

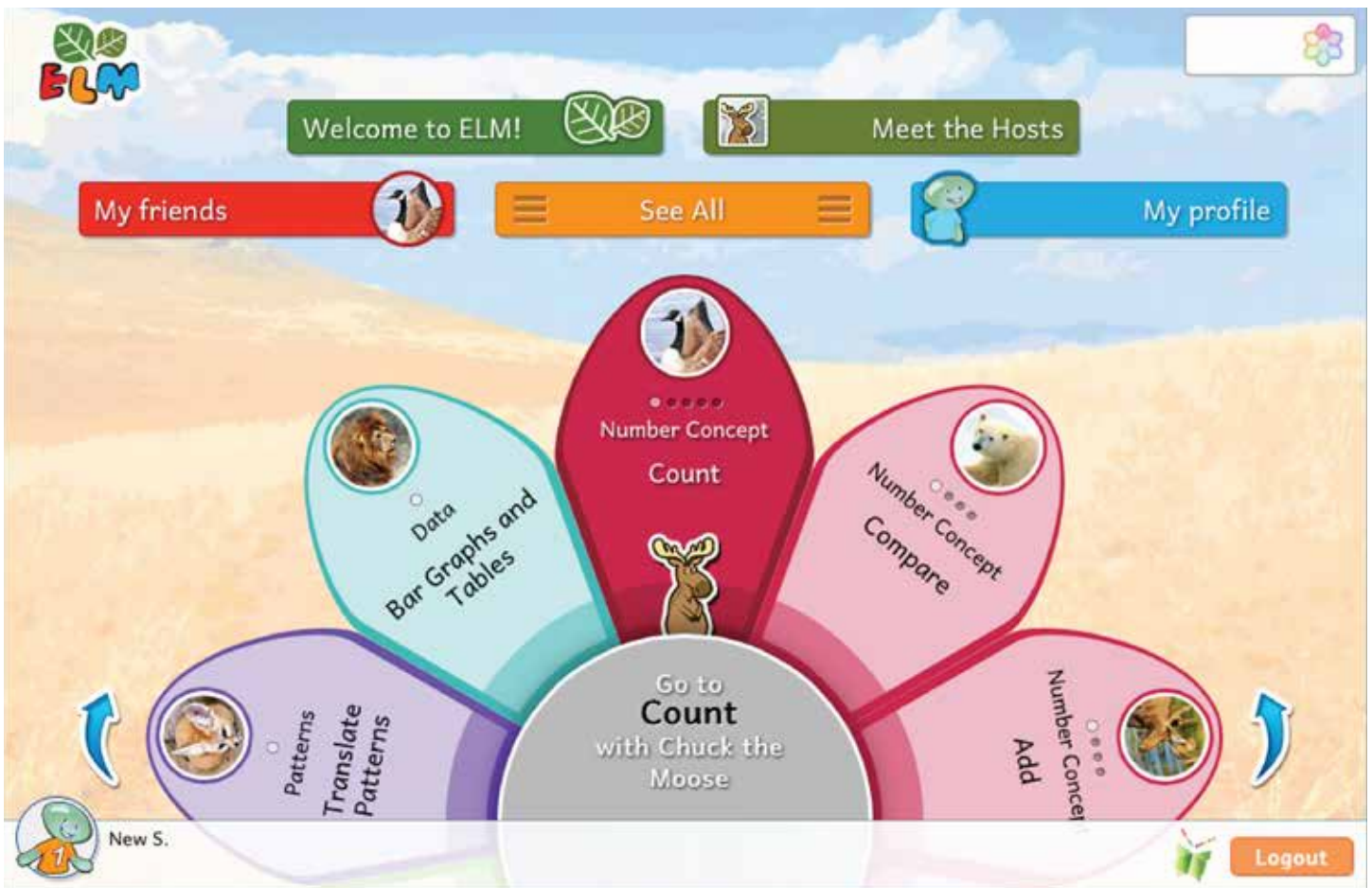


# Learning Toolkit

LTK NEWSLETTER SPRING 2017

CENTRE FOR THE  
STUDY OF LEARNING  
AND PERFORMANCE





## Watch for These Changes in the LTK+ August 2017 Release

- LTK+ will support more current PHP versions (5.4-7.0).
- ELM will have a new look, streamlined navigation and more activities about identifying shapes (Geometry), organizing graphs and tables (Data), and translating patterns (Patterns).
- ELM will be linked to ePEARL level 1, allowing young math students to reflect on the math skills they are developing through games they are playing in ELM.
- ABRACADABRA will be made available in html5, increasing its longevity and making it tablet-compatible.
- French ABRACADABRA will have an intuitive teacher assessment module.
- READS will be redesigned and integrated into the LTK+.

