Project Edutab Africa and EAA's IDD Internet Free Education Resource Bank (IFERB)

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Submitted by: Edutab Africa

Name of author: Edutab Africa

Address of partner: P.O BOX 1468 -30200 Kitale, Kenya

Table of Contents

List of Abbreviations
PBL - Project Based Learning
CBC - Competency-Based Curriculum
IFERB - Internet Free Education Resource Bank
ICT - Information Communication Technology
EAA - Education Above All
PTR- Pupil-Teacher Ratio
KNBS- Kenya National Bureau of Statistics
GOK-Government of Kenya
FGDs - Focus Group Discussions
MoE - Ministry of Education

Executive Summary

Recognizing that a majority of children need access to quality and engaging educational content, and with parental engagement, and teacher support especially to enable continued learning during the COVID-19 emergency, Edutab Africa carried out a nine-month-long pilot project on IFERB resources with support and funding from Education Above All Foundation. This pilot was implemented between August 2021 and July 2022 in 2 rural public primary schools and 1 community library in Western, Kenya. The intention was to pilot project-based, internet-free, accessible learning resources adopted in English and contextualized to fit local contexts.

In fulfilling this commitment, aiming to improve numeracy, literacy, the world around us (Science), and 21st-century skills. This report presents a comprehensive analysis and findings from the teacher and student assessment tools. It also makes recommendations to the government, schools, and educational NGOs among other stakeholders on potential concrete actions that will improve the implementation of project-based learning activities and strategies using IFERB resources in line with the Competency-based Curriculum (CBC) in public school setups.

To understand and improve the implementation process as well as test the efficacy of the IFERB resources in Kenyan contexts, a number of evaluation and monitoring tools were used. These included learner assessments, learner and teacher surveys, FGDs, teacher learning circles, and observations. Findings from the data collected from these tools brought out aspects that resulted in positive learning outcomes using IFERB resources that we can all learn from. Some of these findings include;

- All the assessed skills/learning areas showed improvement in the endline assessment compared to the baseline assessment.
- Looking at gender - In both Level 1 and Level 2, the female students performed better than the male students.
- Literacy in level 2 recorded the lowest scores.
- From the student assessment, creativity was demonstrated more than critical thinking and communication.
- The IFERB resources were more engaging and fun for learners and supplementary resources for teachers

Despite the successes, some of the challenges encountered included

- Limited implementation time due to short-term dates enacted by the Ministry of Education to recover from school closure during covid
- Doubts in the PBL methodology and -laxity in picking up new concepts due to large classes with high teacher-learner ratios meant that some of the classes had to be split during the implementation.

Based on the above highlights and challenges, this report presents recommendations intended to guide organizations, schools, and other stakeholders in their efforts to gradually improve access to quality education through the use of project-based learning approaches.

- Inclusion of more literacy activities like verbal, singing, reading, storytelling, drawing, and writing to enhance the learner's literacy skills.
- We discovered through the student surveys that the majority of the project activities with which the students could connect involve and deploy the concept of acting/dramatizing, drawing, or creating a tangible product or physical.
- There should be improved and continuous teacher professional development initiatives in Project-Based learning approaches.
- There is a need for increased parental engagement in learners' education especially on those projects that require support from home.

I. Introduction

The Kenyan Education sector currently impacts over a 17million learners across different learning institutions with almost 500,000 teachers distributed in close to 90,000 basic education institutions. Provision is mostly public where enrollment in public institutions accounts for 70 % in pre-primary, 84 % in the primary, 93% in secondary, and 82 % in tertiary education (World Bank, June 2022).

Currently, Kenya is phasing out the 8-4-4 curriculum and implementing the new CBC curriculum. The new curriculum ensures that all learners acquire competencies and qualifications that promote national education values, inspire individual innovation, nurture lifelong learning and provide opportunities for learners to realize their full potential (Ministry of Education, May 2019).

