Learning Toolkit+
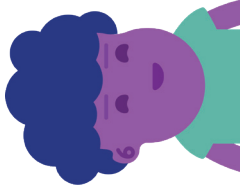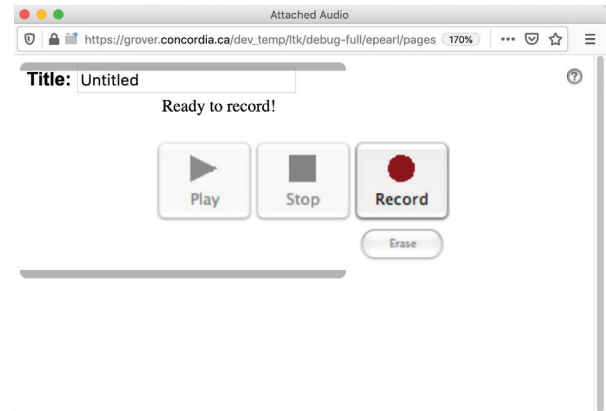# Newsletter SPRING 2020

Contents

LTK+ Release: August

BUILT-IN RECORDER

This past year, LTK+ developers addressed the need to replace the LTK+'s ubiquitous recorder that was programmed in Flash. Scattered throughout **ePEARL** and **IS-21**, we have made significant strides in replacing the recorder, including establishing new methods for online security standards.

SECURITY CERTIFICATE

As the LTK+ continues to evolve alongside global standards, we recommend that LTK+ installations live within secure HTTPS online environments. Thus, there is now the ability to create a 'self signed certificate' (SSL) which will accommodate Local Area Networks and 'offline' uses of the LTK+, such as those in the remote regions of Kenya.

READS

This past year focus has been placed on expanding the collection of French books with over 60 new books being added to **READS.** As well, narrations from our LTK+ partners in China (**Sunny Kwo**) and Kenya (**Maina WaGioko**) have been added to dozens of books.
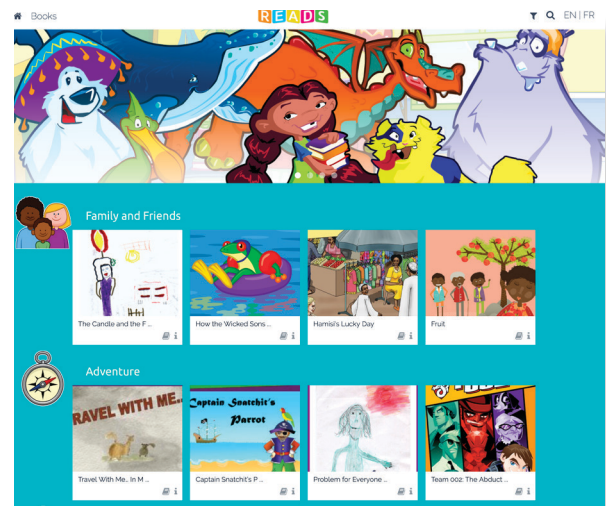
Please email ltkdemo@education.concordia.ca if you wish to receive future upgrade notices.

French ABRACADABRA

Au cours de l'année 2018-2019, une première étude a été réalisée par des chercheurs de l'UQAM rattachés au CEAP afin d'évaluer l'effet de la version en français d'**ABRACADABRA** sur la performance en lecture et en écriture d'élèves de 1re année scolarisés en milieux défavorisés. Au cours des derniers mois, les enseignantes qui étaient titulaires d'une classe de 1re année dans la condition témoin en 2018-2019 ont participé à deux journées de formation ayant pour but de les habiliter à intégrer la ressource ABRA à leurs pratiques pédagogiques habituelles. Par ailleurs, les données qui ont été recueillies dans le cadre du projet de recherche ont compilées; l'analyse et l'interprétation des résultats sont sur le point d'être terminées. Ces résultats devraient être publiés au cours des prochains mois.

