

Rokhana Saba EdTech
Learning Proficiency Assessment

May 2024

The Norwegian Afghanistan Committee

Founded in 1980, the Norwegian Afghanistan Committee (NAC) is a member-based solidarity organization with activities in Norway and Afghanistan and an elected Board and Secretariat based in Norway.

The purpose of the organization is to work together with the Afghan people to contribute to the development of an independent, peaceful, and democratic Afghanistan; promote knowledge about Afghanistan in Norway; and promote friendship between the Norwegian and Afghan people.

Our Vision

NAC shall contribute to a peaceful Afghanistan, free from poverty, where rural communities are empowered and resilient, valuing equality and diversity.

Our Mission

NAC shall support the Afghan people in the development of a peaceful, just, and egalitarian society where universal human rights are respected. NAC shall be a nexus for knowledge of, interest in, and engagement with Afghanistan in Norway, promoting Afghan voices and perspectives in Norwegian public debate and advocating for informed and responsible policies towards Afghanistan.

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Background

Since 2021, the Norwegian Afghanistan Committee (NAC) and Brighter Tomorrow (BT) have been collaborating on the implementation of an EdTech solution in Afghanistan, utilizing Rokhana Saba, a game-based literacy application initiated by BT in Norway, for children in Afghanistan. The primary goal of this project is to improve the basic literacy skills of children and enhance their academic attainment by using innovative, interactive, and accessible digital learning technology. Initially, NAC piloted the Rokhana Saba application, during the winter breaks of 2021 and 2022, for a small group of children in Badakhshan and Kabul as part of our “winter camp” activities and after-school programs. Following the successful implementation of the pilot, in 2023, we expanded the implementation of this application for children across NAC’s partner schools in Badakhshan, Faryab, and Ghazni provinces. In this phase of the project, Rokhana Saba was introduced to schools and teachers to use in their classrooms as part of their regular teaching and learning and with the possibility of a deeper integration into the formal school curriculum. The project was implemented in 3 schools, supporting 300 primary students (250 girls and 50 boys), in grades 2 and 3 (ages 8 to 10) for seven months throughout the 2023 education year.

This report summarizes the key findings of the project’s evaluation, which utilized the “UWEZO” literacy and numeracy proficiency test. It is worth noting that since the initiative was integrated with other NAC interventions in school, such as training for teachers, extra-curricular program for students and other NAC school support activities, it was difficult to evaluate the impact of the Rokhana Saba EdTech solution in isolation from other interventions. However, in this assessment, the evaluation team considered a quasi-experimental design by comparing the ‘treated’ group with an ‘untreated’ group to demonstrate differences and in aim of identifying the contribution of the initiative towards improving participants’ literacy skills.



Methodology

We conducted a pre- and post-test assessment, using the UWEZU Proficiency Test tools, to assess improvements in the literacy and numeracy skills of students as a result of the project intervention. As shown in the table below, a total of 200 students participated in this assessment. To be able to measure the impacts specific to this project, we selected our assessment samples from both experimental groups (who have directly benefited from the Rokhana Saba application) and control groups (who were selected from same grades, but had been exposed to Rokhana Saba). The table below displays demographic details about the students who participated in the UWEZU Proficiency Test.

Province	District	Experimental Group			Control Group		
		Male	Female	Both	Male	Female	Both
Badakhshan	Argo	24	26	50	36	14	50
Faryab	Maimana	0	25	25	22	3	25
Ghazni	Jaghori	0	25	25	25	0	25
Overall		24	76	100	83	17	100

Table 1: Number of Students Attended the UWEZU Proficiency Test – by Gender and Province

This assessment endeavored to outline the contribution of the specific Rokhana Saba project towards improving students' literacy skills; by selecting assessment participants from both experimental (project participants) and control (non-project participants) groups and ensuring the engagement of the same assessment sample groups at both the beginning and end of the program. In cases where changes occurred in the participants' list, additional students with similar characteristics were substituted to ensure consistency.

Microsoft Excel was utilized for generating charts and graphs analyzing improvements in literacy and numeracy skills between pre and post-tests and the experimental and control groups. Additionally, although the Rokhana Saba application does not yet include a numeracy component (this is planned for a future iteration of the app), the assessment also conducted numeracy tests based on UWEZU guidelines to more comprehensively assess the overall progress in learning of children in our partner schools, using the same measurement and analysis methods.