Please send us an email ([ltkdemo@education.concordia.ca](mailto:ltkdemo@education.concordia.ca)) if you wish to receive future upgrade notices.



## ABRACADABRA

With generous funding from the **TD Bank**, our programmers are hard at work behind the scenes, even if the results are not entirely evident to the end users of our tools. The Flash version of **ABRACADABRA** is being replaced with a version rewritten in html5 code, allowing continued use of the tool. And the added bonus is that ABRA will now function on tablets!







## READS

Our repository of free electronic books, READS is currently being revamped and reprogrammed! Due out in the August LTK+ release, the new version will be better integrated with the LTK+, thus encouraging the use of READS to support ABRA's fluency and comprehension activities. Browsing will be made easier on the redesigned home page and a display of images will feature selected themes at random. Search filters will enable searching by theme, level, country or language. With the addition of book descriptions and more refined book levels, teachers will be better able to make book selections according to their students' reading ability. The repository continues to grow with over 600 stories and further additions of narrated stories in English and Kiswahili.

# FRENCH ABRACADABRA

**Development:** Le module d'évaluation permettra à l'enseignant d'accéder aux informations compilées par la ressource ABRACADABRA lors de la lecture des livres ou de la réalisation des activités. Ces analyses, présentées sous la forme de tableaux et de figures faciles à comprendre, mettent en évidence soit un portrait de classe, soit un portrait d'élève. Dans un cas comme dans l'autre, l'enseignant pourra déterminer quelle est la plage de temps sur laquelle il désire obtenir ces informations (p. ex. : les trois dernières semaines, la dernière étape, ou toute l'année scolaire, etc.). Le portrait ainsi généré donnera d'abord un aperçu global de la performance pour l'ensemble des activités. Ensuite, s'il le désire, l'enseignant pourra accéder aux détails de performance pour une activité spécifique. De plus, des recommandations seront également suggérées afin de guider l'enseignant dans ses prises de décision. Le module d'évaluation sera donc en lien étroit avec le guide pédagogique afin de maximiser la préparation des actions à prendre tant auprès des élèves dont la performance est faible qu'auprès des élèves qui progressent bien. À titre d'exemple, dans le cas où le portrait de classe généré indiquerait que, pour la dernière étape, plus de la moitié des élèves qui ont joué à « Mission Fusion » ont dû recevoir de l'aide pour trouver le mot mystère, l'une des recommandations serait à l'effet de (re)faire un enseignement ayant pour cible l'habileté de fusion phonémique. En cliquant sur un hyperlien, l'enseignant aura également accès aux interventions et activités proposées dans le guide concernant cette habileté. Il pourra aussi cliquer sur une icône lui permettant d'avoir accès à la liste des élèves qui ont réalisé l'activité « Mission Fusion » et à leur performance globale (p. ex. : performance faible, bonne performance). Finalement, en cliquant sur le nom d'un élève, il aura accès au détail de la performance de cet élève pour la période qu'il aura choisie.

L+e module d'évaluation constituera un outil incontournable de la ressource ABRACADABRA, qui permettra à l'enseignant de faire des choix éclairés afin d'assurer la progression optimale de chacun de ses élèves et de l'ensemble de sa classe.