In 2018-2019, researchers of UQAM affiliated to the CSLP carried out a first study in order to assess the impact of the French version of **ABRACADABRA** on the reading and spelling performance of first grade students of low socioeconomic status. During the last months, the classroom teachers involved in the control condition of the research project have participated to a two-day professional training aimed to help them to integrate ABRA with their usual teaching practices. To date, the data collected during the research project have been compiled; the analysis and interpretation of the results are almost completed. These results should be published in the next months.
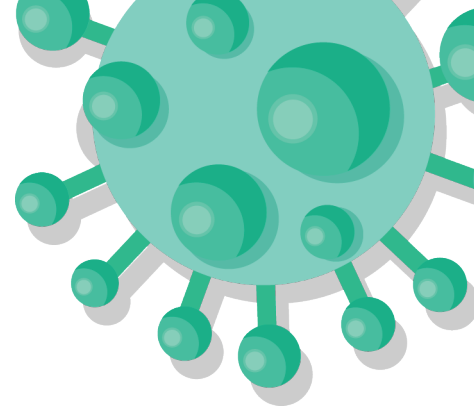
New Literacy Portal: Response to COVID 19

In response to the global pandemic, the LTK+ team had the opportunity to make our tools more readily available to the millions of students currently out of school—both locally and abroad. Early on during the confinement period, the Québec government created **Open School**, an online platform that hosts a collection of resources for parents in pursuit of educating their children at home. This prompted the creation of our very own **Literacy Portal**, a site where a lite version of **ABRACADABRA, READS,** the **Teacher Resource** site, the **Parent Resource** site, and the **Teacher Professional Development** modules are hosted all in one place.

Alongside the support of Concordia's IITS and the Department of Education's Technical Services, we were able to move all of the content on this portal to a larger server to be able to accommodate the influx of new users. During the period of April 3 to April 30, over 100,000 users in Canada had visited the Literacy Portal. In addition to the many new users on the site, there have been numerous requests for access to the demo version of the LTK+.

Along with these requests have also come many questions from parents and teachers asking how to use the tools and how to continue to provide literacy support outside the classroom. To respond to this growing need, a **Getting Started with ABRA** video was made to be added to the Parent Site and live webinars were planned for mid-April delivery.

Offered in both English and French, these webinars were about 40 minutes in length and provided listeners with insight on best practices for the tool as well as a software walkthrough. The webinars were recorded and posted on the Literacy Portal which directs the user to the CSLP YouTube account, in both **French** and **English**.
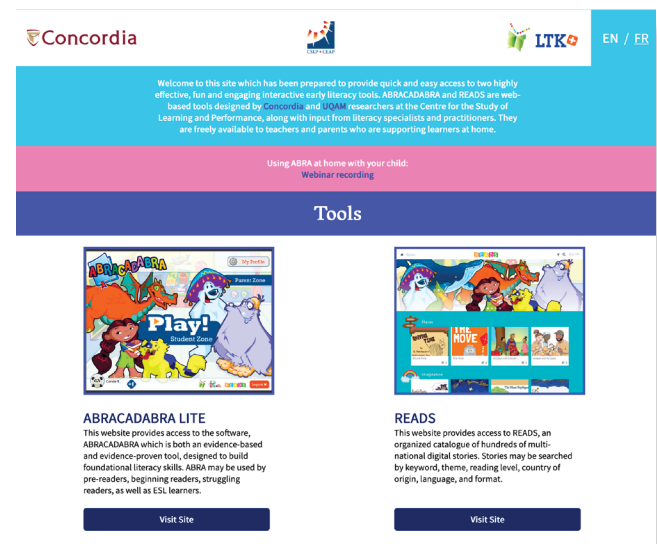
ePEARL 4.0

SELF-REGULATED LEARNING IN POSTSECONDARY SCHOOLS

With funding under **Entente Canada-Québec relative à l'enseignement dans la langue de la minorité et à l'enseignement des langues secondes,** this multi-year project involves working with our partners from Concordia University's Centre for Teaching and Learning, Dawson College's Office of Academic Development, Bishop's University, and most recently McGill's Teaching and Learning Services, to improve teaching and learning at the post-secondary level. Centered around the development of an electronic portfolio called **ePEARL 4.0**, an important objective of this project is to shift from educator-led classrooms towards a more learner-centered approach which encourages active, reflective learning and where students are seen to take on greater responsibility for their learning.

