SABAQ

**USE OF DIGITAL APPLICATIONS
IN REMOTE SCHOOLS AND THE IMPACT ON
LEARNING OUTCOMES**

SABAQ

EXECUTIVE SUMMARY

The Engro Foundation, that operates schools in Ghotki, Sindh, encountered poor student learning outcomes. Across KG-Grade 5, learners did not demonstrate the requisite skills that are expected to be present at their grade levels, according to National Curriculum student learning outcomes (SLOs). The Engro Foundation schools are located in remote areas, where people are rarely literate. As a result, it was extremely difficult to find good teachers. In this context, technology could serve as a useful tool to augment student learning and assist teachers in their pedagogy. This would ensure that their students reach the requisite grade-level literacy and the general literacy level in the area increases, uplifting the local community. SABAQ's team suggested the use of Muse applications in Engro classrooms for blended learning. Before the solution could be scaled across schools, a pilot was run in 3 intervention schools and 2 comparison schools to gauge the impact of Muse applications on learning outcomes and determine how Muse can be scaled across Engro schools. A baseline assessment carried out at the beginning found a significant gap in students' learning. For smooth technology integration, SABAQ provided initial teacher training as well as capacity development visits for teachers. The end line assessment showed a significant improvement in learning outcomes, stemming from better student engagement and improved teaching quality. Specifically, the scores of KG and Grade 1 students increased from below basic (49% and less) to advanced (66- 80%). Hence, on the basis of evidence gathered during the pilot, Engro Foundation decided to move forward with the scale-up.

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USE OF DIGITAL APPLICATIONS IN REMOTE SCHOOLS AND THE IMPACT ON LEARNING OUTCOMES

A PILOT WAS RUN IN 3 INTERVENTION SCHOOLS AND 2 COMPARISON SCHOOLS TO GAUGE THE IMPACT OF MUSE APPLICATIONS ON LEARNING OUTCOMES AND DETERMINE HOW MUSE CAN BE SCALED ACROSS ENGRO SCHOOLS

CONTEXT

The Engro Foundation operates a total of 30 schools across Pakistan. These schools are located in the vicinity of Engro power plants, in areas where access to education is limited and the foundation helps to uplift the local community. In some districts, these schools are the only means of education for the children of the area. Consequently, the number of teachers is extremely limited, as people are rarely literate. In the past, the teachers had also never employed technology in their teaching and hence, lacked technological literacy.

As a result, student learning outcomes were extremely poor and students' learning levels were significantly below the expected level. Learning outcomes identify what the learner will know and be able to do by the end of a course or program. Whereas, levels of learning refer to competencies a learner can achieve. In the case of the Engro Foundation, the students were significantly behind in both metrics as compared to other learners at their grade level.

Consequently, the foundation was looking for a cost-effective and scalable solution to improve student learning outcomes across its schools. The SABAQ team met with stakeholders from the Engro Foundation to devise a comprehensive solution to this problem.

ENGRO SCHOOLS ARE LOCATED IN THE VICINITY OF ENGRO POWER PLANTS, IN AREAS WHERE ACCESS TO EDUCATION IS LIMITED AND THE FOUNDATION WANTS TO UPLIFT THE LOCAL COMMUNITY

SOLUTION

SABAQ is an award-winning Pakistani EdTech initiative on a mission to help K-5 children succeed in literacy, Math, and Sciences. SABAQ's flagship product, Muse, has proven to improve student engagement and learning outcomes through multiple third-party baseline-end line assessments, showing accelerated growth in student literacy and Math scores. Designed and developed with learning and engagement in mind, SABAQ's digital lessons improve lesson delivery by teachers and increase students' learning outcomes in low-resource learning conditions.

Research has suggested that the introduction of technology increases interactivity, reduces the time teachers spend teaching new material and increases student practice. Muse's applications are in line with this research. Muse's interactive digital content includes videos and exercises that transform the nature of learning from monotonous to engaging. The teacher guides and lesson plans integrated within the application aid teachers in lesson planning and classroom management.