The COVID-19 pandemic caused school closures, which interrupted learning. Learners missed out on more than six months of formal education. Many school-going children faced increased violence, exposure to child labour, and mental well-being risks. To curb some of these challenges, the government made efforts to avail remote teaching and learning. However, according to the (Uwezo 2020) report, only 22 out of 100 children got access to remote learning. This is because nearly 70% of the learners in Kenya live in rural areas where poverty and inaccessibility of the internet for both teachers and parents limited access to digital learning opportunities and thus increasing the learning gap during school closures.

Following the above insights, Edutab Africa, an educational organization based in Kitale, Kenya, piloted the (IFERB) resource developed by the Education Above All Foundation. This project was implemented in 2 rural public primary schools and 1 community library.

I. Pilot Overview

Mode of Implementation

The pilot was carried out between September 2021 and June 2022 in Trans Nzoia and Kakamega counties. It reached 1100 learners and 18 primary school teachers in 2 public primary schools. The implementation employed a mixed approach that included in-person visits to the schools by Edutab Africa staff and phone-based support to the schools and the library.

The two implementing schools are located in Kiminini (Trans Nzoia County) and Likuyani (Kakamega County), Kenya. The two schools are characterized by different types of hardships, like early marriages due to cultural practices like girls being community property and exposure to child labour due to the large maize plantations surrounding the settlement schemes.
According to the 2019 Kenya Census data from the Kenya National Bureau of Statistics (KNBS), Likuyani and Kiminini sub-counties are within the densely populated Western Kenya

region with a population density (no. per sq. km) of 662 (Kiminini) and 481 (Likuyani). The average household size in the two sub-counties is approximately 4.3 persons. The Basic education completion rates (primary and secondary education) in the two sub-counties are low, with Kiminini county having a school completion rate of 22% and Likuyani having a rate of 20.8%. The most completed level of education in the two sub-counties is primary school education and a decreasing rate in the secondary colleges (mid-level institutions), and university levels.

Intervention

The teachers of the two schools used the IFERB resources contextualized to the current Competency-Based Curriculum (CBC) by integrating them into the normal class lessons with additional out-of-class lessons during the extracurricular activity meeting times. The teachers and the Edutab Africa staff co-facilitated one in-class and one out-of-class lesson twice a week. At the library, the librarians and Edutab Africa Staff facilitated implementation sessions every Saturday and twice a week during school holidays. The library was also a contingency in case there were more school closures due to COVID-19 or any other unforeseeable condition.

For the project implementation in the school, the following are the initial steps that took place;

1. Training conducted by EAA staff on project-based learning to Edutab Africa staff who were involved in the project to aid the teacher training was one of the greatest pillars in capacity building for the teachers involved.
2. Training of the Edutab team on the MEL components and the tools that were to be used in the project implementation.
3. An inception meeting to onboard stakeholders. These stakeholders included MoE officials, School heads, teachers, community representatives, and community library staff.
4. Teachers and librarians' training on the PBL approach as well as MEL with support from EAA. A total of 18 teachers (12 female and 6 males), 1 librarian, and 7 Edutab Africa staff were trained (4 male, 4 female). See the table below.

Institution	Location	Female	Male	Total
Common Grounds learning center	Kiminini, Trans Nzoia County	4	4	8
Kongoni Primary School	Likuyani, Kakamega County	4	2	6
St.Joseph Primary School	Kitale, Trans Nzoia County	4	0	4
		12	**6**	**18**
Kongoni Community Library	Likuyani, Kakamega County	1	0	1

Edutab Africa facilitators	Kitale, Trans Nzoia County	3	4	7
		4	**4**	**8**

5. Projects selection and contextualization workshops - Edutab Africa and the teachers held 3 physical workshops to select and contextualised the projects, assessment tools, and surveys. The teachers were involved to ensure the contextualized projects suited different learners' needs, interests, and levels of the projects appropriate for each grade. Through this process, 12 IFERB projects were identified and contextualized for implementation. During these implementations, a mix of languages- English and Kiswahili were used to ensure the learners understood the project objectives and achieve learning outcomes.

