



TRANSFORMING EDUCATION

PRELIMINARY RESULTS FROM THE STUDY CARRIED
OUT IN CAMEROON ON THE IMPACT OF THE KHAN
ACADEMY ON CHILDREN'S ACADEMIC ACHIEVEMENT
AND COGNITIVE ABILITIES

A PROGRAM BY



**Bibliothèques
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Libraries Without Borders

IN PARTNERSHIP WITH



WITH SUPPORT FROM

Fondation
Orange 

This study describes the preliminary results of the impact evaluation (randomized control trial) of the Khan Academy implemented with 5th graders in Yaoundé, Cameroon.

At the end of the 3-month tutoring period, **the impact on the students' academic level (+14%) and creative skills (+36%) proves substantial.** Furthermore, these students report a higher self-confidence and stronger inclination to learning mathematics than students in the control group.

While the complete results will not be published until September 2014, this intermediate study underlines **how innovative teaching methods such as the Khan Academy** can be employed effectively, even during a short period, to strengthen academic standards in Cameroon and throughout French-speaking Africa.

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ABOUT THE KHAN ACADEMY

With more than 10 million monthly users, the Khan Academy is the most widely acclaimed online learning platform in the world. Its more than 100,000 exercises, 4,500 quality educational videos and tailor-made tools for accompanying students on an individual basis make it a formidable tool for reinforcing the quality of education everywhere.

By translating and adapting the Khan Academy into French and making it available throughout the French-speaking world, Libraries Without Borders aims to provide a major response to the challenge of education for all.

BACKGROUND



The United Nations Millennium Development Goals (MDGs) made access to basic education one of the top priorities for development. However, while in many countries children are able to complete their primary schooling, **the quality of this education remains insufficient.** In Sub-Saharan Africa, most classrooms are overcrowded and taught by poorly-trained teachers. The teaching methods employed are often outdated and fail to stimulate the students' analytical and critical skills, **leaving little room for expression and creativity.** As a result, it is crucial to find innovative teaching methods that will stimulate children and help teachers to provide a personalized support to students with different academic skill levels.

By translating and adapting Khan Academy into French and making it available throughout the French-speaking world, **Libraries Without Borders aims to provide a major response to the challenge of education for all.** This study is an assessment of our action **an after-school tutoring program for struggling students** that made intensive use of the Khan Academy. It was carried out in two 3-month sessions in the Center for Reading and Cultural Activities (CLAC) of Yaoundé and received financial support from the Orange Foundation. The project focused particularly on the **role of mediation and support for students** to get acquainted with the new teaching method.

With this study, we propose to **assess the impact of the Khan Academy-based tutoring not only on the academic level** of the students monitored - compared to the students from the same schools that did not receive tutoring - but also on **their creative abilities.**

The Khan Academy offers not only quality educational contents, but it also provides an interactive and personalized learning method that can serve as a basis for mastery learning based on the exchange between teacher and student. The method also stimulates student analytical and critical skills. Through the videos and exercises, the student is led to see mathematics as a subject of investigation where innovation and creativity are encouraged. Accordingly, in our impact assessment, we also monitored the creative abilities of the students and the program's impact on students' academic confidence and feelings towards learning mathematics.

RESEARCH PROTOCOL

Context

Out-of-school tutoring program carried out in the Center for Reading and Cultural Activities (CLAC) of Yaoundé, Cameroon.

Students

The trial experimentation monitored **257 fifth graders** attending public schools in the Essos neighborhood of Yaoundé. We employed an impact assessment protocol using the randomized control trial method in each class in order to compare participating students (test group) to a control group similar in all respects (age, gender, academic level).