Aimed at students in low cost private and public schools, these solutions are a cost-effective way to augment student learning across primary grades. Till date, SABAQ's applications have been used by **100,000** learners in **1,000** schools across Pakistan.

SABAQ proposed that the introduction of technology in the learning process would accelerate learning and increase student engagement. The solution consisted of 3 major components:

- **The provision of tablets with Muse applications to students:**

  The students would watch fun, animated video lessons, take interactive exercises and tests and play games to solidify their learning. With digital teacher guides and lesson plans, the applications would also aid teachers in better lesson planning and competent delivery.

- **An initial teacher training and subsequent mentoring visits**
- **A baseline assessment and end-line assessment to gauge differences in learning outcomes**

SABAQ PROPOSED THAT THE INTRODUCTION OF TECHNOLOGY IN THE LEARNING PROCESS WOULD ACCELERATE LEARNING AND INCREASE STUDENT ENGAGEMENT

IMPLEMENTATION

- The implementation began with a baseline assessment at the beginning of the pilot to determine the pre-existing learning levels of the students.

- The students were given tests in 3 subjects – English, Mathematics, and Science. These tests were developed with the help of SABAQ's curriculum experts who used National Curriculum SLOs as a benchmark.

- The results of these tests were then used to classify students' competency in each respective subject according to a performance threshold.

SABAQ PERFORMANCE THRESHOLD

BELOW BASIC	COMPETENT	BASIC	ADVANCE	EXPERT
0-49%	51-65%	50%	66-80%	81-100%

- The results of the baseline assessment found that overall, the competency level of the students in all grades across the subjects of English, Math, and Science was significantly below grade level. The average scores of students were very low, and at primary levels, at least 50% marks in English and Mathematics are considered desirable to pass the grade level. It was also observed that Urdu was not taught in these schools, so students were not familiar with the Urdu language and the Urdu literacy skills of students were not developed.

- SABAQ team carried out a teacher training to introduce teachers to the application's content and impart strategies for teaching using technology as well as classroom management to acquaint them with this novel technological intervention

- The support visits involved collecting feedback from school heads, teachers and field monitors about the challenges that are being faced in the implementation of SABAQ's content. The team also observed classroom practices focusing on the integration of SABAQ's digital content and recommended changes for future implementations.

SABAQ CARRIED OUT TEACHER TRAINING TO ACQUAINT TEACHERS WITH THE USE OF TECHNOLOGY IN TEACHING
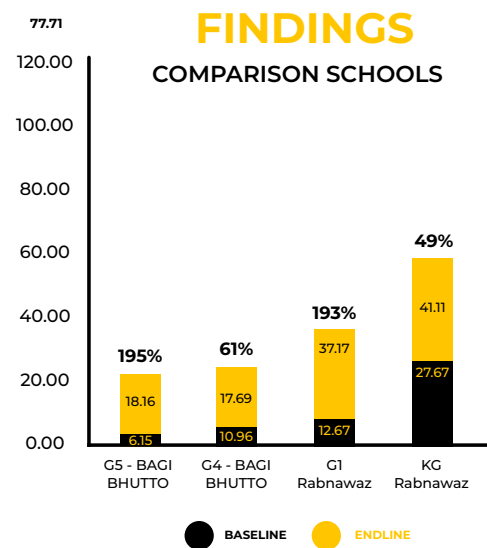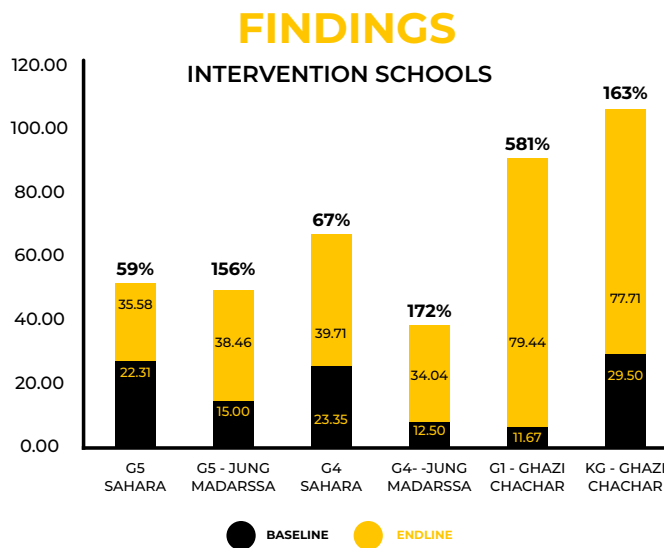
NUMBER OF SCHOOLS:
03

