SELF-REGULATED LEARNING AND EPEARL: A BRIEF REPORT ON THE 2018 FEASIBILITY STUDY.

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Self-Regulated Learning and ePEARL:
A Brief Report on the 2018 Feasibility Study[1]

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Background

Contemporary trends in education research indicate that improvements in educational success will occur when students become active, engaged participants in their learning, thereby enhancing the extent to which learning is personally meaningful (for instance, Abrami et al., 2013). In sync with the global move towards education programs that encourage human capital development, countries of the developing world increasingly express the need for their educational systems to develop autonomous individuals capable of advancing developing national economies. In this regard, the Kenya Ministry of Education has undertaken a massive reform of school curriculum in order to shift the teaching paradigm towards student-centeredness and designed the new curriculum to foster "independent, confident, co-operative, and inspired learners" (KICD, 2017). Cutting across the disciplines and enabling students to be self-reliant, creative and innovative, this competency-based curriculum also centers on developing *lifelong skills of learning to learn* as the outcomes that can open new opportunities for youth to work independently to meet their learning needs and upgrade their skills and empower them on their path to success (KICD, 2016). Given the lack of locally-designed pedagogical interventions targeting the development of self-directed individuals (Stephen, Mailu & Koech, 2018), this study was designed as a preliminary investigation to explore the feasibility and impact of using an electronic learning process portfolio, on Kenya secondary students. Electronic Portfolio Encouraging Active and Reflective Learning (ePEARL) is a student-centred digital portfolio that supports the cyclical phases of self-regulation including forethought, performance and self-reflection (https://www.concordia.ca/research/learning-performance/tools/learning-toolkit/epearl.html).
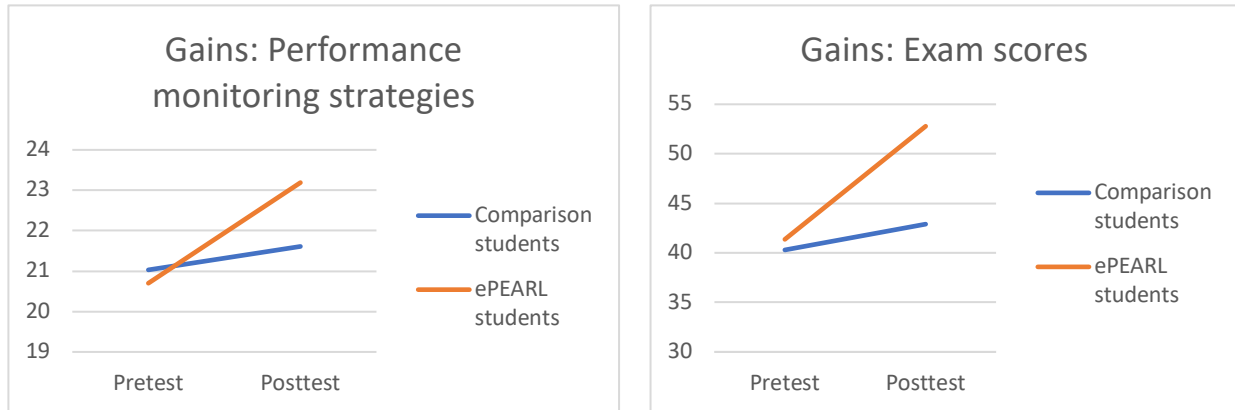

The 2018 Pilot

In 2018 I Choose Life (ICL) Kenya, the Aga Khan Academies unit and the Centre for the Study of Learning and Performance (CSLP) conducted this pilot in a few Mombasa secondary schools involved in the ICL-led Jielimishe Girls Education Challenge initiative. This brief presents a summary of the study and its findings.

For a period of several months in terms 2 and 3, students worked in their school computer lab to use the ePEARL software to complete their class assignments. The students did this work under the supervision of their teachers who had received a three-day training on the importance of self-regulation development in children and the integration of ePEARL to support this development. In addition to training, the teachers were given access to a range of pedagogical materials, including lesson plans, activities and job aids. A set of virtual tutorials explaining the self-regulation features of ePEARL and demonstrating how integrate them into the secondary school instruction were available to the participating teachers. One teacher and his students used the tool on a frequent basis, while ePEARL was used minimally or was not used at all in three classes. In the latter case, these classes were used for comparison with the ePEARL class. To capture a possible shift in students' perceptions of self-regulation, the students completed the *Student Learning Strategies Questionnaire* in the beginning of term 2 and then at the end of the school year. Term-one and end-of-year exam scores were used to measure student learning gains. Student portfolio work was scored to determine the extent the students used the ePEARL features and these scores were used in the analyses.

