Child-Computer Interaction in the Global South: Designing for Children on the Margins

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ABSTRACT

The Global South is a reference to the underdeveloped regions of the world and though it is often synonymous with the marginalisation of people through living standards and access to resources, not everyone falls under this margin. The children in the margins in the Global South encompasses those with little or no access to modern communication, technologies and academic resources. This spectrum also includes children with learning and developmental disabilities, mental and physical health issues and hostile home or school environments. Marginalization in the Global South places a significant portion of the children at an elevated risks of inequality from lack of access, knowledge and training of ICTs to digital exclusion. Moreover, the recent global pandemic has exacerbated these challenges. This workshop aims at tracing research lines and questions around methodological and technological in designing tools to support children on the margins in the Global South.

CCS CONCEPTS

• **Human-centered computing → Human computer interaction (HCI)**; *Interaction design*; User centered design.

KEYWORDS

children, marginalised, global south, CCI4D, digital divide, developing region

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1 INTRODUCTION

With millions of children disconnected worldwide, digital access has become the new dividing line [3] contributing to the information gaps between the developed and developing countries [10]. The global digital divide is often referred to as the north-south divide of northern wealthier regions (Global North) and the southern poorer ones (Global South) [1, 6]. However, recent developments in ICT (information and communication technologies) accentuate that technological disparity can exist within the Global South's [6] marginalized regions [8]. In addition, this disparity is not limited to access to technology but may involve the differences in high-quality computers, internet connectivity and speed, information literacy, financial access to ICTs, accessible design, and cultural and institutional access [1].

Children on the margins in the Global South do not necessarily comprise of those lacking access, knowledge, and training to computing and internet resources but also include those with learning and developmental disabilities, mental and physical health issues and hostile home or school environments. In an ever-increasing information-based society that benefits from the worldwide connectivity, these marginalized children are at a heightened disadvantage. Due to the uneven distribution of ICTs access and training, these children may be denied [8] of:

- Social equality: Gender equality and equal opportunities for children with learning disorders
- Social mobility: Education, job-training, health-care, quality of life)
- Economic Equality
- Economic Growth and Innovations

However, the pandemic has pushed Global South's marginalized children even further from these opportunities [13]. COVID-19 has affected nearly three-quarters of the world's student population (an estimated 1.2 billion learners) [4]. With the world shifting to remote learning and digital life, the pandemic has hit the Global South's children hardest amplifying the differences magnanimously [5]. The pandemic not only affected Global South's children but also had its impact on the scientific research [11]. Academic researchers and practitioners are presented with different challenges from data collection through zoom, to innovating new methods of participants' engagement to improvising ways for study evaluation.

Lastly, the majority of the methodological approaches adopted by the HCI community are developed in the western context with little work being done to understand how these methods can be translated to non-western contexts [9]. With methods being used as a means to an end in HCI and other engineering-oriented disciplines, the products of HCI are consequently then conditioned by the methods we adopt [7]. By applying de-contextualized practices for designing solutions for marginalized communities in the Global South, we take out the experiences, values, perspectives, and positions of the user. This begs the need for not only contextualizing currently available methodologies, but also to develop new methodologies specifically catering to the marginalized communities in the Global South.

In addition to this, research with marginalized children in the Global South within the Child-Computer Interaction has been focused on digital literacy [2] and tools for inclusive education [12], however, such works have not been concentrated on designing tools for the marginalized children of the Global South during the pandemic. Little research has been done on presenting opportunities in COVID-19 for innovative tools for data collection, participants engagement and tools' evaluation when designing for children on the margins.

We call for researchers to submit position papers with the following aims:

(1) Reporting on methodological and technological challenges participants faced in their studies with marginalized children
(2) Reflecting on the challenges that the pandemic brought about during data collection, study engagement and tools' evaluation phases of their study with marginalized children
(3) Reflecting on innovative methods and tools to conduct research within Child-Computer Interaction for marginalized children in the Global South that can provide a guidance for others
(4) Generating insights on how to design digital technologies with and for specific marginalized children in the Global South in order to counter challenges presented above

2 ORGANIZERS

Dr. Suleman Shahid is an Assistant Professor in Computer Science at LUMS University (Lahore, Pakistan) where he directs the 'Computer Human Interaction for Inclusion, Well-being, and Learning ' (CHISEL) and manages the University's Usability Lab. His research interests include (1) assistive technologies (mobile apps and VR/AR systems) to enhance the quality of life of persons with disabilities (e.g. autism, dyslexia, visual impairment), person with mental health conditions, and older adults, (2) educational technologies for children (child-computer interaction), and (3) effective computing.

Dr Omar Mubin is a senior lecturer in Human Computer Interaction at the School of Computer, Data and Mathematical Sciences at Western Sydney University, Australia. Dr Mubin's primary research interests are human robot interaction and human-agent interaction. Specifically, he studies social robotics and their applications and consequently interaction with humans in education, public spaces and information dissemination scenarios. He also has a keen interest in the application of data analytics to the areas of Scientometrics, ICT and Public Health. His current h-index according to Google Scholar is 19 with more than 1700 citations. Dr Mubin is involved in teaching and supervising (undergrad and postgrad) students in the broader area of Human Computer Interaction, Mobile Computing and Health Informatics.