NUMBER OF LEARNERS:
182

CHALLENGES FACED
AND THEIR SOLUTIONS

CHALLENGES	SOLUTIONS
ALIGNMENT OF SABAQ CONTENT WITH TEXTBOOKS	At first, teachers were struggling to align the content with their textbooks, but with the training from the SABAQ team, they were able to align the SLOs successfully.
THE TEACHERS HAD NEVER EMPLOYED TECHNOLOGY IN CLASSROOMS BEFORE AND A SINGLE TRAINING WAS INSUFFICIENT	To solve this problem, SABAQ carried out refresher visits for continuous mentoring of teachers and collection of their feedback.
TECHNICAL ISSUES IN TABLETS	Mostly related to the memory card of tablets and charging. In some cases, teachers faced difficulty in signing-in for the SABAQ Apps. These were solved by technical support from the SABAQ team.
LIAISING REGULARLY WITH DIFFERENT STAKEHOLDERS	This was resolved through periodic support visits and the creation of an internal support system between the schools.

FINDINGS
INTERVENTION SCHOOLS

Chart data (BASELINE / ENDLINE) with percentage increase:

School	Baseline	Endline	% Increase
G5 SAHARA	22.31	35.58	59%
G5 - JUNG MADARSSA	15.00	38.46	156%
G4 SAHARA	23.35	39.71	67%
G4- JUNG MADARSSA	12.50	34.04	172%
G1 - GHAZI CHACHAR	11.67	79.44	581%
KG - GHAZI CHACHAR	29.50	77.71	163%

Legend: ● BASELINE ● ENDLINE

FINDINGS
COMPARISON SCHOOLS

Chart data (BASELINE / ENDLINE) with percentage increase:

School	Baseline	Endline	% Increase
G5 - BAGI BHUTTO	6.15	18.16	195%
G4 - BAGI BHUTTO	10.96	17.69	61%
G1 Rabnawaz	12.67	37.17	193%
KG Rabnawaz	27.67	41.11	49%

Legend: ● BASELINE ● ENDLINE

The results of the end line assessment showed that the average score in all the subjects had increased for all pilot schools. The key takeaways were as follows:

- **Muse applications can improve learning outcomes even in remote areas with extremely limited teaching resources and facilities:**

  The integration of Muse applications facilitated learning, in spite of Engro schools' remote location and lack of access to quality teachers and resources.

- **The use of Muse alone does not improve learning outcomes and students have to be at grade level to benefit from Muse applications:**

  The average scores of KG and Grade 1 students increased by a significant percentage as compared to the scores of Grade 4 and 5 students, which displayed comparatively lesser percentage improvements. This could be attributed to the fact that these students were already struggling since early grades. Although they graduated to the next grade, they had not reached grade-level literacy.

- **Teachers in Engro schools need additional mentoring and support for capacity development for the integration of technology:**

  Smooth adoption of technology was possible when teachers were provided with on the job support. The SABAQ team paid periodic visits to the schools and met with teachers so they could discuss any challenges they were facing.

CONCLUSIONS

- Muse applications can be used for remedial learning to reinforce students' foundational concepts in later grades and help them reach grade-level learning.

- The pilot displayed the substantial effect that SABAQ's digital solution had on improving learning outcomes due to increased student engagement and better pedagogy.

- It greatly assisted SABAQ as well as the targeted schools in learning how to effectively integrate technology in the classroom

- It brought the advantages of a blended learning experience to the forefront.

- Therefore, at the end of the pilot, it was decided that SABAQ's solution would be scaled across all Engro foundation schools.