Main Findings

This section presents the key findings of the literacy and numeracy tests conducted by our education mentors and trainers with students in the 3 targeted schools, using the UWEZO Proficiency Test. NAC's adapted UWEZO Test assesses children's levels of competency in reading and comprehending Dari and Pashto and doing basic arithmetic. The test has been adapted in alignment with Afghanistan's national primary school curriculum.

The Literacy Tests

Utilizing UWEZO, we assessed literacy by asking children to recognize letters from the alphabet, read selected words, read one of two paragraphs, and read a story and answer two related comprehension questions, as illustrated below.

The assessment evaluates students' capabilities in relation to the following five literacy levels:

1. None
2. Letter
3. Word
4. Paragraph
5. Comprehension

The outlined categories above indicate five levels of literacy. The 'None' level refers to students who are unable to identify letters accurately. The 'Letters' level represents students who can identify letters but are unable to read words. This is followed by the 'Words' level which refers to students who can read individual words but face challenges when it comes to reading entire paragraphs. Likewise, students at the 'Paragraphs' level can read a paragraph, but with limited comprehension. Finally, students at the 'Comprehension' level can read and understand a paragraph comprehensively and be able to answer questions related to that paragraph. The graph below displays the students' UWEZO literacy pre- and post-test results conducted at the beginning and end of the program.



Using tablets as a learning device at NAC partner school.

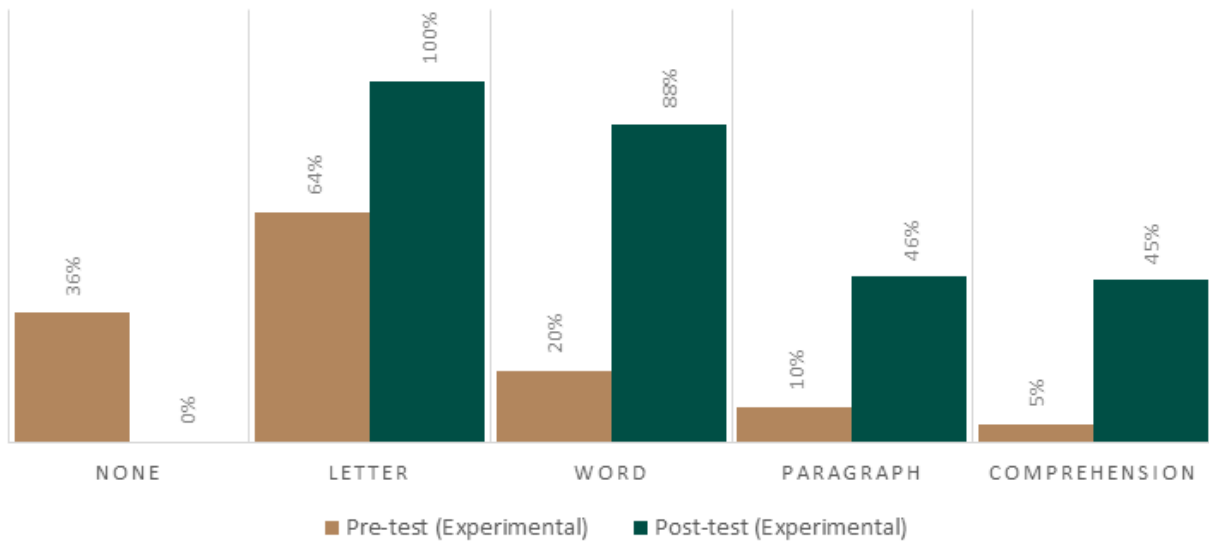


Figure 1: Proficiency pre- test vs post-test results on literacy skills of experimental group

As depicted in the graph above, the test shows significant improvements in the literacy skills of the students in all defined levels from pre- to post-test. In the pre-test, only 5% of project participant students demonstrated comprehension level. 10% exhibited capability at 'paragraph' level, 20% at 'word', 64% at 'letter' and 36% fell into the 'none' category. While in the post-test (at the end of the program), all students were able to identify letters, 88% could read words, 46% could read paragraphs, and 45% demonstrated ability to read and understand paragraphs comprehensively.

The transition from having many students who struggled to recognize letters or words, to a point where all can correctly identify and read

letters, and most can read and write words, and almost half can understand paragraphs, and comprehensively answer relevant questions, demonstrates the effectiveness of Rokhana Saba in building foundational literacy skills. These impacts were further highlighted when we compared the UWEZO results between the experimental and control groups. For clarity, as discussed previously, we conducted the same assessment with other student groups of the same age, grade, and schools, in addition to the actual program participants. This provided further insights into the effectiveness of Rokhana Saba in increasing the learning outcomes of students, as illustrated in the graph below.