**Research:** Au cours de l'année scolaire 2017-2018, une recherche sera réalisée par des chercheurs de l'Université du Québec à Montréal associés au Centre d'étude sur l'apprentissage et la performance de l'Université Concordia. Cette recherche a été subventionnée par le **ministère de l'Éducation du Québec (MELS) et le ministère Économie, Science et Innovation (MDEIE)**. Elle a pour but d'évaluer l'effet de la version en français d'ABRACADABRA sur la réussite des premiers apprentissages en lecture et en écriture d'élèves scolarisés en français. Pour ce faire, la performance d'élèves de 1re année dont les enseignantes recourent à la ressource ABRACADABRA en complément de leurs pratiques pédagogiques habituelles sera comparée à celle d'élèves de 1re année où cette ressource n'est pas utilisée. Plusieurs habiletés hautement associées à la réussite des premiers apprentissages en lecture et en écriture seront évaluées avant et après l'implantation d'ABRACADABRA. Les résultats de cette recherche devraient être rendus publics au cours de 2018-2019.

The screenshot shows a web interface for 'Jargon dragon' with a navigation bar and a main content area. The main content area is titled 'APPRENTISSAGES VISÉS' and contains a table of student performance across four levels. A legend explains the color coding and symbols used in the table.

**APPRENTISSAGES VISÉS**

- Association d'une définition à un mot donné (enrichissement du vocabulaire oral et écrit)

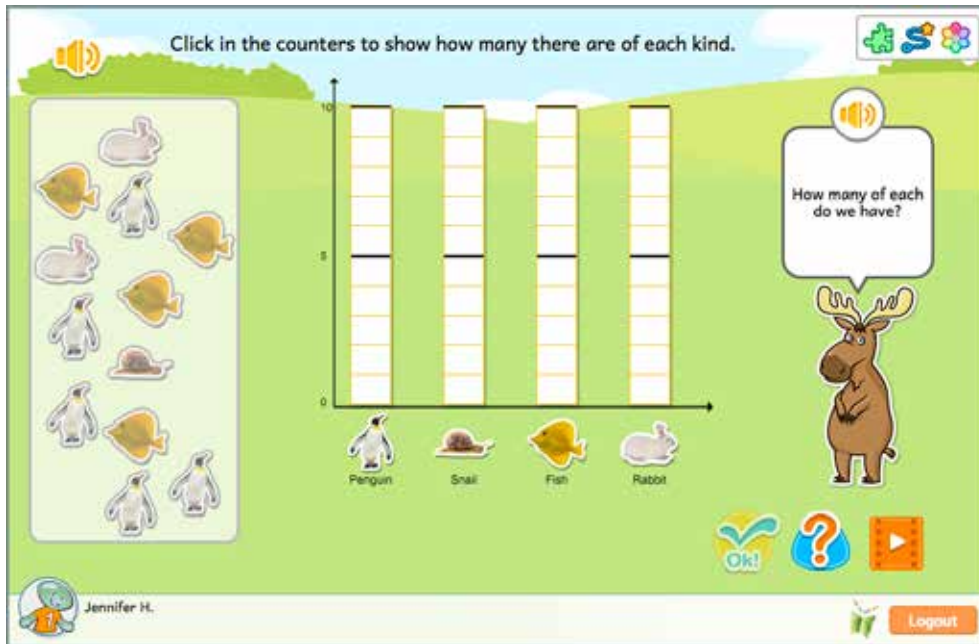
Niveau 1: Mots ayant une fréquence orale correspondant à l'âge de 5 ans  
 Niveau 2: Mots ayant une fréquence orale correspondant à l'âge de 6 ans  
 Niveau 3: Mots ayant une fréquence orale correspondant à l'âge de 7 ans  
 Niveau 4: Mots ayant une fréquence orale correspondant à l'âge de 8 ans

| Élèves           | Niveau 1 | Niveau 2 | Niveau 3 | Niveau 4 |
|------------------|----------|----------|----------|----------|
| William Hsu      | X        |          |          |          |
| Lorie Ford       |          |          |          | X        |
| June Miller      |          | !        | X        | X        |
| Andrew Varner    | !        | !        | X        | X        |
| Ronnie Miller    |          |          | X        | X        |
| William Hindman  |          | X        |          | X        |
| Virginia Reyes   |          |          | !        | X        |
| Shamika Erickson | X        | X        | !        | X        |
| Sarah            | ..       | ..       | ..       | ..       |

