UNIVERSITÉ Concordia UNIVERSITY

CENTRE FOR THE STUDY OF LEARNING AND PERFORMANCE

Learning Toolkit+ Newsletter

Summer 2022-2023

Contents

LTK+ Updates

RELEASES

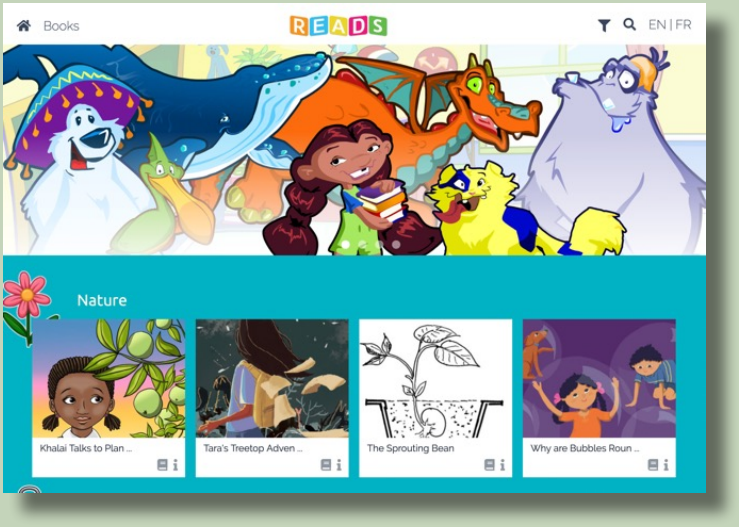
In December 2022, the Learning Toolkit+ team released the latest version of the LTK+ suite of educational tools. This included important backend work to ensure that the suite was compatible with PhP ver. 8.1; the requirement of HTTPS when accessing the LTK+ remotely; and the replacement of the ubiquitous recorder from Flash to HTML5. This year development will focus on MySQL upgrades and conceptualization of encrypted passwords.

READS

Repository of Ebooks And Digital Stories (READS) is a multilingual and multinational organized catalogue of digital books that has been made possible thanks to hundreds of authors and publishers. READS is offered as part of the LTK+, though it may also be accessed through our literacy portal. Each book within READS is catalogued by language(s), country of origin, format, and reading difficulty to help teachers and children search for books to meet their needs and interest. Books are also tagged by genre and themes to further help teachers plan lessons.

An update to READS was included in the last LTK+ release, resulting in an additional 41 books in seven languages. Thus, READS currently offers a total of 1245 unique books, in 43 languages from 25 countries around the world. Some of these books are offered in multiple languages, allowing children to enjoy the stories in their mother tongue and second language.

Our team continuously seeks to expand READS. The next update, due **December 2023**, will include **55** additional books, in eight languages, including the addition of Farsi.



Screen capture of READS

Number of Books in READS by Language		
Language	December 2022	Next Update
English	1220	1275
French	576	604
Bangla	224	254
Kiswahili	213	
Chinese, simplified	139	157
Farsi	0	100
Hindi	33	91
Chinese, traditional	84	89
Kinyarwanda	64	
Afrikaans	58	
isiZulu	55	
Luganda	53	
Lusoga	46	
Lugbarati	39	
Telugu	35	
Kimkamba	33	
Lunyole	31	
Ng'aturkana	31	
Oluwanga	30	
Portuguese	30	
Other languages*	392	

** Including Tamil, Punjabi, and many local tribal languages.*

Data retrieved: May 2, 2023

International Projects

KIX – IDRC Activities

The LTK+ team is in their final year of a 36-month grant funded by IDRC under the GPE-KIX **program** that has been implemented in **Kenya**, **Rwanda** and **Bangladesh** with a focus on:

1. Promoting improvements in teaching and student learning in classrooms through engagement with the ABRA/READS tools, support materials, and teacher professional development (TPD) activities (i.e., face-to-face (f2f), blended, and fully online).

2. Deepening our understanding of the relationship between levels and delivery methods of teacher support, teaching practices, and student learning outcomes.