6. This selection and contextualization were followed by mapping the available time with the school term dates that allow the Edutab team to make in-person visits to the school for implementation.

7. Administration of baseline surveys and assessments - After contextualization, the baseline teacher and student surveys were administered.
   The teacher's baseline surveys were taken by 18 teachers (12 males and 6 females), drawn from a mix of grades, gender, and schools, and administered by teachers self-filling in the survey form.
   The student baseline surveys were administered to a randomly selected sample of 96 learners (48 were male and 48 were female), this was administered on a one-on-one question. The questions were administered in Kiswahili the language of communication and answer where the responses were recorded directly by Edutab staff. This was an efficient approach for getting additional qualitative information from the learners. It was a time-consuming exercise and therefore not all participating learners in the pilot would have been interviewed thus we settled on a representative number.

   The student baseline assessment was administered to 490 learners (187 Male, 303 female). We administered an assessment to all the students by a facilitator who orally read aloud the question in the classrooms; first in English, then interpreted the questions into Kiswahili to ensure every learner understands the questions before responding. The learners then wrote down the answers by themselves either in English or in Kiswahili.

	Gender		Age Group		School	
	Male	245	Level 1	212	St.Joseph	187
	Female	245	Level 2	278	Kongoni	303

Total		490

Learners who took the baseline assessment

After administration of the assessments, they were marked and graded out of [48 for level 1 and 45.5 for level 2]. Later both the survey and assessment data were entered into a spreadsheet for analysis.

8. Administration of endline surveys and assessment - The endline assessment and surveys were administered in exactly the same way during the baseline.

The teachers' endline surveys were taken by 7 teachers (5 females and 2 males). These are part of the teachers who had taken the baseline and were directly involved in the projects' development, contextualization, and implementation. There was a significant dropout rate of teachers because one of the schools (Common Ground Center) got into a process of phasing out when we were implementing the project.

The student endline surveys were administered to 88 learners (45 males and 43 females) who were identical learners who took the baseline assessment. There was an 8.3% dropout due to school transfers or absenteeism.

The student endline assessment was administered to 377 learners (194 male, 183 female). Out of the 377 students who took the endline assessment, 302 (147 male and 155 female) completed both the baseline and the endline.

	Gender		Level		School	
	Male	147	Level 1	130	St.Joseph	68
	Female	155	Level 2	172	Kongoni	234
Total						302

Learners who took both baseline and endline

9. Phasing out the pilot - Edutab has committed to keeping offering support for the library and the school to enable children to keep recording the African children's stories inspired by the Grandmother tale project. In line with the CBC, we shall keep supporting teacher professional development, additionally, recommendations on the different IFERB resources they could use in the CBC projects.

Below is the list of projects adapted and completed and the the areas they cover in the national curriculum.

Project	Level	type	National curriculum strands covered by the project
ABC By me	1	Literacy	- Writing, - Speaking
Grandmother's Tale	1	Literacy	- Listening - Speaking
	2	Literacy	- Listening And Speaking
Be Your Own Author	1	Literacy	- Listening - Speaking - Writing
	2	Literacy	- Listening and Speaking
Make Your Own Poem	1	Literacy	- Listening - Speaking
	2	Literacy	- Listening and Speaking - Writing
Encyclopedia	2	Literacy	- Writing - Grammar - Reading
Healthy and sustainable Lifestyle	1	World Around Us	- Measurement - Numbers - Care for the Environment
	2	World Around Us	- Environment - Measurement - Numbers - Health Education
Water is Life	1	World Around Us	- Environment and Its Resources - Care for the Environment

	2	World Around Us	- Environment - Health Education
Adventures in the Plant Kingdom	1	World Around Us	- Environment and Its Resources
	2	World Around Us	- Living things
My Animal Park	1	World Around Us	- Environment and Its Resources
	2	World Around Us	- Living things
Jumping Math	1	Numeracy	- Numbers - Measurement
Robot Games	1	Numeracy	- Geometry - Numbers
Less is More	2	Numeracy	- Measurement
Money Matters	1	Numeracy	- Measurement
	2	Numeracy	- Numbers - Social Environment
Setting Up a Shop	2	Numeracy	- Social Environment - Measurement
What's the Price	1	Numeracy	- Numbers

During implementation, 3 virtual FGDs via Zoom calls and 2 physical FGDs were conducted through physical in-school meetings with the participating teachers. Further, teacher learning circles were conducted through teacher WhatsApp groups. These helped to support teacher-teacher cross-learning in the two sites and collect qualitative feedback to continually improve the implementation.