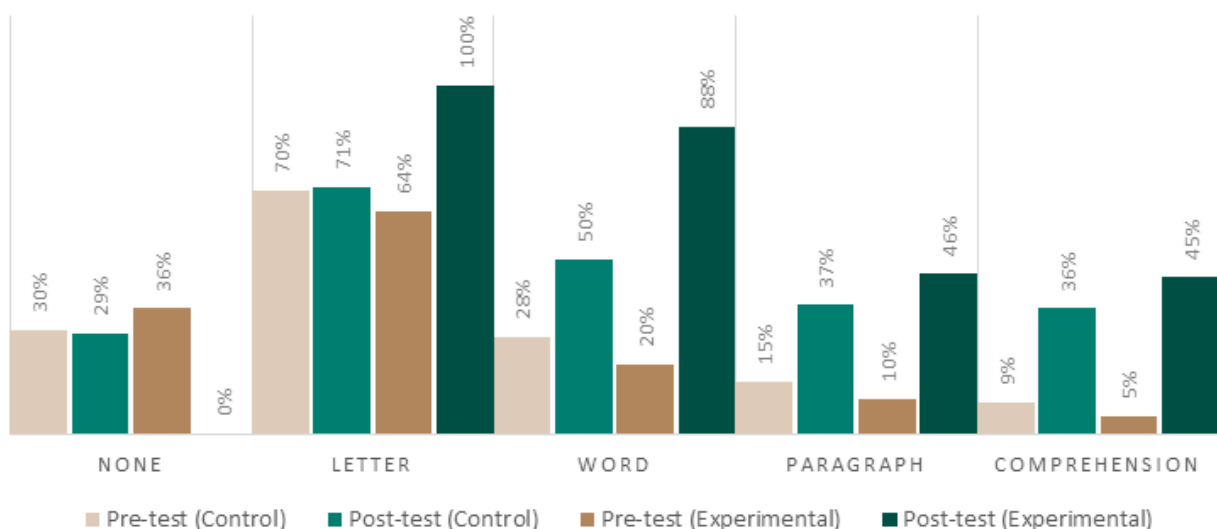


Figure 2: Proficiency Test Results on Literacy Skills by Control and Experimental Groups, n = 200)



Playing game to
improve literacy skills,
EdTech student.

Although the control group were not directly exposed to the Rokhana Saba application, the students in this group also demonstrated significant improvement in their literacy proficiency. At the beginning of the school year, only 9% of these students were at the comprehension level; by the end, this proportion had increased to 36%. Furthermore, the percentage of students who could read a paragraph increased from 15% in the pre-test to 37% in the post-test. The improvements observed in the control group can be attributed to the efforts made by their teachers, school management and parents, which were underpinned by NAC's comprehensive school support program, including the training of teachers, provision of teaching-learning resources to students and teachers, as well as the mobilization of shuras and other community members to support education, over the last three years. Therefore, these findings may not be indicative of the situation in other schools in these provinces which have not benefitted from similar support programs and interventions.

Comparing the test results of the experimental group with the control group gives us insights into the effectiveness of the Rokhana Saba project. The result shows that although the students in the control group demonstrated higher scores in the pre-test, while in the post-test, students in the experimental group demonstrated remarkably higher levels of literacy skills compared to students in the control group. For instance, at the beginning of the program, 30% of students in the control group scored "none" in literacy skills while this figure was 36% for the experimental group. Moreover, 70% of students in the control group were able to identify letters compared to 71% in the experimental group in the pre-test. Similarly, 28% of control group students could read words, versus 20% in the experimental group; 15% could read paragraphs, compared to 10% in the experimental group; and 9% could comprehend paragraphs and answer related questions, compared with just 5% in the experimental group.



In the post-test however, this dynamic had significantly shifted, with the students in the experimental group demonstrating higher achievements compared to students in the control group. The proficiency test results indicate that the percentage of students in the experimental group with no literacy skills dropped by 36% while in the control group the students experienced only a 1% reduction. Further analysis shows a 36% improvement in letter recognition in the experimental group, again this improvement is only 1% in the control group. There was a 68% increase in word reading skills in the experimental group, compared to a 22% increase in the control group. Additionally, the experimental group achieved a 36% increase in paragraph reading, versus 22% in the control group, and a 40% increase in paragraph comprehension and response, compared to 27% in the control group.