3. Increasing understanding of scalability and sustainability.

4. Promoting improved educational technology-related policies and practices by our partner organizations, including local and national governments.

Since the inception of the KIX grant in January 2020, activities have unfolded in all three target countries—**Kenya**, **Rwanda** and **Bangladesh**. Much has been learned having used an iterative design model for the teacher professional development (TPD) blended program, in terms of its impact on the growth of teachers' understanding of literacy instruction and on students' literacy achievement, as well as factors and barriers that contribute to the scaling an educational innovation.

A facilitator helps a teacher with TPD content during Taita training.

Impact of the TPD on Teaching: 2022 Results

An important goal of our research is to validate the TPD blended program we have designed for the sustainable scaling of ABRA use. The TPD blends the use of in-person and online opportunities for teacher professional learning of effective literacy instruction, using three core modules: alphabetics, fluency, and reading comprehension. The TPD program also features the use of communities of practice, booster sessions, and reflective practice using teacher portfolios.

Over this past school year, **505 primary school teachers** from **Kenya** (N=333) and **Rwanda** (N=172) have taken the course as part of this validation research. The studies have entered the data analyses phase, led by our Wilfrid Laurier researchers, **Eileen Wood**, **Alexandra Gottardo** and their graduate students. Some preliminary findings are gleaned from this research. First, our blended TPD approach addressing the teachers' desire for in-person contact with their peers, while also allowing for flexibility of online access appears to be effective. We continue to learn how to find the optimal balance of in-person contact time vs online instruction and support needed for successful learning, especially given national and local contexts vary. Second, we observed teachers' confidence grow as the TPD modules unfolded, as participating teachers improved their knowledge about early literacy development and how to support it in the classroom. Finally, the suggested improvements included extending hands-on practice and increased time allocated for completing the units as the teachers requested more opportunities for practice and longer exposure to the TPD content.

Two teachers consult content on their phones as they work on TPD training.

As we waited for the government approval that would enable us to work in **Bangladesh** schools, we piloted our ***Alphabetics*** module with 12 recent education graduates with the objective of learning about our program's alignment to their context, along with the teacher and classrooms resources developed for the **Bangladesh** educational environment. In January, after receiving approval from the Bangladesh Directorate of Primary Education, we were ready to launch the KIX program in **13 schools** scattered across the eight **Bangladesh** divisions. The local team began planning for the implementation of the TPD *Alphabetics* module, along with the integration of literacy tools in classroom instruction. In May, our local LTK+ Coordinator **Musle Bhuiya** facilitated the first session of the Alphabetics module with our participating teachers. We are looking forward to analyzing the data that is collected from this new geographic region.

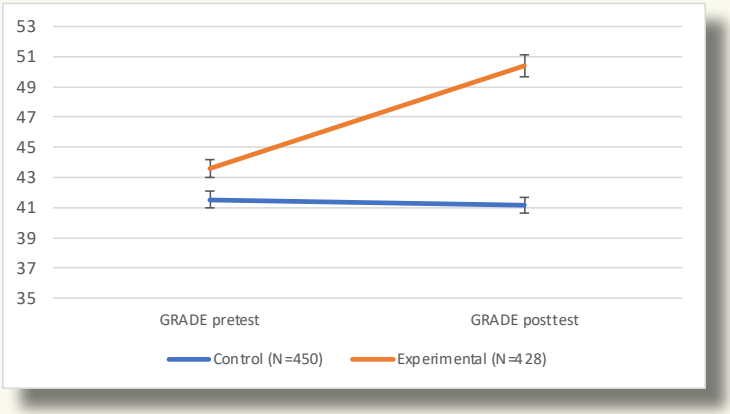
Once this cross-country research is concluded, its findings will continue to inform the iterative development of the TPD course for it to produce the expected impact on many more teachers and their students. These results will be shared with stakeholders in the educational community who are interested in learning about the scaling of educational interventions in low-income contexts.

Recent graduates work cooperatively during the Bangladesh pilot study.