Dr Abdullah Al Mahmud is a design researcher and Human-Computer Interaction (HCI) specialist, who works at the intersection of design and health. He is proficient in developing and assessing technology with end-users. His research interests include co-design, child-computer interaction, assistive technology, digital health, persuasive technology, and designing with and for marginalised communities living in low-resource regions.

Zainab Iftikhar is currently working as a Graduate Research Assistant at the Computer-Human Interaction Lab for Inclusion, Wellbeing, and Learning at Lahore University of Management Sciences. Her research interests lie in persuasive technology for health innovations and the design of educational tools within child-computer interaction.

Rabiah Arshad is currently working as a Graduate Research Assistant at the Computer-Human Interaction Lab for Inclusion, Wellbeing, and Learning at Lahore University of Management Sciences. Her research interests lie in the digitization of healthcare in the Global South and the design of assistive technologies as interventions in the domain of mental health.

3 PRE-WORKSHOP PLANS

A detailed plan will be established to attract and recruit participants to join the workshop. The organisers will first call upon their previous contacts in the HCI and Child-Computer Interaction fields to engage in the workshop. Professional networking tools will be employed to approach interested researchers in related fields to partake in the workshop. Secondly, social media networking sites will be used to broadcast the workshop to attract participants. Moreover, the website will promote additional details to create interest and recruit participants. The main organizer is organising an HCI conference in South Asia for CHI and will be advertising the workshop there to attract participants. He is also conducting a webinar series on AI for education in the context of ICT4D and will be using that platform to advertise the workshop further.

4 WORKSHOP STRUCTURE

The half day workshop will be held online due to the virtual nature of the conference caused by the current global pandemic. Communication tools like Zoom will be utilized to allow live discussions while asynchronous chatting services will also be provided to facilitate communication among the participants before and after the workshop.

The workshop will provide a platform for researchers with different backgrounds to come together and share their experiences and perspectives. The participants will be allowed three minutes to briefly present their work during the workshop. Due to time

limitations, only one author will present the paper while the others will be invited to participate in the workshop. We plan to accommodate around 10-15 papers. To facilitate discussion before and after the workshop, we will request the participants to submit a short video of upto 3 minutes with a summary of their work before the workshop so this can be shared with the paper prior to the presentations.

The latter part of the workshop will focus on live discussion with in-depth focus on specific topics. We propose to invite Neha Kumar (Georgia Tech) who will talk about the HCI Challenges faced in the Global South during the COVID-19 crisis and Juan Pablo (University of Iowa) who can discuss Child Computer Interaction and the marginalisation of children within the Global South. We will also organise role based activities in the fields of data collection, design and testing. The aim is to put the participants in specialised scenarios and see how they perform keeping in mind the specialised challenges faced by the population within the margins during a global pandemic. The workshop will end with a collection of reflections and insights gathered during the discussion to summarize the effects of the workshop and future work.

5 POST-WORKSHOP PLANS

After the workshop, we plan on converting the website into a repository for the community for Child Computer Interaction in the Global South. We aim to connect larger communities in the Global South with respect to the children in the margins. Secondly, we will create a specialized community on slack and Facebook to bring together like minded people and share experiences, knowledge and perspectives about the marginalised children within the Global South. Thirdly, we plan on assembling the reflections and insights convened during the workshop to a larger audience to a special journal issue either in the Journal for Child Computer Interaction (IJCCI) or the Behaviour and Information Technology Journal. Finally, we would like to hold this workshop regularly every year either on IDC or similar avenues to keep the research and discussion on children within the margins in the Global South active.

6 CALL FOR PARTICIPATION

This workshop aims to create a space to discuss methodological, technological, social and ethical issues related to designing for marginalized children in the Global South. The main goal of the workshop is to bring together researchers, developers and practitioners who have interest in this topic and scaffold a collective discussion about these questions: "What are the methodological and technological challenges we faced in our studies with marginalized children"; "What were the challenges that the pandemic brought about during the data collection, study engagement and tools' evaluation phases of our studies with marginalized children?"; "What are the main ethical and social issues that deserve particular attention when working with emergent technologies with children?"; How can we address these issues? Which methods, techniques, approach, theories?"; "Can we develop innovative methods and tools to conduct research within Child-Computer Interaction for marginalized children in the Global South?"; What kind of tools and platforms do we need in order to create a shared space for children's reflections?". We are looking for highly motivated people who have experience in this field and wish to share their thoughts and knowledge in a highly interactive event. The workshop aims at providing participants a platform to increase their network as well as to develop innovative ideas, and learn something new.

Participants need to submit a position paper, 2-4 pages in the CHI Extended Abstracts Format, that outlines their view on the workshop's topic. We warmly encourage them to highlight the reasons for their interest in the topic including their previous work in the area. Paper submission will be done via easychair. The workshop can accommodate approximately 20 participants. At least one author must register for the workshop and one day of the conference. In addition, the workshop participation will be open to any IDC participant, upon place of availability. All attendants must register for both the workshop and one day of the conference. Authors will be selected by workshop organizers based on the papers' fit with the topic, originality, and quality.

The author of an accepted submission must attend the workshop and provide a short presentation.

7 IMPORTANT DATES

Submission deadline: 10th May 2021 23:59 PST
Participants notified of acceptance: (on or before) 15th May 2021
Camera-Ready Deadline (for workshop organizers): 15th May 2021 23:59 PST
Workshop day/Virtual: 26th June 2021

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