Guided by the expertise of a multidisciplinary Steering Committee, the latest version will build on what was learned in a pilot project carried out with CEGEP (college) and university students. The latest version of the web-based portfolio will feature a simple account creation and log-in system. A re-designed interface will make it easier for students to set goals, upload or create work, link their work to professional competencies, and reflect on their learning. Users will be able to control who can see and comment on different aspects of their portfolio. Owners of a workspace, such as a faculty member, will be able to invite a group of students into their workspace so they may easily view any uploaded course documents, as well as share work and receive feedback from their classmates and/or their professor. We look forward to field testing this latest version in Quebec CEGEP and university classrooms during the 2021 Winter term...

ePEARL TEACHER AND STUDENT RESOURCES

Much like the tools within the LTK+, extensive multi-media support materials have been developed for both faculty and students. In the former instance, the **ePEARL 4.0 Resources** website includes a series of videos where professors discuss the importance and value of goal setting and reflection, how to do this in a meaningful way and how to support students as they go through this process. There is also a portfolio implementation guide that addresses the common issues faced by educators wanting to integrate portfolios into their teaching. The **Student Resources** include tips and strategies that will help them develop those self-regulated skills scaffolded within the

portfolio. There are also written guides and handouts on these topics. Most recently, examples of students' portfolio presentations have been added to illustrate the portfolio process.

Drawing on this support material, faculty development workshops have been conducted for educators from our partner institutions—Dawson College, and Bishop's, Concordia and McGill universities. If you are teaching in a post-secondary classroom and are interested in participating in this project, please contact **cslp@concordia.ca.**
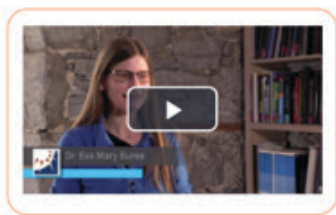
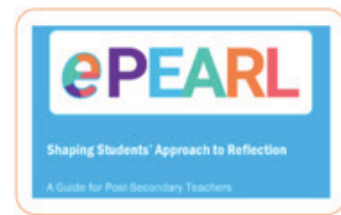**Elements of Outstanding Portfolios**

Professors explore the elements of an engaging portfolio.
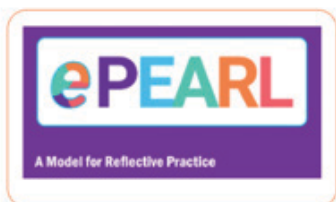

Supporting Under-Performing Students Through Self-Regulation

A Dawson College professor discusses how to support and motivate under-performing students.

Shaping Students' Approach to Reflection

A guide for post-secondary teachers for encouraging students to reflect critically and thoughtfully.

International LTK+ Projects

SCALING UP AN EDUCATIONAL INNOVATION

Our literacy and numeracy project has evolved from a pilot study in 12 primary classes to spread to more than **500 primary** and **secondary classrooms** in a number of areas in Kenya including **Mombasa, Meru, Laikipia, Kirindon,** and **Kwale.** The significant positive impact of the LTK+ tools on a range of student's skills including literacy, numeracy, and self-regulation made it important for us to learn how we can ensure that the tools continue to be used and in a larger number of Kenyan classrooms.

To explore these questions, we designed a survey that tapped into what is known about expanding and sustaining educational innovations. Viewing the teachers as the agent of change, the survey also drew on a theory of motivation suggesting that an educational innovation is more likely to endure if the teacher's value of the innovation and the likelihood for success are high, and if these benefits outweigh the costs of implementation. We spoke to a range of stakeholders associated with the Kenya LTK+ projects over the years including teachers, ambassadors, school principals and representatives of partner organizations. **Forty interviews** were completed, coded and analyzed.

The value of using the LTK+ for students' benefit was the main driver for teachers to continue the use of the tools (e.g., students became more motivated and improved their skills). The contingencies between the use of an LTK+ tool and the desired outcome were about equally split between internal (e.g., if the teacher sees a value) and external (e.g., if support is available) attributions. Costs mainly related to physical aspects (e.g., managing use of LTK+ in big classes). When speaking about the factors hampering the expansion of LTK+ tools in Kenyan schools, the interviewees most frequently brought up teacher-related (e.g., lack of confidence in using ICT and lack of ICT skills) and school-related (e.g., unreliable technology and lack of technical support) factors.

In regard to the influences on viability of the LTK+ implementation in Kenyan school, the comments about school and LTK+ software factors took the most space in the interview narratives. Such factors as teacher and professional development factors, technology and economic factors, political factors and student factors were less present in the interviewees' accounts. When asked to assess the importance and to select **factors critical for strong efficacy in the use of the LTK+ tools, the interviewees named school** and **teacher professional development as the most important factors** respectively.