Impact of the TPD on Learning: 2023 Research

In keeping with our second KIX objective, we are also studying the effects of the blended TPD literacy program on the students' learning achievements using a two-group pretest-post-test design. The experimental teachers come from a large pool of grade 2 and 3 teachers taking the TPD program who then apply their learning to integrating the ABRA software into their literacy instruction. Matching classrooms where students learn to read in a traditional way form the comparison group. In both conditions, classroom, teacher and student data are collected before, during and after the program completion. To measure student reading outcomes overtime, a standardized test of reading skills, GRADE (Group Reading Assessment and Diagnostic Evaluation) is used.

Our **Kenyan** study (May – Nov. 2022) unfolded in public primary schools in the Coastal and Western regions of the country. Led by **Larysa Lysenko** and supported by **Enos Kiforo** (Global Hub Coordinator) and **Emmanuel Korir** (World Vision Kenya Hub) the study involved **11 experimental and 11 control teachers of grade 2 and 3 classes of 428 and 450 students** respectively. When completing the 12-lesson *Alphabetics* module (3 face-to-face and 9 online sessions), the experimental teachers exposed their students to ABRA instruction on a weekly basis for at least 14 weeks. There was a relatively low access to classroom technology as on average 3 or 4 students shared a device to work on ABRA activities. While teacher and classroom data are still being analyzed, we were very pleased to learn from the analysis of student pre- and post-test achievement data there were important gains for students in the ABRA classes. Overall, compared to the control group, ABRA students improved their reading skills by 18 percentile points.

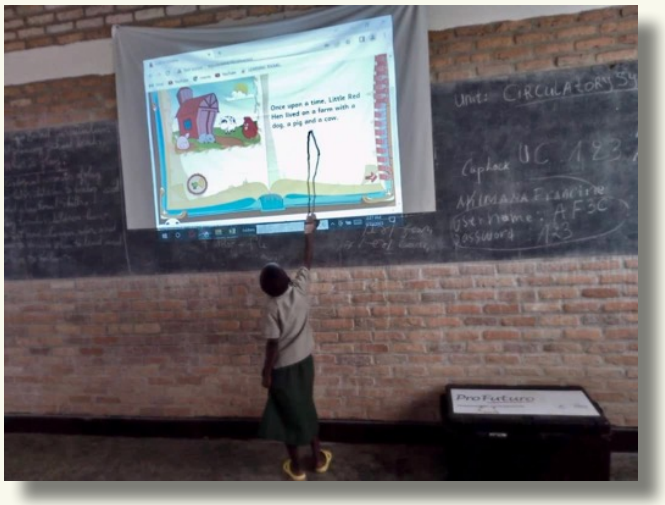


Accounting for such student factors as gender, grade level, geographic area, and baseline student ability in the analysis revealed consistent over time benefits for **all** ABRA students. For instance, the girls in the ABRA classes outperformed the girls in the control classes by 18 percentile points. Further, after being exposed to ABRA, grade-two students' reading skills improved by 13 percentile points whereas those of grade-three students reached 29 percentile points in comparison to their control peers in grades 2 and 3 respectively. Also, ABRA students from schools in semi-urban and rural communities consistently and significantly outperformed their control peers. The effects of ABRA on reading gains of students in rural schools were higher than in semi-urban schools. Finally, ABRA effects varied as a factor of students' reading ability at the onset of the intervention. Reading improvements of ABRA students turned out significantly higher than their peers from the control group regardless of whether they were low or high readers at the baseline.

However, ABRA's impact on low reading students is one remarkable outcome of this study – after being exposed to ABRA instruction, a student with low reading skills improved them by 46 percentile points. This implies that the gap separating high and low readers shrunk dramatically and, actually, is contrary to the well-known "Matthew's effect" suggesting that the differences between high- and low-ability students increase as they progress through school.

One child is reading an ABRA book using a tablet while another learner watches over her shoulder.

