provide additional support to parents (as well as teachers) that included not only technological tools and instructional materials, but also emotional and physical support.

Information Discovery in a Blended School: Correlated to teaching in a blended environment is how children meet their information discovery needs in this context. Here it was referenced how the influence of parents in the home environment may impact the tools that are used as well as the overall attitudes towards technology. Additionally enhancing tools to better meet children's information discovery needs is critical, as well as providing curricular supports to facilitate children's learning of how to search.

Comparing and Contrasting Information Discovery Tools in the Classroom: There is a need to understand how to better support children's information discovery tasks. The context of the information (e.g. book vs. the Internet) influences the processes and results that children receive. We need to further understand children's practices using current tools, and how to support critical thinking to enable children to compare the resources found in online and offline scenarios. In addition to investigating the tools, it is a must to identify the learning and knowledge gain. Finding information is not enough; assimilating and utilizing that information is key.

The Changing Role of Teachers: With blended learning having dramatically increased due to the global Covid-19 pandemic, teachers' roles have also dramatically changed. Traditional training for teachers is not available and perhaps not as effective. With additional responsibilities and workload (and corresponding increased frustrations, see below), teachers have had to adapt their approaches. Traditional instructional practices need to be modified. As such different roles discussed were teachers as mediators, coaches, and supporters who advocate, motivate, and aid students in their learning and are less of a teacher who stands in front of a class presenting a concept. With the adaptation of methods, there was a discussion for also advocating for more

²<https://miro.com>

freedom with regards to curriculum. Oftentimes, curriculum is mandated by governing bodies, but that poses challenges when flexibility in mode of communication and teaching and learning are modified. Students learning needs need to be met in this new environment and that requires a balance and mutual understanding between teachers and students. Teachers are already designers with regard to designing a learning experience. This concept of teachers as designers could be built upon in the future. One suggestion was for teachers and students to collaboratively design the curriculum and to re-frame teachers as designers and design facilitators. This has elements of previous suggestions on how children can help design our future by extending participatory design practices into formal and informal educational settings [Guha et al., 2011].

Future Research Directions Focused on Teachers: Questions emerging as guidance for future explorations include how can we better support teachers as designers? How can we empower teachers to be more involved in developing innovative pedagogy and technology? How can we include teachers as co-designers (or possibly co-researchers) in the technologies that are used in the classroom? What are the right technologies to make? How do we ensure these platforms are safe and maintain adequate privacy? What is the appropriate training to provide teachers with the necessary competencies to deal with the dynamic nature of knowledge transmission? What will motivate teachers to participate in such activities? When investigating teaching and learning, particularly during Covid-19 times, it is important to involve the teacher, student, *and* parent/guardian in the design of technologies for blended school environments.

How do we overcome obstacles that may challenge future adoption of technologies. This includes some hesitancy – and sometimes resistance – to use technology that is expressed by some teachers and parents. Additionally, teachers are already often overburdened (even overwhelmed) by so many responsibilities and expectations, simply adding to that list is not tenable and so how do we provide support mechanisms that afford new roles and minimize (or facilitate to lessen the time it takes to accomplish) previous expectations.

Other Ideas: Other issues that were raised included the differences between public and private learning institutions and how the above categories may be different based on those settings. There are pragmatic costs associated with updating classrooms with new technologies as well as any associated training. This results in the need to weighing potential benefits with the costs. With regards to cost, any time you initiate a change, there is a need to evaluate the sustainability of those changes. What additional access issues need to be addressed with regards to technology as well as motivations based on generational gaps and perspectives.

Frustrations: Several noted growing frustrations that impact teaching and information discovery. One of the primary issues is that there are simply too many platforms and tools that teachers need to manage and use already – which has only been exacerbated by the global pandemic and need to provide instruction and information online. Not only are there many technologies, but some are phased in or phased out based on local and regional administration approvals and purchasing, as well as companies shifting to different tools. Additionally, there are challenges and frustrations when managing teaching with some students face-to-face and another cohort online in synchronous and asynchronous fashions.

3.2 Summary

From exchanges during KidRec, there are several open concerns for the community to address.

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1. Teachers should be involved as designers and researchers [Guha et al., 2011]: let teachers co-design on learning activities. Perhaps they can lead children in co-designing those activities, as both are clear stakeholders. This could form a basis for a new pedagogical approach.
 2. With the proliferation of blended learning environments that include homes as context of learning, parents are also a clear stakeholder that should be involved as co-designer.
 3. It is key to investigate the gap or mismatch between what science and pedagogy teaches teachers and what teachers teach children.
 4. To keep up with the ever-changing environment and society, teachers should be equipped with skills to adapt to change. As such, teachers need to keep up with technological advances. Providing adequate support (time, space, training, and funding) for this to occur is critical.
 5. Finding the desired information is not enough, that information needs to be accessible in a way that allows children to learn and increase their knowledge.
 6. As a result of the Covid-19 pandemic, it become apparent that parents, teachers, and children require mental and emotional support, since the pandemic took a toll on all of us. Mental and emotional support is needed for everyone. Therefore these affective perspectives should inform future research design and development.
 7. It would be interesting to investigate why using technology at home is normal, while in school environments parents and sometimes teachers are hesitant to use technology or frown upon using technology in the classroom. How come that this mismatch exists and how can we change this? In short, there is a need to change practices, because society keeps changing.

4 Conclusions and Next Steps

We continue to build community and advance knowledge around this important research area: technology that can support children. Archival material and other resources can be found on the KidRec website.³ Moreover, you can reach out and continue the conversation at kidrec-group@boisestate.edu. We are particularly interested in hearing about themes of interest for future workshop editions.

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