We also built a model exploring the impact of the specific factors on the teacher motivation (perceived expectations, values and costs) to implement and sustain the use of LTK+ tools. The model explained the **important variance in the teacher intent to stop or continue using the LTK+ tools** with the most influence from the **national and local policies, professional development factors and student factors.**

These findings are important as the existing research evidence is far from establishing the principles that are necessary to build sustainable and scalable approaches to educational interventions in developing countries. Much of the focus has been on the integration of relatively large initiatives into educational mainstream, whereas little effort has been devoted to questions about how to scale up small scale, successful educational interventions to reach many in dire need of it.

Improving Literacy in the Trans Mara

For the past four years, the LTK+ team has collaborated with **World Vision Canada. World Vision Kenya** and the **Aga Khan Academy** in Mombasa on a literacy and numeracy project in a remote region of the Trans Mara, one of the vulnerable regions of Kenya in most need of educational services.

In order to improve the early primary student's literacy and numeracy achievement, ABRA, READS and ELM have been used in pre-school and grade 1, 2, 3 classes in **seven primary schools.**
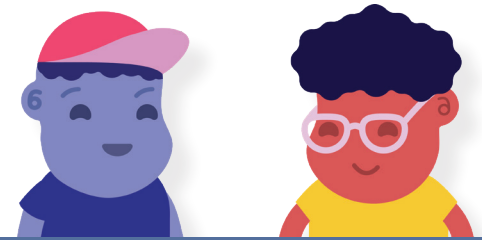
In 2019, we conducted a small study looking specifically at the effectiveness of using **ABRACADABRA** and **READS** on the development of literacy skills of **grade-one students** in Kirindon. This was a pre-test-post-test two-group study where students' reading skills were measured on a standardized reading test (GRADE). For about 20 weeks, the experimental teacher and her 40 students used ABRA-READS for a weekly 45-minute long lesson of English. To increase the exposure time to the software, the students worked in dyads and took turns to interact with the computer. Meanwhile the control teacher taught her 40 students using traditional method of English reading instruction.

ABRA-READS implementation in Kirindon.

The results show reading gains from pre-to post-test for the students in both experimental and control classes. At the same time, the effects consistently favour the students who used ABRA and READS. The analyses found that **after exposure to the ABRA and READS instruction, the students improved their scores at a higher rate than their peers from the control class.** Specifically, the ABRA/READS students showed significantly larger improvements in **Vocabulary, Reading Comprehension** and **Total test.** Graph 1 represents the change in the total test mean scores of students in the experimental and control groups.

Teacher's self-reports also indicated that integrating ABRA and READS in their classroom instruction accounted for the important shifts in the reading competencies of their students. Use of these tools enabled the experimental teacher to spend more time on phonics and phonemic awareness, as well as bring more emphasis and diversity in teaching fluency and comprehension activities to their grade-one students.
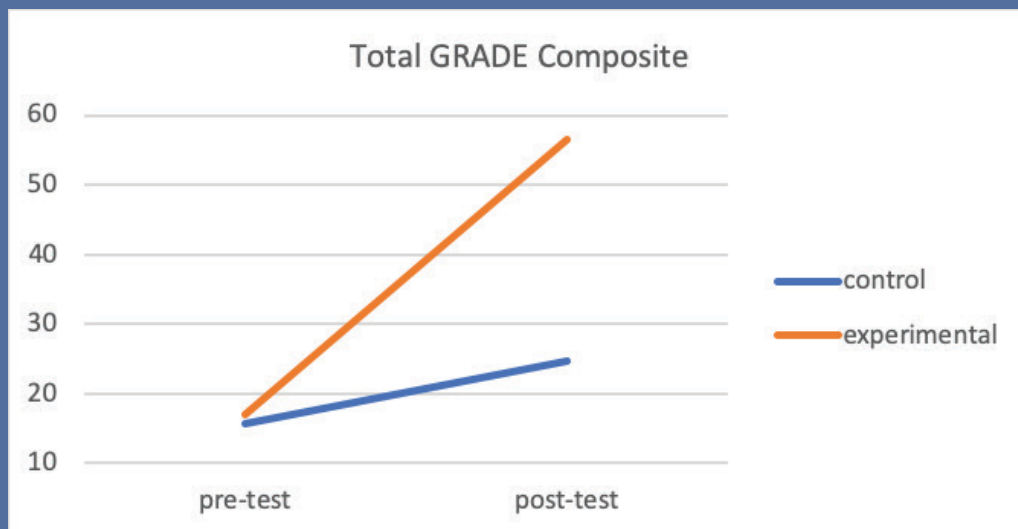
Graph 1. Total GRADE average scores of the experimental and control groups