A similar study in **Rwanda** is currently unfolding in public primary schools from the World Vision Buranga Area Program in the Gakenke district. **Our experimental group consists of 10 teachers** and their **498 students** who were participants in a 2021 ABRA TPD pilot study. They were matched with **10 teachers and their 504 students in a control group** (students not using ABRA). This past year, the blended TPD course extended beyond the *Alphabetics* module such that the experimental teachers continued on with the *Fluency* and *Reading Comprehension* modules, led by our local Coordinator, **Jean-Baptiste Maniraguha**. As a result, the implementation of ABRA in grade 2 classes addresses five literacy components (phonics, phonemic awareness, fluency, vocabulary and comprehension). Fortunately, the school computers (tablets and laptops) are readily available to students with 1:1 student-computer ratio, thus facilitating ABRA implementation. While classroom use of ABRA is ongoing, so too is the collection of data on classroom instruction. Post-test data from teachers and students will be collected at the conclusion of the end of the Rwandan school year in July, 2023. This will be matched with the data collected at the pretest, before the program started and we hope to see significant gains from both teachers and students!

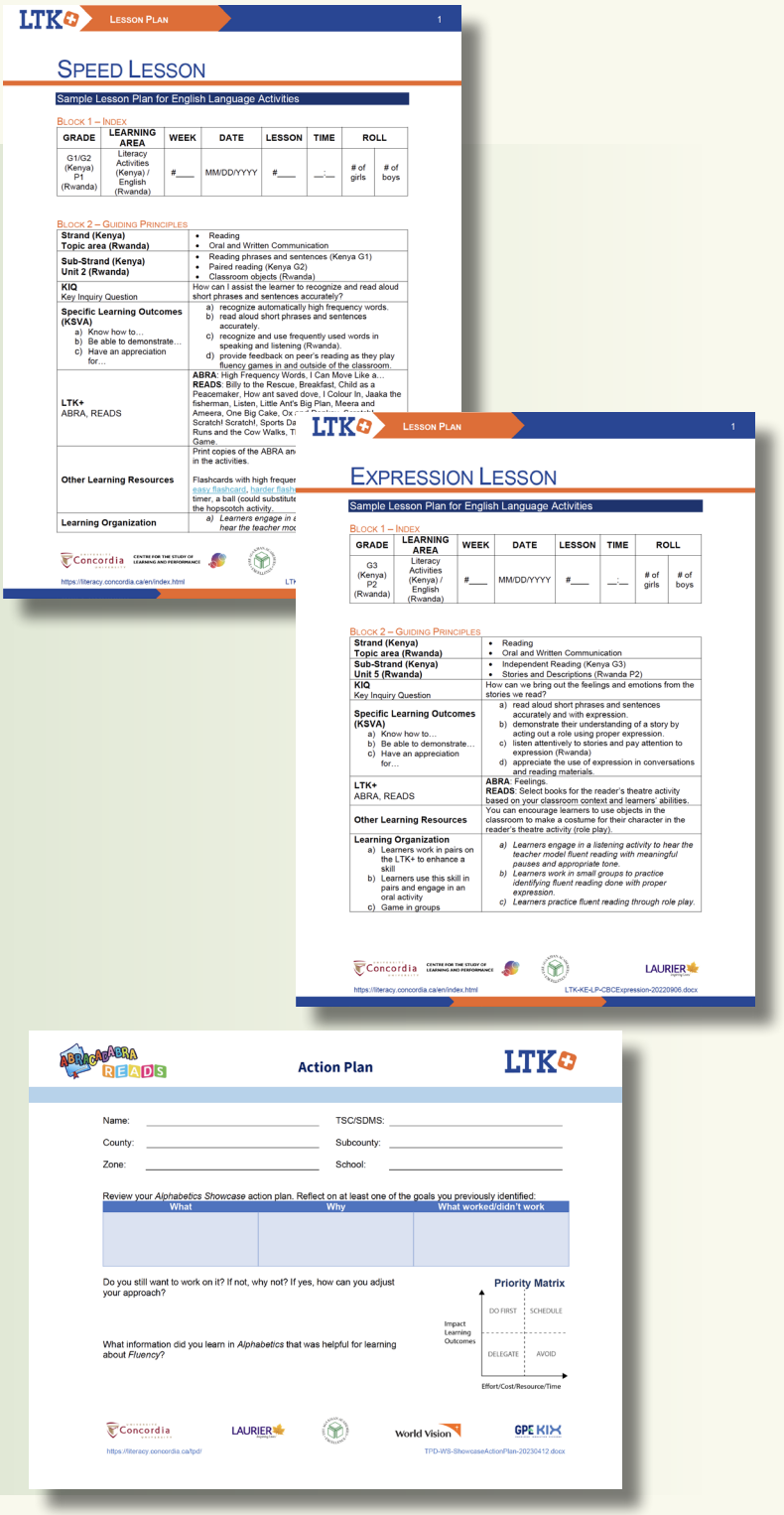


A Rwandan student reads a book in ABRA while it is projected in front of the whole class.

TPD Blended Program Design