Additionally, this helped identify some of the teacher's professional development needs. These include more training on Project-based learning contextualization and lesson development to

enhance their ability to deliver PBL content to learners.
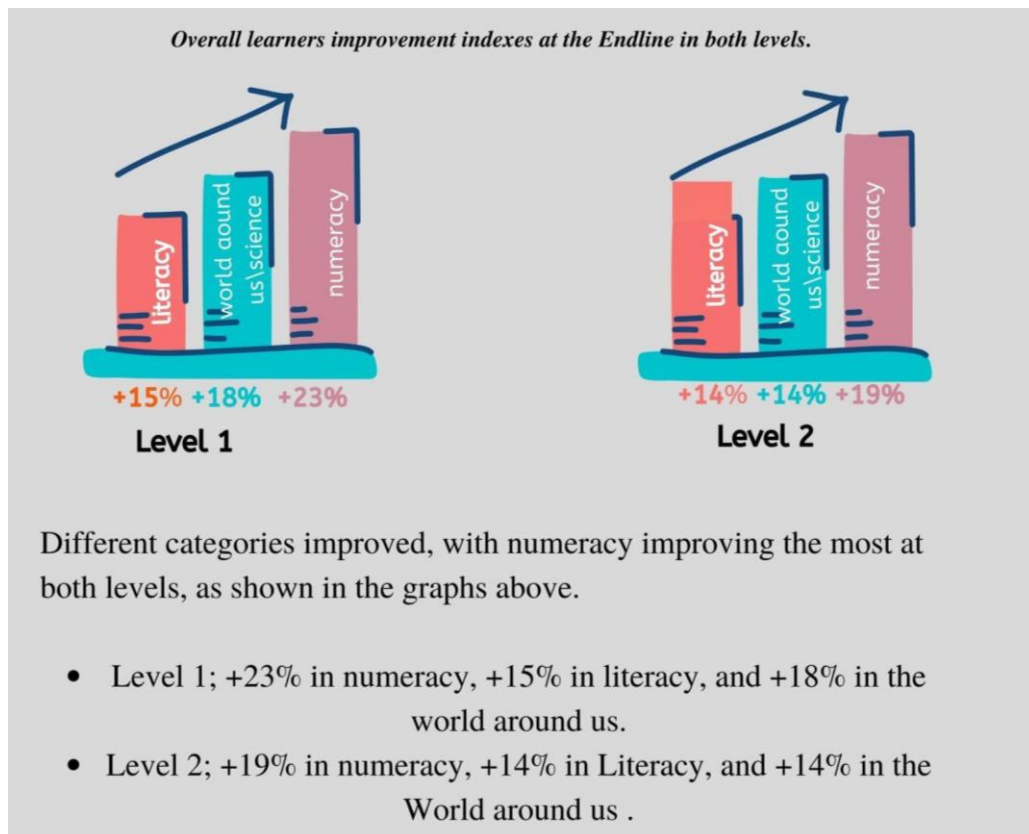
II. Results

This pilot collected qualitative and quantitative data from the assessments, surveys, observations, and FGDs. Additionally, quotes from teachers and photographs were also taken during implementation and teacher learning circles.