**Légende**

- Bonne performance (Vert)
- Performance moyenne (Orange)
- Performance faible (peu joué) (Rouge)
- Performance faible (beaucoup joué) (Rouge foncé)
- Nombre de parties insuffisant (X)
- Non-joué (Carré blanc)

# ELM



**Research on ELM's Impact:** In the 2016-2017 school year, more than **480 grade one students** and their 24 teachers from four school boards in Quebec (**English Montreal School Board, Commission Scolaire Point de l'Isle, Commission Scolaire Beauce-Etchemin and Eastern Shores School Board**) have been participating in this study. Additionally, six teachers from British Columbia (**Powell River School District**) have been using ELM in their grade one Math classrooms. For about three terms, the experimental teachers taught the pivotal concept of Number and related operations with the help of ELM, while control teachers relied on their regular math instruction.

Thanks to funding from the **Max Bell Foundation**, this past year we have been able to focus our efforts on the expansion of the Student Module. Three new activities, part of our Geometry theme, focus on identifying basic shapes. The Data activity will guide students in categorizing objects, creating a bar graph from that data, and then translating that graph into a table. The Patterns activity will have students identify the unit of repeat and then translate that pattern using different objects.

ELM's interface has also been redesigned to allow for improved accessibility to the activities. There are also new features, such as the ability to meet the theme hosts. In addition, the Teacher Report has been altered so that teachers can (de)select the information they want to view and provides a clean look overall. ELM's connection to ePEARL has grown stronger as well, students can now reflect on ELM-specific ideas as they develop their self-regulated learning.

Over the coming months, we will be focusing our efforts on expanding the Teacher and Parent modules. Watch for the addition of teacher implementation and other videos to help support the use of ELM at school and in the home.

The two rounds of observations that have been completed in the ELM classrooms reveal that teachers have developed ease in using ELM as part of their Math instruction. They have integrated the tool in a variety of classroom settings (a computer lab or a technology centre) and teaching approaches (exhorting strict pedagogical control over activities or providing students with the liberty of choice). The students have also become fluent with ELM as observations show they need very little direction and are able to support each other.

Planned for the late spring, post-test data collection in Quebec will include measuring students' gains in math achievement, along with their attitude towards mathematics. The teachers will also report on students' self- and co-regulation in the context of math instruction. All participating teachers will enjoy the opportunity to share and discuss their experiences with their colleagues in Quebec and British Columbia, as well as to participate in intensive training of their peers from the control classes. We are looking forward to welcoming the teachers and learning from each other. This research has been funded by the Québec Fonds de Recherche, Société et Culture.



## ePEARL LEVEL 4 IS UNDER DEVELOPMENT

The CSLP, along with the **Office of Academic Development at Dawson College** and the **Centre for Teaching Services** at Concordia, has obtained funding for the development of ePEARL L4, through the *Entente Canada-Quebec*, a program to support English-language (minority) post-secondary education in the province. The new tool will be designed to scaffold self-regulation in post-secondary students through the use of a flexible, engaging, portfolio environment. Our development team will draw on the research results from the use of the prototype, including surveys and interviews, to design a tool and support materials that will encourage meaningful and wide-spread use of the e-portfolio to improve learning outcomes and engage young adults in the process of deep, meaningful, life-long learning.

## ISIS-21 AND INFORMATION LITERACY SKILLS

Our research and development on Information Literacy has continued this past year, with a focus on the expansion of the teacher support materials for our Francophone teachers. This material, including an example of an inquiry task entitled Planète terrestre, has been posted to the SESI-21 Teacher module [grover.concordia.ca/resources/isis21/teacher/fr](http://grover.concordia.ca/resources/isis21/teacher/fr)

With funds from the **Social Sciences and Humanities Research Council**, the impact of ISIS-21 on the development of information literacy skills is also being studied in seven English and French classrooms from the **English Montreal School Board** and **Commission Scolaire Point de L'Isle**. Using a two-group research design, **170 grade-five students** are

currently working on an inquiry project related to advertising or recycling. The English and French versions of ISIS-21 are being used to support the inquiry of experimental students, whereas students in control classes are completing their projects without using the software. Experimental teachers had the choice of using the Guided Mode (12 steps), or the Flexible Mode (eight steps), which contains all of the features that are found in the Guided Mode though only the core features of the tool are automatically displayed.