The significant achievement for students who participated in the Rokhana Saba project in the 'word' comprehension category fits with the application's strong focus on this level to help students in grades 2 and 3 meet the expected

learning outcomes in these grades. According to the Afghan primary school curriculum, students in grade 2 are expected to be able to fluently read and write the words found in their school textbooks. The results of the UWEZO assessment indicate that this expectation was met, with 95% of the grade 2 students who had participated in the Rokhana Saba project able to read and write the words contained in the test paper.

We also compared the test results between boys and girls. The overall findings indicate that girls demonstrated greater capabilities in literacy skills in both pre- and post-tests compared to their male counterparts.

As depicted in the graph below, in the post-test, only 25% of boys reached the comprehension level, and a similar percentage demonstrated proficiency at the paragraph level. In contrast, 51% of girls reached the comprehension level and 53% exhibited skills at the paragraph level in the same test. Overall, the findings reveal an average literacy proficiency improvement level of 1.80 in the experimental group and 0.72 in the control group.

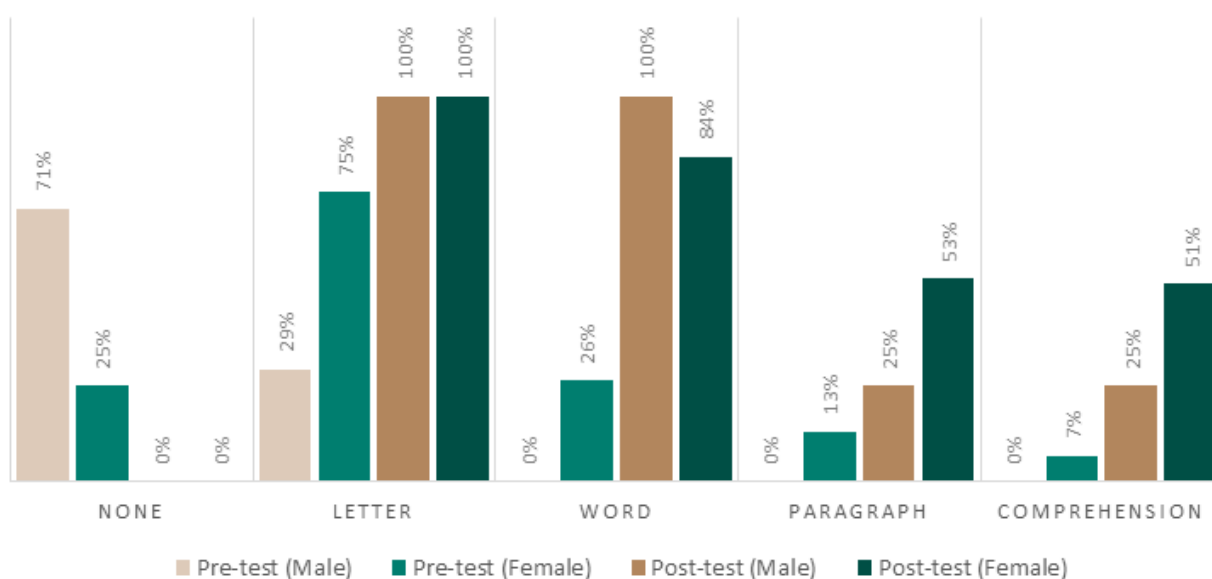


Figure 4: Figure 4: Improved proficiency levels (Post-Test, n = 200)

The graph below illustrates the overall improvement in proficiency levels of both groups, disaggregated by province.

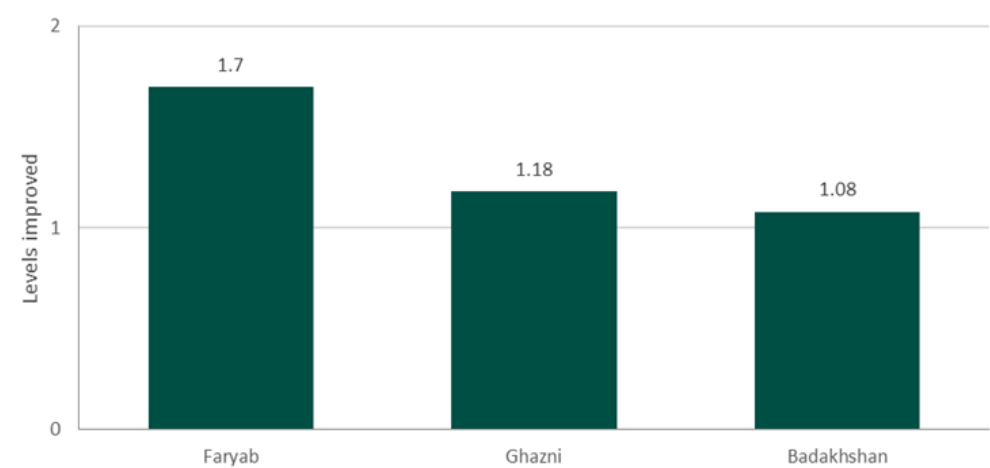


Figure 4: Improved proficiency levels (Post-Test, n = 200)