This past year in **Kenya** and **Rwanda** our TPD facilitators **Rose Iminza, Clifford Ghaa, Livison Chovu** (Global Hub), **Emmanuel Korir** and later **Abraham Shivachi** (World Vision Kenya), and **Jean-Baptiste Maniraguha** (World Vision Rwanda) continued to use a blended approach while rolling out our online *Fluency* module for those teachers who had graduated from the *Alphabetics* module. Led by our Lead Instructional Designer **Jennifer Head**, additional resources were developed to help teachers build their own proficiency in, for example, designing Competency-based Curriculum lesson plans that targeted specific reading fluency skills.

With each iteration of the TPD program, we learn more about what aspects work well and what elements require further refinement. One of the lessons we learned was the need to better support teachers in accessing our various online resources. Thus, a series of videos were developed to provide step-by-step instructions on accessing the TPD modules, and accessing ABRA, and a couple of other country-specific guides.



Sample resources (CBC lesson plans & action plan) that were developed for KIX training support.

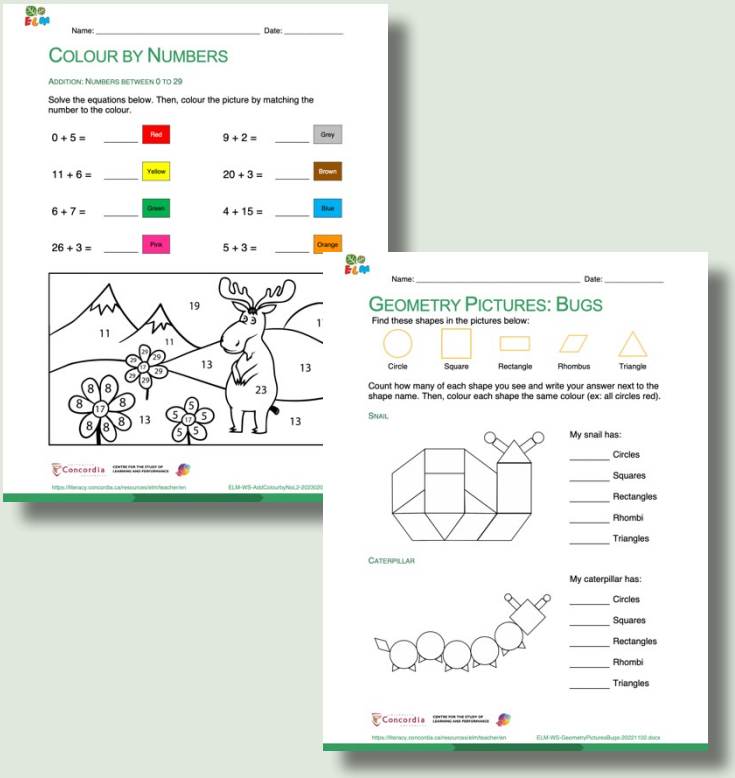
SSHRC Partnership Activities

Alongside the KIX activities described above, this past year the LTK+ team has also conducted additional activities funded under a seven-year grant from the Canadian Social Science and Humanities Research Council, in **Kenya** and **Morocco**.