Students' Assessment

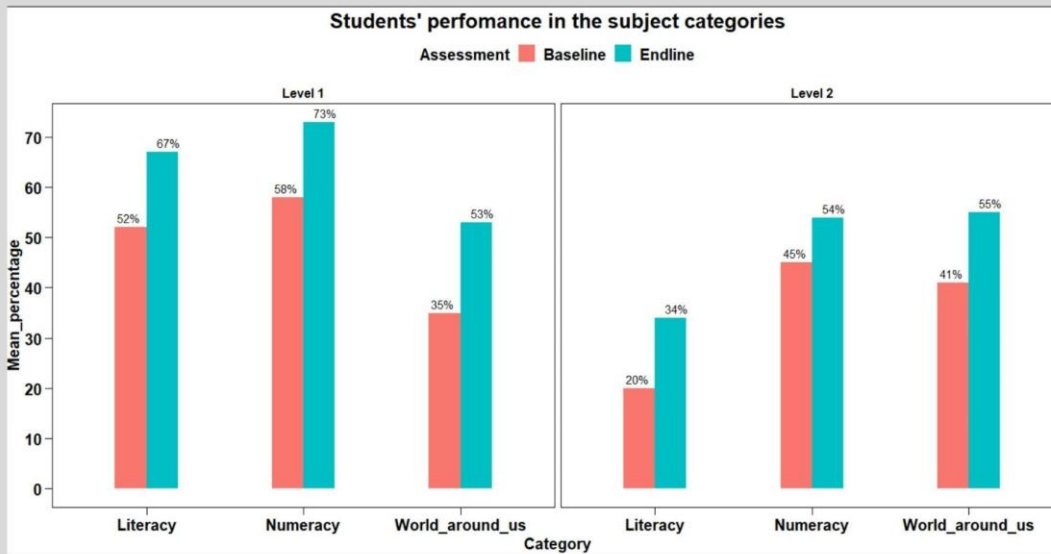The findings from the baseline and end-line assessment are as follows.

In both level 1 and Level 2
1. All categories recorded improvements as shown below
2. Female students performed better than male students
3. Numeracy performed better than the other categories

Overall learners improvement indexes at the Endline in both levels.
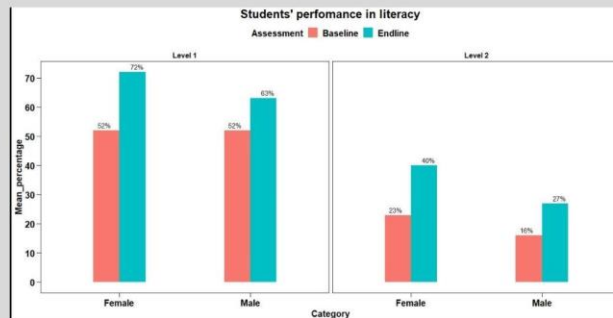
+15% +18% +23%
Level 1

+14% +14% +19%
Level 2

Different categories improved, with numeracy improving the most at both levels, as shown in the graphs above.

- Level 1; +23% in numeracy, +15% in literacy, and +18% in the world around us.
- Level 2; +19% in numeracy, +14% in Literacy, and +14% in the World around us .

In level 2 Literacy was the least performed with the lowest grades across the whole assessment.

Student Assessment

Students' perfomance in the subject categories

Assessment ■ Baseline ■ Endline

Level 1
- Literacy: 52% (Baseline), 67% (Endline)
- Numeracy: 58% (Baseline), 73% (Endline)
- World_around_us: 35% (Baseline), 53% (Endline)

Level 2
- Literacy: 20% (Baseline), 34% (Endline)
- Numeracy: 45% (Baseline), 54% (Endline)
- World_around_us: 41% (Baseline), 55% (Endline)

- In both Level 1 and Level 2;
  - female students performed better than male students.
  - Numeracy was the best-performed category.
- The least performed categories were World_around _us and literacy in level 1 and level 2 respectively.