Organization of the tutoring sessions

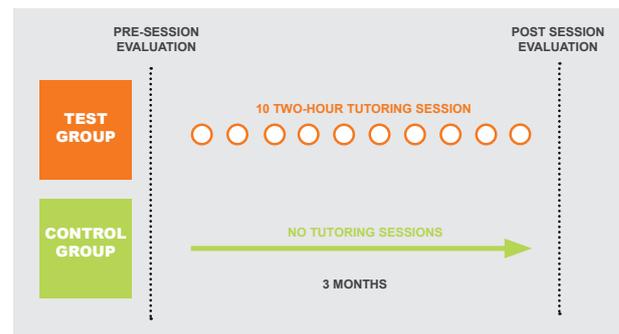
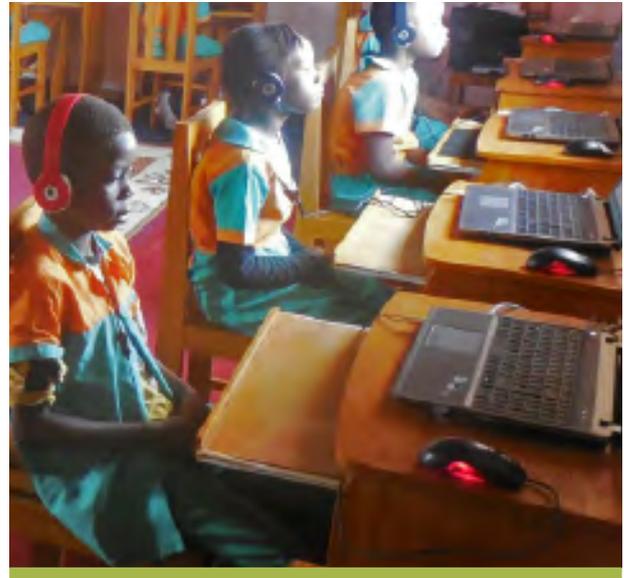
The students in the test group received tutoring during **two 3-month sessions** from January to March, and from April to June. Two tutors and a project officer monitored a group of 20-23 students during a weekly 2-hour tutoring session. Tutors prove crucial as mediators to ensure student acquaintance with the new method and encourage cooperation among them.

Measured variables

At both the beginning and the end of each session, the students in the Test group (257 in total) and those in the Control group (299 in total) were tested on the following:

- their **mathematic skills***,
- their **creativity***.

*Test descriptions can be found in the Results chapter.



We also administered a **questionnaire on social interactions, as well as cognitive tests** (attention span and problem-solving skills). However, the results obtained from these tests are not included in the intermediate study (the complete study will be made available in September 2014).

Finally, **each student underwent an individual interview** at the end of the second tutoring session in order to learn about their feelings on the program, their attitude towards learning mathematics and confidence in their academic skills.

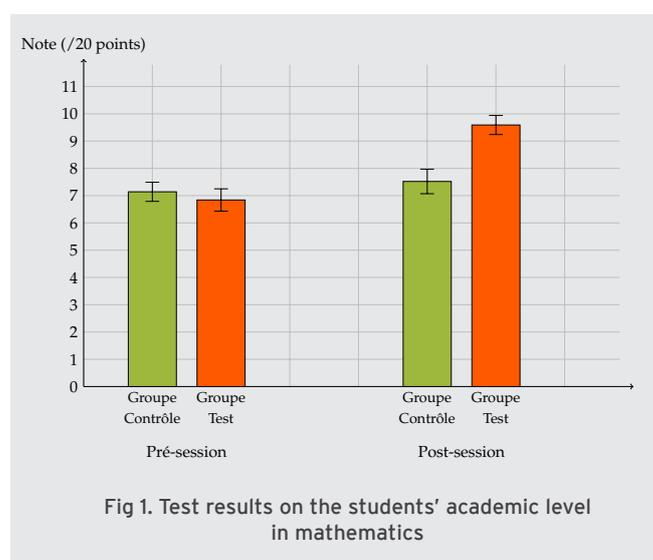
RESULTS

1. A SIGNIFICANT IMPACT ON THE ACADEMIC LEVEL OF THE STUDENTS

The students in both the test and control groups took two math tests: one before the session began, to assess the baseline level of students and ensure that the control and test groups had similar levels; the second test was administered at the end of the session to measure changes in the students' mathematic skills after the tutoring program, allowing to assess both the skills acquired by the students before (in the classroom) and during the tutoring session.