ELM Teacher Resources

In **Kenya**, we continue to study the impact of our early numeracy software, ELM. To support this work, the ELM Teachers Resources site was updated to provide a number of additional worksheets, class activities, and videos targeting early primary teachers and their students.

Two videos were developed with the support of our Kenyan ELM teachers. The first, entitled What is Decomposition? was prepared as our team noticed teachers tended to avoid using the ELM decomposition activities, as they lacked confidence in teaching this competency. With the help of LTK+ Ambassador **Mary Taabu**, this video explains the concept of decomposition and demonstrates how it may be taught using ELM in a Grade 1 Kenyan class.



Sample ELM worksheets developed this past year.

Screen captures of Mary's video, where she explains and helps children learn about decomposition.

Another LTK+ Ambassador helped us create a second support video entitled Using ELM in Learning Stations with PP2 Learners. **Bimishi Mwidau** explains the concept of learning stations and provides examples of the kinds of activities she does in each station. Teachers have found this strategy helpful for addressing the different needs of their learners, especially in large classes.

Screen captures of Bimishi's video, where she introduces different activities in learning stations.

ELM Study: Student Math Achievement

Inspired by the promising results we found in our 2019 ELM study (Lysenko et al., 2022), this past year we decided to look more carefully at teaching and learning mathematics with ELM in grade-one classrooms from 9 primary schools in **Kenya**. We designed this study as a two-group pretest-post-test research, where the experimental group of 12 teachers and their 550 students use ELM as part of math instruction while the control group of 9 teachers and their 450 students features traditional way of teaching math. Learning about the impact of the ELM software on students' Math achievement is the major goal of this study. To this end, the gains of ELM students from pretest to post-test will be compared to those of control students. Observations of Math lessons, teacher reports, and use-data generated by the software will help us monitor the implementation of ELM as the school year unfolds.

To support ELM classroom practices, our local team of LTK+ coordinators (**Enos Kiforo** and **Clifford Ghaa**), along with our school-based ambassadors continued training and assisting the teachers by means of classroom visits and bi-weekly pedagogical support sessions. Led by **Engineer Tony Ajode**, the county's ICT Authority involvement in the project has been critical where the need for functional devices is high. ICTA Technicians and qualified interns have been assigned to the project to give teachers and their students a hand with trouble-shooting technical issues as they arise.

At the completion of the study in early fall, we look forward to discussing the results of this study with our various partners and collaborators.

Preservice Education

Another important area of interest has been to work with faculty in Kenyan teacher education programs at both the **University of Nairobi** and **Thogoto Teachers College** by integrating use of our literacy tools, ABRA and READS into their English and IT courses. Following completion of these courses, interested students then implement these tools during their practica in classrooms scattered around the country. We have been piloting this approach with hundreds of students from these two institutions who have been trained in the use of ABRA/READS, with dozens having used the tools in their practica. Faculty have conducted site visits and observations. This year we will be collecting more comprehensive data.

Our objective in targeting preservice teachers is to foster a culture for the use of evidence-based pedagogies early on, and more specifically, for these students to explore how evidence-based and evidence-proven literacy tools may be used to set young learners on the path to personal success. This also serves as a reverse mentorship approach, where student interns serve as mentors to the in-class teacher who may then take on the use of the tools as well.

ABRACADABRA in Morocco: Une nouvelle expérimentation de la ressource Abracadabra à Rabat, Maroq

Les résultats de la recherche exploratoire réalisée au printemps 2022 ayant démontré les effets positifs de l'utilisation d'Abracadabra auprès d'élèves de 1re et de 2e année, le personnel du ministère de l'Éducation nationale du Royaume du Maroc ont proposé d'effectuer une étude quasi expérimentale avec 300 enfants fréquentant le premier cycle dans des écoles publiques à Rabat.