Comparing improvements in literacy levels across different provinces, it is noted that students in Faryab, demonstrated a higher level of achievement, improving by 1.7 levels across the five levels of literacy test, compared to improvements of 1.18 and 1.08 in Ghazni and Badakhshan, respectively. The higher achievements in Faryab may be attributed to the fact that it was one of the provinces where NAC, despite national Ministry of Education’s restrictions on INGO’s work in education, was able to continue its full operations throughout the school year. Particularly through the ‘Equitable Access to Education in Faryab Province’ project, NAC supported all partner schools through providing students with new and innovative learning materials, enhancing teacher capacity, and conducting extra-curricular courses.

Despite the significant learning progress discussed above, a comparison of the overall literacy post-test results for the 2023 intake with those from the 2022 intake reveals a decline in literacy achievements among the 2023 cohort. The graph below compares the post-test results of the two intakes.

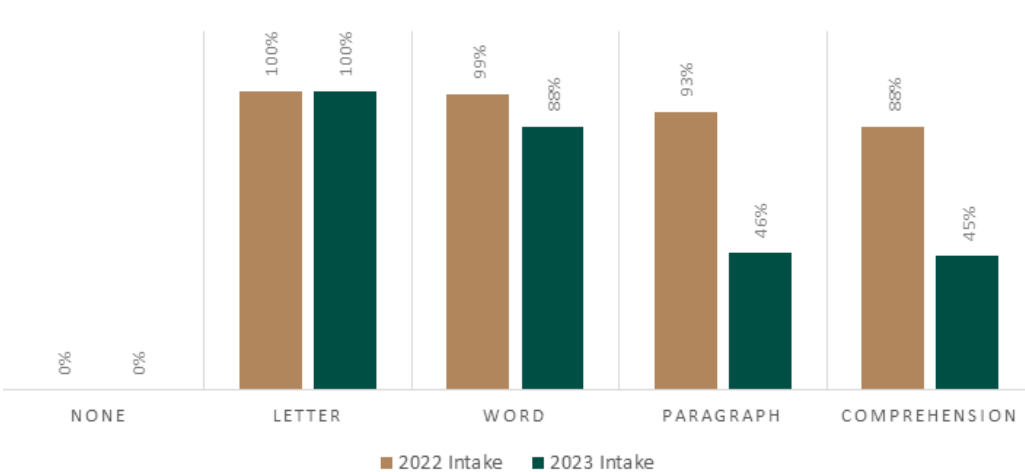


Figure 4: Improved proficiency levels (Post-Test, n = 200)



Although the project period for the 2022 intake was relatively shorter than that of the 2023 intake, the data indicates that the literacy results from 2022 were significantly higher, especially in comprehension and paragraph levels. In the 2022 intake, 88% of students reached the comprehension level, and 93% demonstrated capabilities at the paragraph level. Such a deviation can be explained by multiple factors. First, the 2022 intake was part of our winter camps, which offers a variety of activities and programs during the school winter break, including an in-depth, intensive and experiential literacy and numeracy program through project-based learning that supports the development of literacy and numeracy skills in an accelerated time frame. In contrast, the 2023 phase of the Rokhana Saba project, as outlined previously, was implemented in public schools with fewer extra-curricular activities compared to those provided in NAC's winter camps. Secondly, the 2022 intake benefited from robust mentorship activities and facilitator support, with NAC education officers regularly providing mentorship support to the trainers and facilitators at the winter camps. While the 2023 intake received less mentorship compared to what the 2022 intake had received through the winter camps. This indicates, that although the Rokhana Saba application can be beneficial with limited support "scaffolding", it has much greater potential to improve students' learning outcomes when it is coupled with mutually reinforcing literacy/numeracy and mentorship support interventions.

Students in EdTech classroom working together on a group project.





