

Using Technology to Deliver and Scale Early Childhood Development Services in Resource Constrained Environments: Case Studies from South Africa

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Abstract : South African based Innovation Edge is experimenting with technology to drive positive behavior change, enable data-driven decision making, and scale quality early years services. This paper uses five case studies to illustrate how technology can be used in resource-constrained environments to first, encourage parenting practices that build early language development (using a stage-based mobile messaging pilot, ChildConnect), secondly, to improve the quality of ECD programs (using a mobile application, CareUp), thirdly, how to affordably scale services for the early detection of visual and hearing impairments (using a mobile tool, HearX), fourthly, how to build a transparent and accountable system for the registration and funding of ECD (using a blockchain enabled platform, Amply), and finally enable rapid data collection and feedback to facilitate quality enhancement of programs at scale (the Early Learning Outcomes Measure). ChildConnect and CareUp were both developed using a design based iterative research approach. The usage and uptake of ChildConnect and CareUp was evaluated with qualitative and quantitative methods. Actual child outcomes were not measured in the initial pilots. Although parents who used and engaged on either platform felt more supported and informed, parent engagement and usage remains a challenge. This is contrast to ECD practitioners whose usage and knowledge with CareUp showed both sustained engagement and knowledge improvement. HearX is an easy-to-use tool to identify hearing loss and visual impairment. The tool was tested with 10000 children in an informal settlement. The feasibility of cost-effectively decentralising screening services was demonstrated. Practical and financial barriers remain with respect to parental consent and for successful referrals. Amply uses mobile and blockchain technology to increase impact and accountability of public services. In the pilot project, Amply is being used to replace an existing paper-based system to register children for a government-funded pre-school subsidy in South Africa. Early Learning Outcomes Measure defines what it means for a child to be developmentally 'on track' at aged 50-69 months. ELOM administration is enabled via a tablet which allows for easy and accurate data collection, transfer, analysis, and feedback. ELOM is being used extensively to drive quality enhancement of ECD programs across multiple modalities. The nature of ECD services in South Africa is that they are in large part provided by disconnected private individuals or Non-Governmental Organizations (in contrast to basic education which is publicly provided by the government). It is a disparate sector which means that scaling successful interventions is that much harder. All five interventions show the potential of technology to support and enhance a range of ECD services, but pathways to scale are still being tested.

Keywords : assessment, behavior change, communication, data, disabilities, mobile, scale, technology, quality

Conference Title : ICECET 2018 : International Conference on Early Childhood Education and Technology

Conference Location : Paris, France

Conference Dates : July 19-20, 2018