Using ELM In Mombasa

The promising results from our 2016 pilot that explored the feasibility of integrating **ELM** in early primary Math classrooms in Mombasa, provided the impetus for conducting a larger study. In 2019 in partnership with **Aga Khan Academy** in Mombasa, we conducted a study of ELM in **14 grade-one classes** from **seven primary public schools in the Mombasa area.**

Busy Bees Primary students using ELM

For several months, **nine teachers used ELM** to teach mathematics curriculum to their grade-one students whereas **five teachers continued teaching math in a regular fashion**. To measure student learning gains, we used a standardized test of mathematic achievement (GMADE) to assess all students at the baseline and then again at the conclusion of the study.

Overall, the outcomes of this study suggest that **the use of ELM significantly improved young student's mathematical abilities** over those of students from the control group. Graph.1 illustrates the average total gains of students from both groups highlighting the improvements of experimental students who learned with ELM in the school computer lab during a weekly math lesson for a few months.
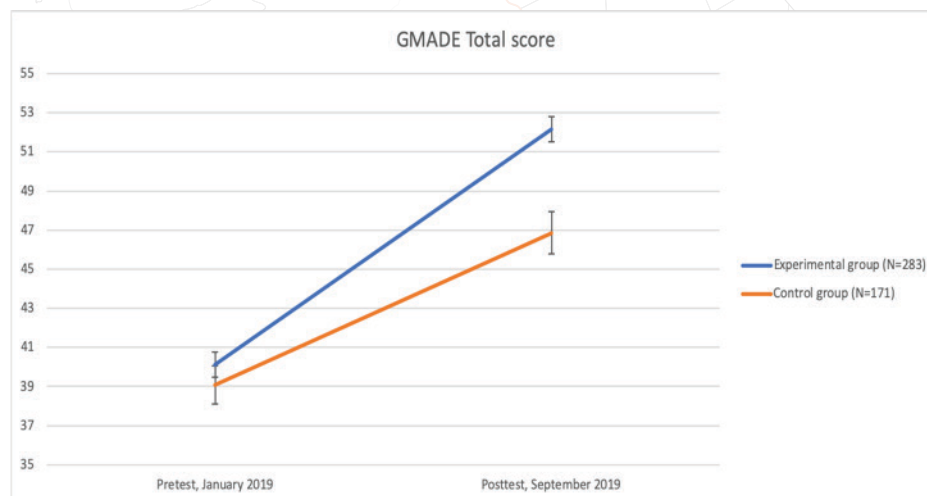

Graph 2 - Total GMADE average scores of the experimental and control groups

The effects of using ELM were especially important on complex mathematical skills where students used language and the concepts of mathematics and applied appropriate operations and computation to solve word problems. The areas included algebra, geometry, measurement, money, numeration, quantity, sequence, statistics and time. On this set of skills, **the magnitude of difference between the groups was .71 implying that, after learning with ELM, an average student will improve by 27 percentile points and score at the 77th percentile.**

This study also revealed shifts in the teachers' perceptions about their practice. At the conclusion of the intervention, the **ELM teachers reported having gained more confidence in mathematics and comfort in teaching mathematics with computers.** Such shifts were expected since ELM is designed to supports teachers' classroom instruction and ensure they cover important mathematical concepts and deliver them to students correctly and confidently. ELM allowed teachers to diversify Math content traditionally taught in grade-one classes. In addition to concepts of counting, adding and subtracting, teachers also focused on teaching geometry, place value and patterns.

In order to expand on these findings, we hope to resume the 2020 study of ELM that was halted by the Covid-19 pandemic.

We would like to acknowledge our funders for all of these international research projects: The International Development Research Centre and the Social Sciences and Humanities Research Council.
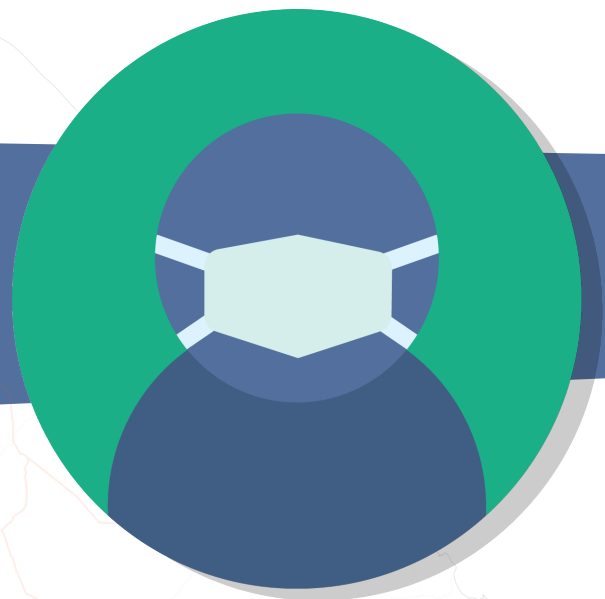
Self-regulated Learning (ePEARL) in Kenya