The Numeracy Test

Although content related to numeracy was not featured in the Rokhana Saba application, we included a numeracy test for school students in the UWEZO proficiency assessment to gain insights into the broader learning progress of students at our partner schools. Thus, this section does not reflect the impacts of the Rokhana Saba application per se, but rather the outcomes of other educational efforts in NAC partner schools.

This assessment measured improvements in students' numeracy skills, using the UWEZO proficiency test numeracy skill levels of: 'None', referring to students with no numeracy skills; 'Counting' referring to students able to count objects only; 'Identification of numbers' indicating students who could identify numbers; 'Comparing numbers' referring to students able to compare between numbers; 'Addition'; 'Subtraction'; 'Multiplication'; and 'Division', referring to students who are able to do basic arithmetic equations.



Playing the Rokhana Saba game to enhance literacy proficiency.

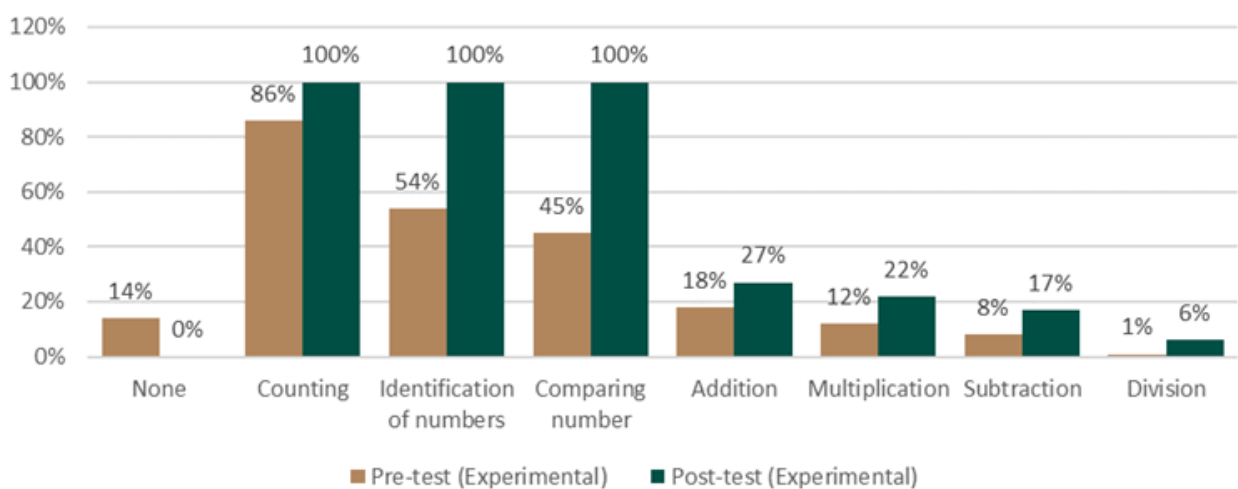


Figure 6: Pre and Post Proficiency Test Results on Numeracy Skills (n = 100)

We can observe a notable improvement across all skill levels from pre to post-test, particularly in basic numeracy like counting and identifying numbers, as well as in comparing numbers. However, the gains in arithmetic operation skills such as addition, multiplication, subtraction, and division, we found lower compared to other areas. Only 6% of students demonstrated the ability to do division at the end of the school year and the percentages for subtraction, multiplication, and addition are 17%, 22%, and 27%, respectively. Overall, our t-test result of numeracy datasets indicates that on average students in EdTech program have gained 1.45 levels progress on numeracy capabilities by end of education year.

Looking at the data for the control and experimental groups, there are no large differences in progress between the two. The graph below compares the numeracy attainments of students in both groups from the pre-test to post-test.