Literacy

In both levels
- Female students performed better than male students.
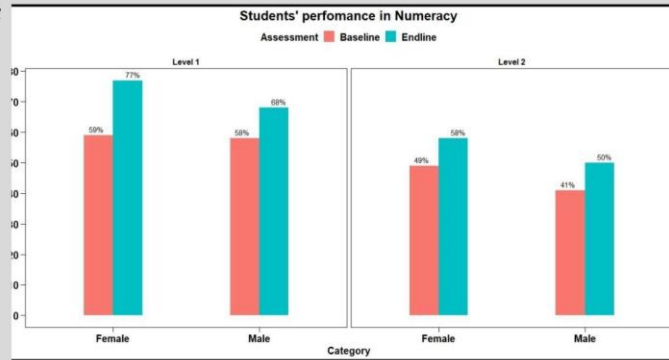- There was an improvement in performance (Level 1 = +15%, Level 2 = +14%).

Numeracy:

In both levels
- There was an improvement in performance (Level 1 = +23% , Level 2 = +19%)
- Female students performed better than the male students.
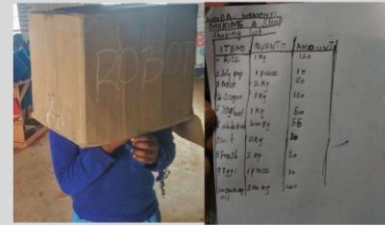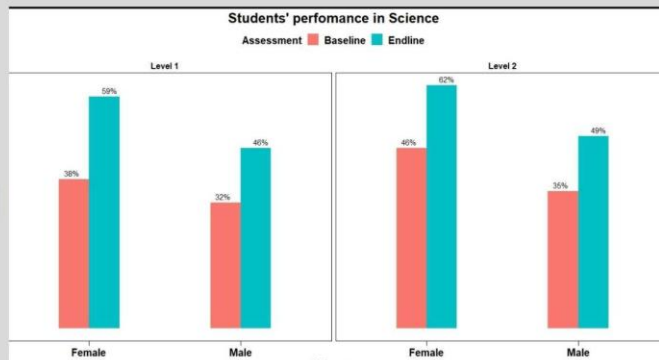
World Around us (Science)

In both levels
- There was an improvement in performance (Level 1=+18%, Level 2=+14%)
- Female students performed better than male students.
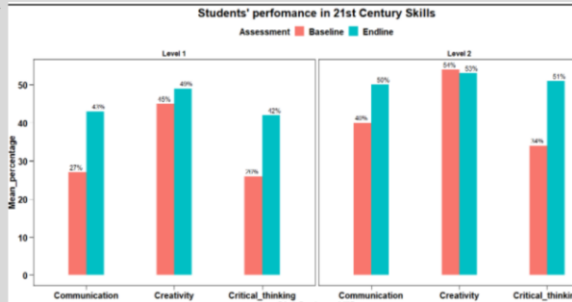
21st-Century Skills

In both levels
- Creativity was the best performed
- There was an improvement in performance across (Critical Thinking =+8, Communication = +10, creativity= +5)

There was an average improvement of +12

21 Century Skills

Overall improvement index

+12%

Students' perfomance in 21st Century Skills

Of the three skills, creativity was the best performed on both levels.

CRITICAL THINKING

- **It centered on how to critically examine evidence, arguments, claims, and beliefs as well as alternative points of view**

- **aimed at improving students' ability to identify, comprehend, and question the fundamental concepts underlying problem solutions.**

CREATIVITY

- **Learners were asked to use a variety of idea creation techniques, such as brainstorming to elaborate, refine, analyze and evaluate their own ideas**

COMMUNICATION

- **Communication centered on the learners' ability to articulate thoughts and ideas effectively using oral, written, and nonverbal communication skills, as well as listening to decipher meaning.**

Student survey

Interesting projects

Literacy projects	storytelling: narration, dramatising, drawing and creating storymaps
Numeracy Projects	setting Up a Shop: making a shopping list, buying and selling
World Around Us Projects	The plant kingdom: designing their own plant

Observed Learning

Learners reported learning new things such as Storytelling, buying and selling, using a shopping list and budgeting, water conservation, plant and animal characteristics, coding and controlling robots, and learning about directions were among the most frequently mentioned new skills learned.