The results of this pilot study suggested benefits for those 28 students who used ePEARL to complete their class assignments over their 57 peers in the three comparison classes (see Figure 1). ePEARL students' gains were noticeable in the self-reported use of the ensemble of self-regulation strategies, especially those that students relied on when doing assignments such as talking through steps of their task as working unfolded, imagining what their work would look like in the end and trying other strategies when facing a problem. The exam scores analysis revealed that over time, in the class where ePEARL was frequently used, the gains were higher than in those classes where the use of the portfolio was scarce.

Figure 1. Gains of ePEARL and comparison students in self-regulation and achievement

Gains: Performance monitoring strategies

Comparison students

ePEARL students

Pretest   Posttest

Gains: Exam scores

Comparison students

ePEARL students

Pretest   Posttest

Further analyses showed that more frequent use of ePEARL and more comprehensive use of its features to complete a task translated into higher student achievement as measured by the end-of-year exam scores (see Figure 2). Together with the extent of ePEARL use, performance monitoring strategies students reported to have applied when doing the task, turned out to be the strongest predictor of the students' end-of-year performance. Specifically, one-standard-deviation increase in the use of the portfolio or that of performance-monitoring strategies improved their average exam scores by 11 and 18 percentile points respectively.

Figure 2. End-of-year mean exam scores and standard errors by the extent of ePEARL use

End-of-year exam scores

ePEARL: some trace   ePEARL: 1 artifact   ePEARL: 2 and more artifacts
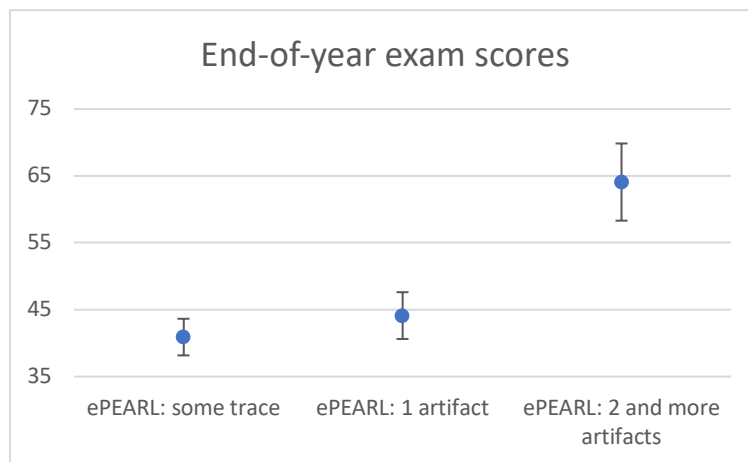
The feedback we collected from the teachers and classes who experimented with ePEARL during the pilot study reveal their enthusiasm, zeal and determination towards teaching and learning with the digital portfolio. Here are a few excerpts from their testimonies:

Teacher 1	*Immediately after the training I introduced ePEARL to my class. To my surprise ePEARL changed learning activity instantly. The excitement and the gusto it created in my students towards learning was amazing.* *It is surprising to see our learner using very little time to take their lunch in order to create time for ePEARL and going home late in the evening.* *As a teacher, learning has never been like this before. I am motivated when I see my students using ePEARL which in turn is helping them to improve their academic performance.* *EPEARL is the game changer towards total transformation of our learning system from teacher centred to learner centred.*
Student 1	*ePEARL has made me confident since I presented in class using it. It has also made my studying interesting and faster. I am able to go through the work and make changes where necessary. It is a welcome development in our school.*
Student 2	*EPEARL has helped me improve my results and I can now learn on my own, like lunch time and after classes before I leave for home at 4pm. I carry out the task given by my teacher because am motivated to learn more.*
Student 3	*ePEARL has made my learning interesting and fun and today am highly motivated to learn. I learn on my own and ePEARL has given me confidence and boost my self-esteem.*
Student 4	*Learning using ePEARL has made my studies fun and now I can use it at home. If possible, I would like to use ePEARL more often to accomplish my learning goals.*

In summary, the 2018 feasibility study was an important initial step that revealed the potential of ePEARL to improve student-centred teaching and learning in Kenyan secondary classrooms. It was possible for regular teachers to implement ePEARL instruction and with an improved system of support to implementation, there is a prospect for ePEARL not only to stay in the pilot classes but also to reach out to many more schools and classes in Kenya.