In partnership with **I Choose Life Kenya** and the **Aga Khan Academy**, the CSLP completed a two-phase pilot of **ePEARL**, our electronic portfolio designed to support deep meaningful learning by supporting students through the self-regulated learning processes of planning, doing and reflecting. The philosophy and pedagogy of ePEARL fits well within the landscape of the Kenyan student-centred school reform fostering "independent, confident, co-operative, and inspired learners" capable of succeeding in the 21st century.

In both years, under their teachers' guidance the students from public secondary schools were using ePEARL to complete their class projects in English Language and Literature, Business Studies, Biology, and Physics. Participating students varied in their use of the features within ePEARL, ranging from no use to extensive use, such as creating multiple versions of an artifact, identifying task goals and strategies and reflecting on their learning progress and outcomes. It is important to note **the number of students who had more comprehensive use of ePEARL almost tripled over two years,** from 25 students in 2018 to reach 73 students in 2019.

Changamwe Secondary students using ePEARL

The extent of ePEARL use consistently and significantly predicted students' performance in their subject exams. The graph below illustrates how students' average exam scores in both years varied as a function of ePEARL use. Specifically, higher exam scores were obtained by the students who made fuller use of the ePEARL features.

The results also indicate that in 2018 and 2019 after learning with **ePEARL, the students reported more frequent use of the self-regulation strategies than their peers who did not do any work with ePEARL.** In view of these promising pilot results, we are planning a larger study of ePEARL, where we will compare gains in a subject matter and self-regulation of students who learn with ePEARL versus those who learn in a traditional way.
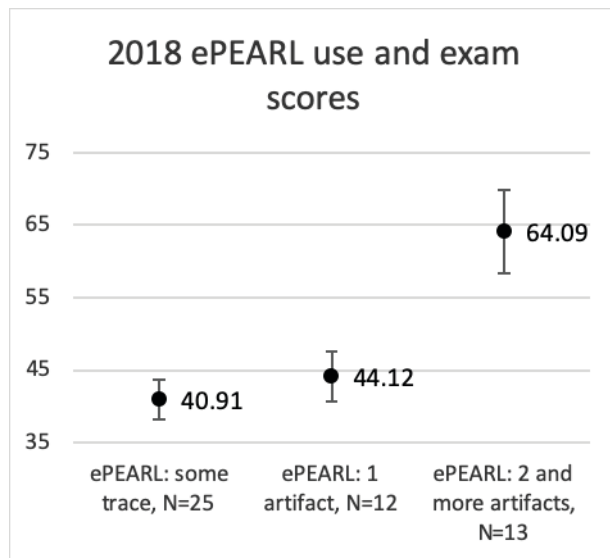
Graph 3. Average exam scores by the extent of ePEARL use (2018)
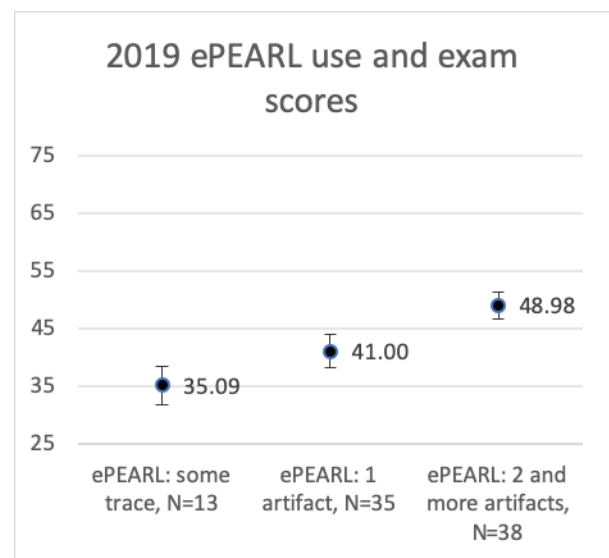
Graph 4. Average exam scores by the extent of ePEARL use (2019)