The subjects covered during the tutoring sessions were selected in accordance with the school curricula in Cameroon and in consultation with the teachers of the participating classes.

At the end of the tutoring session, students in the test group earned an average of 2.8 additional points out of 20, an increase of 13.8 percentage points over their previous performance. **A detailed analysis shows that students progressed on both the skills covered during the tutoring program and related skills that were not directly covered in these lessons.** In this way, the Khan Academy content provides a broad understanding of important concepts.



The use of the Khan Academy outside the school improves student math skills significantly. Compared to their non-tutored classmates, test group students show a **score increase of 13,8 %** (2,8 points).



2. A MULTIDIMENSIONAL IMPACT ON STUDENT CREATIVITY AND ANALYTICAL SKILLS

Student creative abilities were assessed using the Alternate Uses task by asking participants to state, in a limited time, the maximum possible uses for a given object. Each response is then scored according to its originality and its degree of sophistication. The total number of responses and the number of categories of uses for each object cited are also included in the total score.

We show in this study that students who attended tutoring demonstrate more creativity at the end of the session than students who did not participate in the sessions, even when the test and control groups were statistically comparable before the program began. Tutored students earn an average of 3.6 additional points out of 10 - an increase of performance of 36 percent - compared to non-tutored students whose scores remained stagnant.

Beyond the performance of standardized tests, discussions with tutors and teachers find a stronger student engagement in learning: students do not passively

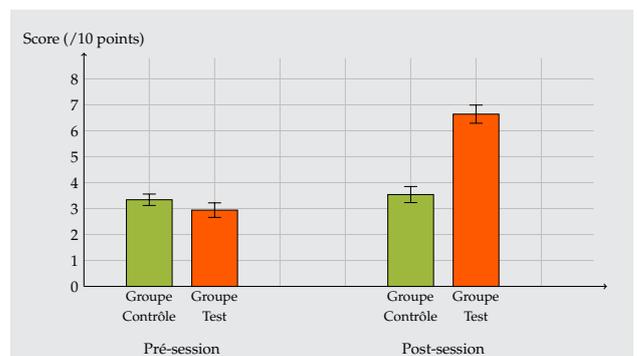


Fig 2. Test results on student creative capabilities

Analysis show a **36% increase in student creativity.**

watch the videos, but actively engage in discussions, ask questions, and offer suggestions to improve the program and contents.

Interviews held with student supervisors suggest that they appreciate the use of the Khan Academy, particularly as a means to personalize the learning experience.

CONCLUSION



This study of the first trial experimentation of the Khan Academy in French in Cameroon suggests that the use of these resources in a challenging school environment, even for a short period, has an extremely positive impact on participating students. Three months of tutoring based on the Khan Academy were sufficient to significantly improve both math skills and creative and critical thinking abilities.

A complete study will be published in September 2014. This study will include a more detailed evaluation on these students' math skills, cognitive and social abilities, and their feelings towards learning via the Khan Academy in French.

These initial results, along with the feedback from students and teacher testimonies, lead us to strongly recommend the use of the Khan Academy in French as

an academic tool, especially for students in underresourced environments.

This first trial experimentation in Sub-Saharan Africa also confirms the importance of personalized support by mediators, be they teachers in a school setting or guardians in an extracurricular context. The Khan Academy is a great educational tool, but the role of the mediator remains crucial. Moreover, when the Khan Academy is used outside of school, sustained communication with teachers was found to be important as a means to customize the learning experience, and to create greater consistency in pedagogical methods.



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- Libraries Without Borders (LWB) is a nonprofit organization founded in 2007 by French historian Patrick Weil.
- LWB counts with 40 employees today, an annual budget of \$4 million and more than 200 volunteers in France.
- Our know-how: providing vulnerable populations with the tools to understand the world and be able transform it. We strongly believe that access to information, culture and education are formidable levers of development for both individuals and societies.
- Our organization is present today in France and in more than 20 countries.



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