Learners' discipline

The students reported making mistakes both at home. We see that punishment is the primary method of correcting learners' mistakes both at school and at home, and they always try to avoid repeating the same mistakes.

"I learned from receiving a wrong balance from the shop and went back to get the correct one."

Learner aspirations

influencing factors

societal issues	inspiration from close family members	Talents
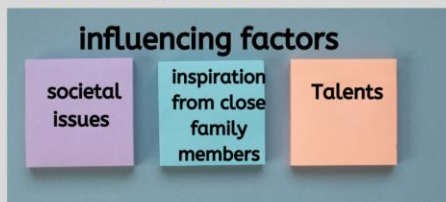
"There are a lot of young people who drink alcohol. I would like to be part of reducing the numbers by being a police officer."

"I would like to be like my sister, who is a doctor."

doctor
pilot
nurse
driver
teacher
police
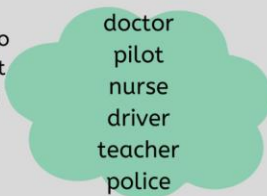
lack/inadequate

Learner assistance

Learners reported receiving support at school and at home from their parents, teaches, siblings, guardians, and friends while working on the projects. They receive assistance with drawing, writing, coloring, creating posters, and acting.

"Mom helps with telling me where to get leaves and other things I need for the activities."
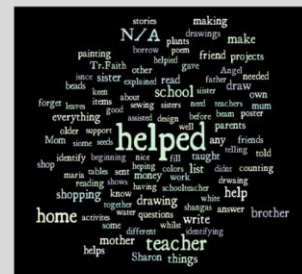
Interest in school

Most learners reported enjoying going to school because they get to learn new skills in reading, drawing, making bracelets, singing, and storytelling. They also believe that school will provide them with the knowledge that they will use to help their parents when they grow up. Additonally, the learners look forward to going to school to play and spend time with their peers.

Hard work

The learners believe that working hard enables them get better grades in school and securing better-paying jobs in the future.

They, therefore, improve their reading and writing skills both at home and in school whenever they get the chance

They also improve their individual talents and skills, such as making ornaments (bracelets, necklaces), singing, dancing, and sewing sweaters.

Challenges

A number of challenges emerged during the implementation period.

They included;

- Inadequate or lack of resources at home and school that the learners could use. These majorly included crayons/coloured pencils, pencils, rulers, needles, plain paper, etc.
- Lack of ICT and other Skills among teachers to help learners in PBL or CBC projects.
- Lack of enough parental involvement in learners' academic life
- The school terms were very short with a lot of content to cover for the teachers. This necessitated the learners from lower grades to come back to school after lunch twice a week. Additionally, for the upper grades, we had to use some of the co-curricular activity time to finish implementation.

Discussion

Student learning enhanced

Feedback from teacher focus groups and student assessments indicate that students' performance in the subject areas has improved. Learners' communication skills, creativity, critical thinking, drawing, colouring, and participation in class generally improved.

Quotes from teachers in relation to this are shown below.

> *"These projects are not static, they are dynamic. They are fitting the current trends of our education. They are fitting in the new education system on different projects that*

you are implementing. It makes learning interactive I mean learner-centred it also makes learning project centered the learners can interact with these things I could say they manipulate the teaching-learning resources" teacher

"The content of the projects relates to day today's real-life situation e.g making a shopping list and also learners make good use of available resources in the environment" teacher

Literacy performance

Learners at Level 2 performed poorly in literacy when compared to those at Level 1. Female students also outperformed male students. Based on teacher interactions and focus group discussions, this could be due to low self-esteem among Level 2 students. Students are unable to practice reading aloud and answering comprehension questions in class because they are shy and may be concerned about what their peers think of them.

" I can say that as they are in level 2 they become more shy than in level 1, hence are unable to express themselves freely, the self-confidence is not there and also they consider what their friends will say afterward".

The difference in student performance at Level 1 and Level 2.

Based on the student assessment results, Level 1 students outperformed Level 2 students. They attributed this to transition issues, as noted by one of the headteachers.