To date we have collected pre-test data using measures of information literacy (TRAILS, [trails-9.org](http://trails-9.org)) and self-regulation (SLSQ, [concordia.ca/research/learning-performance/knowledge-transfer/instruments](http://concordia.ca/research/learning-performance/knowledge-transfer/instruments)). The ISIS-21 students have made considerable progress in their inquiry project: they have planned their search strategies and started searching for information. By the end of the school year we are expecting experimental classes to have completed the three phases of the ISIS-21 inquiry process a) measure changes in student inquiry and self-regulation skills (compared to control classes); b) videotape students' project presentations; and c) learn about teachers' experiences and perspectives in using both the software and the support materials for their classroom projects.



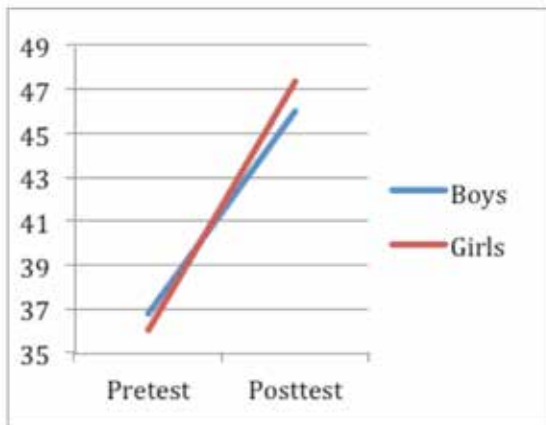
# OUR INTERNATIONAL RESEARCH PROJECTS

In 2016, our literacy and numeracy projects in Kenya were funded under the **Strengthening Education Systems East Africa (SESEA)** project, a sub-component of a large multimillion joint initiative between **Global Affairs Canada** and the **Aga Khan Foundation Canada**. The results of these projects are summarized below.

## Numeracy in Kenya

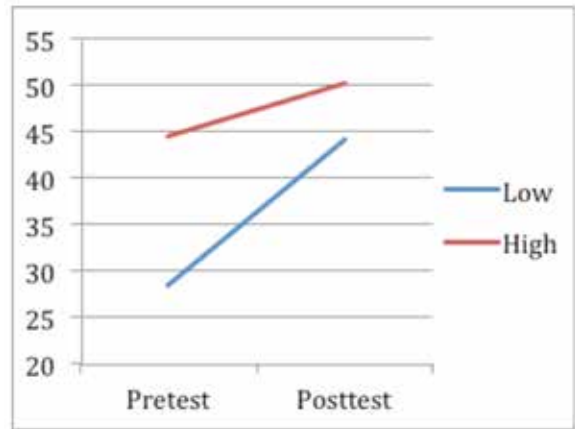
We are pleased to report on the results of a small study using ELM in two primary schools in **Mombasa**, Kenya throughout 2016. Three teachers and their **168 grade-one and kindergarten** students participated in this project designed as a one-group pretest-posttest study over six months. Following the initial training in ELM, teachers were provided with teaching materials to help integrate the software into their regular math instruction and they attended weekly planning meetings facilitated by the local ELM Coordinator. Some classroom observations were conducted by the ELM coordinator, who then provided feedback on their Math lessons.

Employing a standardized test of mathematics achievement to measure the change in math skills for students, the implementation revealed the feasibility of using ELM in Kenyan math classrooms. Some findings included a) the girls in the ELM classes demonstrated higher gains than boys albeit non-significant; and b) as a result of instruction the initial pre-test gap between low and high performing students started closing. These results are visually represented in the graphs below.



Graph 1 Math gain scores difference between boys and girls

We also learned a few lessons regarding the ELM implementation. For example, teachers need to build more comfort with using the technology in large classes. Not surprisingly, technology in the computer labs needs to be more reliable to maximize learning opportunities for the students in large classes whereas implementation of cooperative teaching approaches could also aid math instruction.