Donc, à l'hiver 2023, des formations auprès de huit enseignantes et de deux inspectrices ont été réalisées. Ces formations ont permis aux participantes de découvrir les fondements sur lesquels l'équipe de recherche s'est appuyée pour développer la ressource ainsi que la façon d'intégrer les activités à leur enseignement. Aussi, afin de pallier les problèmes d'accessibilité du matériel informatique, nous avons adapté sept activités qui se réalisent sous forme de jeux de manipulation en sous-groupe. Cette transformation des activités web en activités de manipulation a permis à tous les enfants d'apprendre en jouant avec Abracadabra.

La période des posttests se déroule en juin. Nous pourrons annoncer les résultats dès l'automne prochain. Déjà, les rencontres-bilans avec les enseignantes et les inspectrices sont positives. Selon leurs observations, les enfants ont développé leurs connaissances, reconnaissent davantage de mots et ont un meilleur vocabulaire. De plus, les activités de manipulation ont permis aux élèves de développer des habiletés sociales.

Knowledge Exchange

The team has been busy disseminating our findings in a variety of national and international fora. Among these conferences are World Congress of Education, annual meetings of the Society for the Scientific Study of Reading and the International Academy for Research in Learning Disabilities, the UN Commission on the Status of Women. We were especially pleased to be invited to participate in the United Nations Commission on the Status of Women (CSW67) conference held in March 2023 in New York. The panel, entitled *"Lessons in leveraging digital education, technology, and innovation for gender equality in the Global South"* featured three KIX-IDRC projects from **Canada** and across the Global South. **Larysa Lysenko** presented our team's findings related to the four major directions - gender equality; instructional design for students and teachers; research and implementation; and scaling. To close the panel, Hon. Marci Ian, Canadian Minister of Women and Gender Equality and Youth, offered her reflections on the power of educational technologies for gender equity.

A Kenyan student uses a tablet to read a story in ABRA.

Recent Publications

Arshad-Ayaz, A., Naseem, M. A., & Inyega, J. (2022). Using technology for learning: Generalizable lessons from the qualitative research on technology integration in Kenyan educational system. *Canadian Journal of Learning & Technology, 48(2),* 1–19. https://cjlt.ca/index.php/cjlt/article/view/27957/20639.

Chapleau, N., Leblanc, A. et Laplante, L. (accepté, avril 2023). Et si les enfants apprenaient à lire et à écrire tout en s'amusant. *Actes du colloque de la Biennale internationale en éducation 2023. France.*

Guo, X., Cheung, A., Abrami, P. C., & Wade, A. (2023). Examining the impact of the ABRACADABRA (ABRA), a game-based online literacy programme on primary school students in rural Hunan, China. *Educational Technology Research and Development.* https://doi.org/10.1007/s11423-023-10185-5

Iminza, R., Lysenko, L., Wade, A., & Abrami, P.C. (2022). Implementing interactive literacy software in Kenya early childhood education classes. *International Journal of Education and Development Using ICT. 18(1),* 55-66. http://ijedict.dec.uwi.edu/viewissue.php?id=64

Lysenko, L., Abrami, P.C., & Wade, A. (2022). Sustainability and scalability of digital tools for learning: The Learning Toolkit Plus in Kenya. *Canadian Journal of Learning and Technology. 48(1),* 1-29. https://doi.org/10.21432/cjlt27961

Lysenko, L., Abrami, P.C., Wade, A., Kiforo, E., & Iminza, R. (2022). Emergent Literacy in Math (ELM): Learning numeracy with interactive technology in Kenya grade-one classes. *International Journal of Innovation in Science and Mathematics Education. 30(5),* 1-19. https://doi.org/10.30722/IJISME.30.05.001

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Wade, A., Abrami, P.C., & Durand, C. (2023, April 11). Expectancy-value: How motivated Kenya teachers are transforming early literacy instruction. https://www.gpekix.org/blog/expectancy-value-how-motivated-kenya-teachers-are-transforming-early-literacy-instruction

Wood, E., Vica, C., Gottardo, A., Iminza, R., Kiforo, E., & Wade, A. (2022). Perceptions and pedagogical considerations in professional development training for integration of an early literacy program in Kenya. *Oxford Education Review, 48(6),* 786-803.

Concordia

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