Online Teacher Professional Development

TEACHING EARLY LITERACY WITH THE LEARNING TOOLKIT+

One new project that the LTK+ team has been working on this past year is the development of several **teacher professional development** modules bundled together in an online TPD program called **Teaching Early Literacy with the Learning Toolkit+.**

The modules are designed to support teachers' use of the literacy tools within the LTK+, specifically **ABRACADABRA** and **READS**. The goal is to promote best practices and help bridge potential gaps in teachers' knowledge of sound literacy instruction.
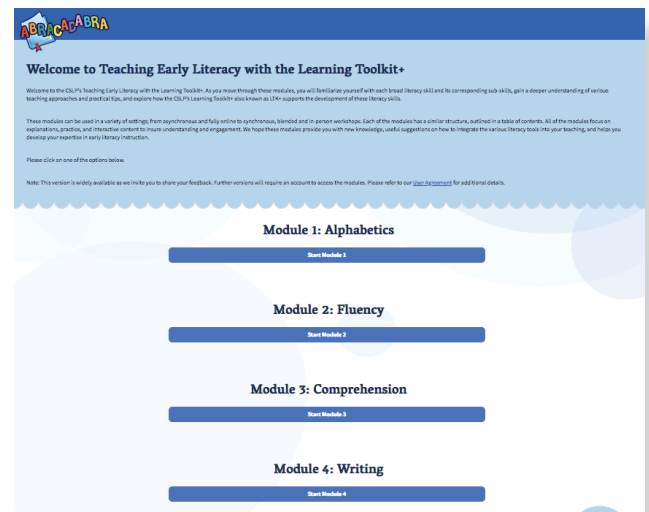
Version 1.0 contains four modules that focus on the core literacy skills: Alphabetics (phonological and phonemic awareness, and phonics), Fluency, Comprehension, and Writing. Using a combination of text and multi-media presentations, teachers learn about the skill, how it is addressed in ABRA, and how to bring it into in their classroom. Teachers are asked to pause and reflect on their learning throughout the module. There are also several interactive knowledge check questions that require teachers to engage with the content in various ways.

The first four modules are being piloted in Kenya, Rwanda and Bangladesh as part of the new KIX grant. The CSLP is working closely with partners from **Wilfred Laurier University,** the **Aga Khan Academy** and **World Vision Canada** to deliver different models (F2F, blended, online) of professional development.

Preliminary results from Kenya show that teachers' knowledge increased after going through the Alphabetics module. Additional gains were observed after they covered the module a second time.

Additional modules will include ABRA assessment, links to **ePEARL,** Cooperative Learning strategies, and Train the Trainer. They are expected to launch in August 2020.

ABRACADABRA

Fill-In-The-Blank

How many phonemes does the word 'show' have?   Question 3 of 8

'Show' has [ ] phonemes

Submit

Skip

ABRACADABRA

What is Fluency?

Watch this video to get a brief introduction to this broad skill

A IS FOR ALLIGATOR

01:52/ 03:18

Video Transcript Here
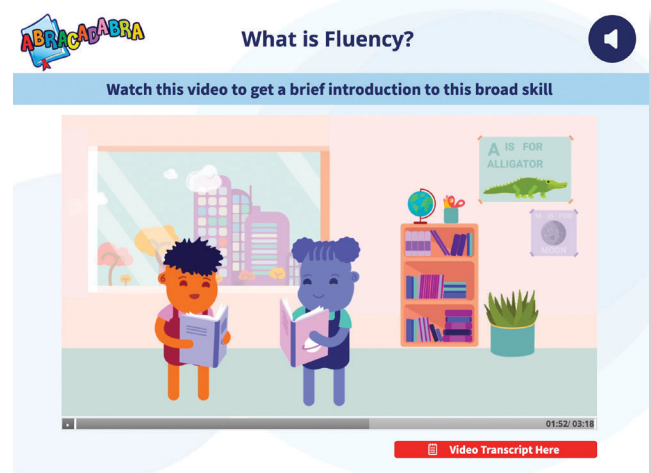
Scaling Educational Innovations