Graph 2 Math gain scores between low and high readers

## Literacy in Kenya

Preliminary (ABRA and READS) findings for our 2016 literacy project in Kenya are currently available. Twenty-seven teachers and their **1300 grade-three students** from 16 primary schools in **Mombasa** and **Nairobi** participated in the study designed as a two-group pre-test-post-test study. The model used was in keeping with that set in earlier years whereby our local team of coordinators and ambassadors facilitated the training and support of teachers. This year the intervention extended to the whole school year given the character of ABRA implementation in the authentic classroom context.

The preliminary reading achievement data show that students who used ABRA significantly outperformed students taught using regular instruction, as ABRA students' gains were significantly higher on the GRADE reading comprehension. In addition, girls and boys benefited about equally from ABRA. Both genders in the ABRA classes showed enhanced performance on the GRADE compared to those students learning to read using a more teacher-directed, recitation method of instruction.

As well, teachers continue to develop a certain comfort level with the software and have improved their ability to balance the teaching of key literacy sub-skills. Having said this, the teachers' skills on integrating ABRA into the curriculum could be further developed, as better links could be established between the ABRA content and the learning activities in the classroom. Other findings, including instruction, were reported to be gender balanced. Students of both genders were equally engaged in asking questions, and the teacher equally called upon them. The language that ABRA teachers used in their instruction was reported as being gender balanced and non-discriminative.



## Reaching out to Secondary School Teachers

As part of the **Jielimishe project**, the Aga Khan Academy and the CSLP have been working with Anne Gatende in the teaching of 21st century learning skills using ISIS-21 and ePEARL!



## Future Work in Kenya and Beyond

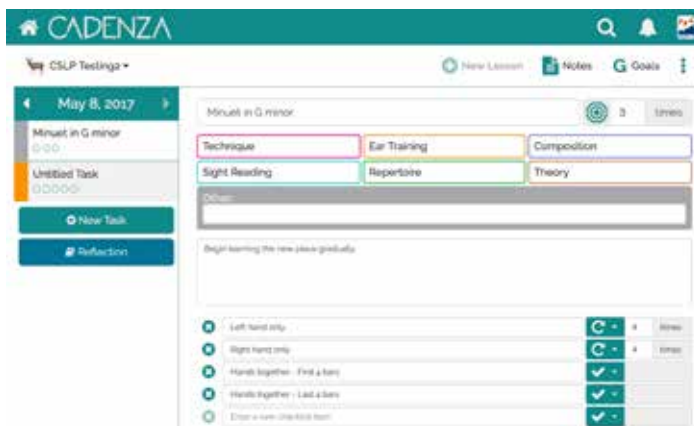
We are very pleased to have been awarded funding from Canada's **International Development Research Centre** as this will enable us to continue these projects over the next three years with the intent to learn more about how to successfully scale up and sustain an educational innovation such as the Learning Toolkit. More recently we learned that a seven-year **SSHRC** Partnership grant was awarded to our team, so expansion plans beyond Kenya may become a possibility! We thank Jonathon Marsh (Aga Khan Academic Unit) and John Temba (ICT4E, Kenya Ministry of Education) for participating in the **SSHRC** interview, thus helping to make this a grant a reality.

### ABRA in China!

Led by our colleagues from the CEELT, funding received from the **Canadian International Development Research Centre** has enabled the team to look at the effects of using ABRA with primary students in rural China. Approximately **700 third grade students** from five schools in the Hunan Province are participating in a year-long pilot study. Post-testing will unfold in June.

[concordia.ca/ltk](http://concordia.ca/ltk)

## MUSIC TOOLS SUITE



### Cadenza

We have heard great things from Cadenza users. Now it's time to review and refine the tool! We are working on Version 2 of Cadenza and are currently investigating the best ways to enhance the Cadenza experience. Our teams of expert teachers and students, as well as loyal users all over the world are helping to inform the CSLP design team about which new features would further enhance this electronic notebook for musicians.

[musictoolsuite.ca](http://musictoolsuite.ca)

### Acknowledgements

Writers: Estel Grimard, Jennifer Head, Einat Idan, Line Laplante, Larysa Lysenko, Anne Wade

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