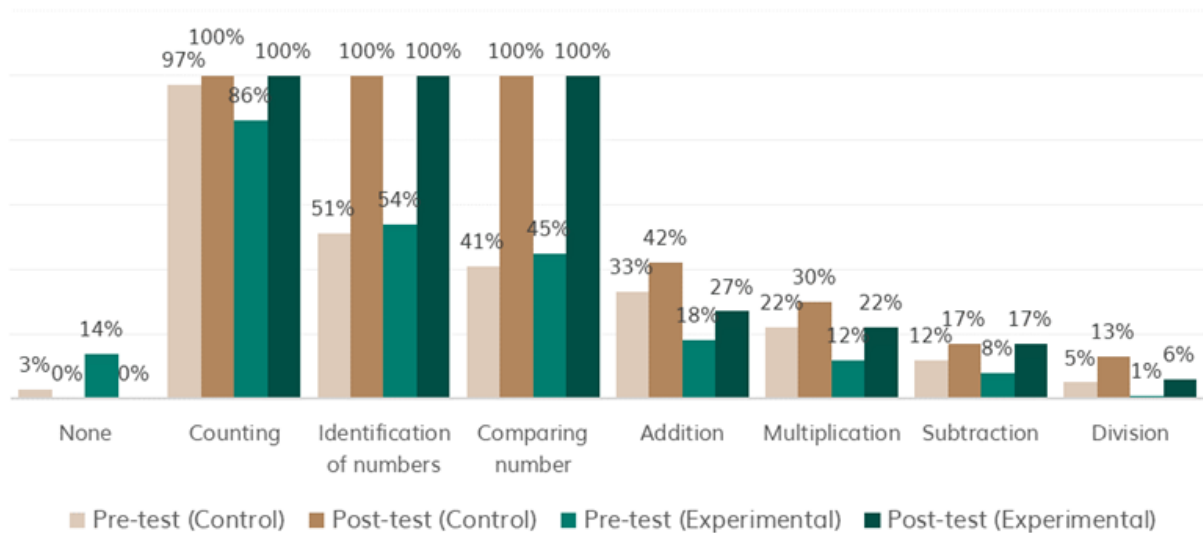


Figure 7: Proficiency Test Results on Numeracy Skills by Control and Experimental Groups (n = 200)

By the end of the program all students both in control and experimental groups gained abilities in counting, identifying numbers, and comparing numbers. The average level of progress across various numeracy skills in the control group was found to be 1.47, while in the experimental group, it was slightly lower at 1.45, showing a difference of 0.02.

Although, as mentioned previously, the Rokhana Saba application was not focused on improving students' numeracy skills, our overall school support activities in these schools, including the Rokhana Saba application for literacy improvement contributed towards numeracy skill improvement among children in these schools. However, comparing achievements of students in literacy with the achievements with numeracy skills development, it is evident that the progress in acquisition of literacy has been greater. As described previously, the average level of literacy progress for students in the program was 1.8 levels, whereas the average for numeracy was only 1.45. This finding not only highlights the significance of the Rokhana Saba project in specifically improving students' literacy achievements but also highlights more general gaps and challenges in numeracy skills development in schools.



Student signs to express gratitude for the EdTech solutions provided.

Conclusion and the way forward

This assessment has focused on evaluating the effectiveness of the Rokhana Saba application in improving literacy skills (and to a lesser extent , numeracy skills) among children in grades 2 and 3 in rural schools across three provinces in Afghanistan. The overall findings of this assessment clearly demonstrate the significant impact of the Rokhana Saba project in improving students' learning outcomes, particularly the literacy proficiency of primary students. This has been evident based on comparative results of literacy skills for both experimental and control groups between pre-tests and post-tests.

Notably, the literacy proficiency test results indicated that those students who participated in the project gained greater achievements by the end of school year in comparison with those who did not participate. The proficiency test results indicate that there was a 68% increase in word reading skills in the experimental group, compared to a 22% increase in the control group. Additionally, the experimental group achieved a 36% increase in paragraph reading, versus 22% in the control group, and a 40% increase in paragraph comprehension and response, compared to 27% in the control group.

Although the Rokhana Saba application is valuable in itself, the significant positive outcomes achieved through this phase of the project can also be attributed to the high-quality implementation of the project by teachers and facilitators through support from NAC education colleagues in Badakhshan, Faryab, and Ghazni provinces. This underscores the importance of mentorship and support in using such EdTech teaching and learning applications. Furthermore, the findings of this study demonstrate a strong correlation between overall school support programs by NAC (such as teacher training) and the learning outcomes of children. For example, in schools where support was greater, literacy and numeracy achievements of students were consequently higher.

This assessment not only highlighted the significance of the Rokhana Saba application in improving the literacy proficiency skills of students but also pointed to existing gaps and challenges faced by students in gaining numeracy skills.