"How do we ensure that learners from lower grades transition to the upper grades without us noticing disparities?" -Headteacher

These disparities in performance could be attributed to;

- **Differences in teaching methods between the two levels.** At Level 1, learners are taught by a single teacher as opposed to Level 2, where learners are taught by multiple teachers. This change contributes to poor performance at level 2 since learning and adapting to this change.
- **Level 2 covers more learning areas.** Students in Level 2 are required to cover more subjects than in Level 1. Additionally, level 1 teachers provide more assistance in reading and writing, as opposed to level 2 where learners are expected to read and write on their own.
- **Increased household chores for students.** In comparison to Level 1 students, Level 2 students are more involved in housework. These chores take away from their study time which sometimes leads to absenteeism.

Performance by female learners

As highlighted in the results section, female students outperformed male students in lower grades, however, later in upper grades, their performance begins to decline. This is due to a number of factors related to gender inequality. For example, girls are more likely to drop out

of school than boys due to factors such as poverty, insecure learning environments, and schools being far away from home. These factors affect boys too, but they give rise to additional risks in the case of girls, such as early pregnancies and sexual abuse. Other challenges are the burden of household chores and family responsibilities assigned to girls. As a result, the girls begin to lag behind and thus limit their opportunities as they progress to other academic levels.

III. Key Learnings
For successful implementation of such a pilot in similar school setups;

1. ***Goodwill and support of stakeholders are key*** - Support from the Ministry of Education, local administration, and school administration, parents/guardians contributed to the successful implementation of our pilot. Guardians/parents supported the pilot by helping out the children get resources/items to use in the projects. Further, allowing learners to be in school longer than usual and attend sessions at the library. Some parents were involved in helping the learners finish assignments whilst at home.

2. ***Teachers' involvement is the core of successful implementation*** - Teachers were involved in the selection, contextualization, and implementation projects. This ensured they had a good understanding of the projects, had ownership of the activities, and provided useful feedback that matched the needs of the students with the projects. They embedded implementations in their teaching routine leading to better learner engagement and enabling creative expression of the learners as indicated by a teacher at St Joseph's primary school.

"It has developed learner's curiosity, broken classroom monotony, it is learner-centered, the content covered from one subject applies to other learning areas, improves learner's mastery of content, the content relates to day-to-day life situation i.e. making a shopping list, and also learners make good use of the available resources in the environment i.e. characteristics of living thing, I really appreciate your efforts may God bless the work your offering to this learners" - A teacher from St. Josephs Primary School

3. **Even with an offline solution, supportive technology is inevitable** - Due to the acceptability of technology post-pandemic, we used Zoom and WhatsApp for FGDs, teacher reflections, peer learning, and a remote support system enabling useful interaction between the Edutab Africa team and the teachers. Further, we included listening to podcast activity during the grandmother's tales project which used some form of technology.

4. **Continued teacher support and hand-holding enabled sustainability and scalability** - The ideas of IFERB at the schools will continue even after the project ends because;
   a) The teachers who were directly involved have gained useful PBL skills. Equipped with these skills, they will train more teachers in their schools to scale up the intervention as highlighted by one of the headteachers.

   "Teachers who were directly involved in the project should now instruct the others on how to develop the learners' skills in different aspects through these resources." - St Joseph's Headteacher.

The Kongoni Community Library continues to implement social-emotional learning resources with other students during weekends and school holidays.

b) Continued teachers' engagement through the learning circles enables the provision of support for any challenges they may encounter.
c) Teachers' ability to use available resources to access, develop, and contextualize projects as applicable in their teaching.

5. **Freedom of choice in learning promotes learning** - Learner interactions with IFERB resources made them think outside of the box in pathways that helped them generate new knowledge. For example, the ability to decide what materials to use to make different products in the projects enabled students to innovate and improvise.

Annexe I: Summary of Projects
Include a summary table of all the projects implemented

Annex II
Other relevant or detailed outputs/activities tables: workshops, training, meetings, community mobilization, learning circles, etc.