KNOWLEDGE AND INNOVATION EXCHANGE

The LTK+ team at the Centre for the Study of Learning and Performance is pleased to announce a new Knowledge and Innovation Exchange (KIX) research grant, called **Using Technology to Improve Literacy in the Global South** that was awarded at the beginning of 2020. This was one of **twelve global grants** awarded, out of almost 400 submissions, by the **IDRC** aiming to strengthen national education systems in more than 40 low and middle-income countries. This 42-month research project will be conducted in three countries: **Rwanda, Kenya** and **Bangladesh** in partnership with **World Vision Canada, Aga Khan Academies** and **Wilfrid Laurier University.**

The primary objectives of this grant are to achieve significant, **scalable, sustainable,** and **cost-effective** increases in **student learning, enhancements to teaching practices** through engagement with ABRA/READS professional development, and **wide-scale changes to educational policies** concerning educational research in general and educational technology in particular.

CONCORDIA RESEARCHERS EVALUATE THEIR WORK TO IMPROVE LITERACY RATES IN KENYA

A visit to Oloonkolin School

"Concordia researchers from the Centre for the Study of Learning and Performance (CSLP) visited the Trans Mara region of Kenya in May to see firsthand how their hard work on reducing illiteracy in the area was paying off.

They were evaluating the impact of the Learning Toolkit Plus (LTK+), a suite of evidence-based pedagogical software for teaching English and French literacy, mathematics and other skills that the CSLP introduced in this region in 2015.

The centre has implemented the software in 27 primary schools across Kenya, including in Trans Mara, which is located in the southwest part of the country. More than 3,600 Kenyan students are now taught fundamental literacy skills through the LTK+ and its ABRACADABRA software."

- July 5, 2019 | By Kelsey Rolfe

Read full article **here.**

LATEST PUBLICATIONS

Abrami, P. C., Lysenko, L. & Borokhovski, E. (2020). The effects of ABRACADABRA on reading outcomes: An updated meta-analysis and landscape review of applied field research. *Journal of Computer-Assisted Learning.* https://doi.org/10.1111/jcal.12417

Lysenko, L., Abrami, P.C., Wade, A., Marsh, J., WaGioko, M., & Kiforo, E. (2019). Promoting young Kenyans growth in literacy in educational technology: A tale of two years of implementation. *International Journal of Educational Research*, 95, 179-189. https://doi.org/10.1016/j.ijer.2019.02.013

Wade, A., Lysenko, L., & Abrami, P.C. (in press). Developing information literacy skills through the inquiry process. *Journal of Information Literacy.*

UNDER REVIEW

Abrami, P.C., Wade, A., Lysenko, L., WaGioko, M., Kiforo, E., Iminza, R. & Marsh, J. (2020). The Learning Toolkit Plus: An overview. [Manuscript submitted]. *Frontiers in Educational Technology. Special issue.*

Arshad-Ayaz, A., Naseem, M.A. & Iniega, J.O. (2020). Using Technology for Learning: Generalizable Lessons from the Qualitative Research on Technology Integration in Kenyan Educational System. [Manuscript submitted]. *Frontiers in Educational Technology. Special issue.*

Gu, H., Yao, J., Cheung, A., Zeng, Z., & Abrami, P.C. (2020). Can computer-assisted-learning help? A meta-analysis on the effects of ABRACADABRA on K-3 non-native English speakers. [Manuscript submitted]. *Journal of Computer Assisted Learning.*

Gu, H., Yao, J., Zhou, L., Cheung, A., & Abrami, P.C. (2020). Teachers' implementation accounts: A quasi-experimental study of a web-based literacy tool on Grade 3 students in China. [Manuscript submitted]. *ECNU Review of Education.*

Gu, H., Cheung, A., Abrami, P.C., & Wade, A. (2020). Teachers' perceived challenges of using technology to teach through the lens of activity theory: Lessons from rural China. [Manuscript submitted]. *Frontiers in Educational Technology. Special issue.*

Lysenko, L., Abrami, P.C. & Wade, A. (2020). Sustainability and scalability of digital tools for learning: the Learning Toolkit Plus in Kenya. [Manuscript submitted]. Frontiers in Educational Technology. Special issue.

Wood, E., Gottardo, A., Uribe-Banda, C., Vica, C., Kiforo, E. & Iminza, R. (2020) Supporting teacher integration of early literacy technology: Voices of teachers and teacher-mentors. [Manuscript submitted]. Frontiers in Educational Technology. Special issue.

Concordia

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Learning Toolkit
www.concordia.ca/ltk

CSLP
www.concordia.ca/cslp