The assessment has yielded several specific learning points and recommendations for the way forward:

- In the current phase of the project, we used the Rokhana Saba application, which exclusively focuses on literacy skills. Nevertheless, this assessment highlights a significant struggle with numeracy among children in rural schools, which suggests there would be a benefit in integrating a numeracy component into the Rokhana Saba application to benefit these students.
- UWEZO Proficiency test results indicate that the project significantly improved basic literacy skills, such as letter identification, which were specifically targeted by the application. Given the positive impact at this foundational level, it is recommended to further develop the Rokhana Saba application to also focus on higher-level literacy skills, such as reading comprehension, where students showed the most difficulties.
- Given the overall success of the Rokhana Saba project in improving participants' learning outcomes in literacy, it is recommended that this be expanded for use in other schools and education settings (e.g., winter- and summer camps, NAC THINK Labs and other TVET opportunities) as much as possible. However, it is important to note that the Afghan Ministry of Education's current restrictions make it challenging to implement such innovative education interventions, particularly in public schools in the country.
- Providing mentorship and regular support to teachers and facilitators of the Rokhana Saba project has been found to be a crucial aspect of the success of the intervention. The assessment found that in areas with more robust mentorship support, students achieved greater learning outcomes. This is particularly significant in schools in Afghanistan, where "traditional" teaching methods are less child-centered, and students are more dependent on rote learning.



Appendixes

Appendix 1: UWEZO literacy test

حروف الفبا	لغات	پاراگراف اول
پ	سگ	ساره بسیار به سرعت میخواند. او دوست دارد که بیاموزد. من موسیقی را دوست دارم. ما همچنان فوتبال بازی میکنیم.
پ	گاو	
چ	دختر	
ث	موتر	
ه	قلم	پاراگراف اول
ن	خط	
ی	کتاب	
م	ناخن	
ز	مرکب	من یک پشک خانگی دارم. چشمهایش بسیار بزرگ است. من به او شیر میدهم. پشک همراهی من بازی میکند.
د	شیر	

قصه
احمد معلم صنف ما است. او والدین ما را دوست دارد. ما هم معلم خود را دوست داریم. معلم برای ما کتاب میدهد. ما در کتاب های خود مینویسیم. ما برای نوشتن در کتاب از پنسل استفاده میکنیم.

سوالات
کی معلم ما است؟ معلم صاحب احمد چه کسی را دوست دارد؟

Appendix 2: UWEZO numeracy test

انتخاب نشانه‌ها

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مقایسه نمودن اعداد

۳۵	۵۷	۳۹	۵۵
۱۷	۴۲	۲۲	۹۰
۹۸	۸۶	۴۱	۴۹
۴۰	۷۰	۳۰	۷۶

شناخت اعداد

۱۶	۸۰	۵۰	۷۷
۲۵	۸۸	۹۱	۳۳

جمع کردن اعداد

$\begin{array}{r} ۹۸ \\ +۲۶ \\ \hline \end{array}$	$\begin{array}{r} ۲۹ \\ +۳۵ \\ \hline \end{array}$	$\begin{array}{r} ۸۷ \\ +۱۵ \\ \hline \end{array}$	$\begin{array}{r} ۴۹ \\ +۲۵ \\ \hline \end{array}$
$\begin{array}{r} ۷۶ \\ +۴۵ \\ \hline \end{array}$	$\begin{array}{r} ۸۵ \\ +۶۶ \\ \hline \end{array}$	$\begin{array}{r} ۶۸ \\ +۱۶ \\ \hline \end{array}$	$\begin{array}{r} ۳۵ \\ +۲۸ \\ \hline \end{array}$

تفریق کردن اعداد

$\begin{array}{r} ۷۲ \\ -۳۵ \\ \hline \end{array}$	$\begin{array}{r} ۹۰ \\ -۶۴ \\ \hline \end{array}$	$\begin{array}{r} ۹۷ \\ -۴۸ \\ \hline \end{array}$	$\begin{array}{r} ۵۳ \\ -۱۷ \\ \hline \end{array}$
$\begin{array}{r} ۳۳ \\ -۲۵ \\ \hline \end{array}$	$\begin{array}{r} ۷۳ \\ -۳۸ \\ \hline \end{array}$	$\begin{array}{r} ۶۵ \\ -۳۶ \\ \hline \end{array}$	$\begin{array}{r} ۹۴ \\ -۱۷ \\ \hline \end{array}$

ضرب کردن اعداد

$۵ \times ۶ =$	$۱۲ \times ۶ =$
$۱۰ \times ۳ =$	$۷ \times ۸ =$
$۹ \times ۴ =$	$۱۱ \times ۲ =$
$۷ \times ۷ =$	$۲ \times ۵ =$

ضرب کردن اعداد

$۶ \div ۳ =$	$۱۲ \div ۴ =$	$۳۰ \div ۶ =$
$۲۰ \div ۲ =$	$۱۰ \div ۵ =$	$۳۵ \div ۷ =$
$۴۰ \div ۴ =$	$۳ \div ۳ =$	$۲۴ \div ۴ =$



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