EDUCATION
FINLAND

eduten

Pilot Activity & Implementation Report

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Preface

Together with the experts at the Mongolian Institute for Education Research, we embarked on a transformative journey by piloting Eduten in a variety of schools across Mongolia. These were remarkable first steps we have taken towards a brighter future for Mongolian teachers and students.

The research pilot brought together visionary educators who understand that technology holds the key to unlocking endless possibilities in learning. Together with the experts at MNIER the teachers succeeded in transforming traditional math lessons to ignite curiosity, foster critical thinking, and unleash creativity within their students. By harnessing Eduten, they tailored instruction to individual needs, elevating academic achievements and nurturing a love for learning beyond the confines of the classroom.

The measured learning impact was excellent considering the pilot duration was only 12 weeks. The pilot's success clearly indicates that Eduten is a perfect fit for Mongolian classrooms, and it marks the first step toward a digital transformation in education across Mongolia. We stand on the cusp of an era where classrooms become ecosystems of discovery, collaboration, and innovation.

This report celebrates the accomplishments of the participating teachers, students, and MNIER experts for their unwavering dedication to advancing education. It calls upon educators, administrators, policymakers, and society to rally behind the cause of digital transformation in schools. Together, we can create a future where every student thrives, resulting in a society-level transformation.

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Eduten background

Eduten is based on research and development at Turku Research Institute for Learning Analytics (TRILA), an unit of University of Turku. University of Turku was established in 1920, and it is one of the largest and oldest universities of Finland. It has been evaluated in the global top 1% in international university rankings. Eduten is one of the few truly research based learning platforms in the world.

Eduten Ltd is a Finnish company that was established in 2017 to provide this platform internationally. The personnel of Eduten Ltd consists of all senior TRILA researchers complemented with decades of experience in international operations. To date Eduten Ltd has spread the Eduten platform to hundreds of thousands of teachers and students in more than 50 countries. Eduten Ltd specific expertise is to work in cooperation with education institutions and experts of other countries to adapt the Eduten platform to be suitable for the schools in their countries.

Eduten Ltd operates the Eduten platform internationally, while TRILA operates the Eduten platform for Finnish schools under the brand name ViLLE.

What is the Eduten Platform?

The Eduten platform is a digital classroom tool based on 18 years of pedagogical research at the University of Turku, Finland. It is used in over 70% of all schools in Finland, and it received the UNESCO ICT For Eduction prize in 2020 and the UNICEF “Blue Unicorn” Award in 2022.

The Eduten platform is a modern gamified digital exercise, assessment and learning analytics platform. The primary users of Eduten are teachers who use it to coordinate pedagogical and gamified exercise activities of their students. In return the teacher receives automated learning analytics to help the teacher understand the current strengths and challenges of each of their students. Eduten is a browser application, which means it can be accessed with any reasonably modern device, eg. computers, laptops, tablets or smartphones.

CURRICULUM TOOL INSTEAD OF EXTRACURRICULAR ACTIVITY

Eduten's core idea is to enhance the local curriculum by introducing weekly digital exercise lessons as a standard part of the classroom activities. This is achieved by aligning Eduten's existing content library of more than 200,000 pedagogically high quality mathematics tasks so that the weekly exercises in Eduten will exactly match whatever topic the teacher is teaching every week. This way Eduten enhances students' learning directly at all times of the school year, and Eduten's learning analytics and exam features help teachers monitor the learning progress towards the curriculum learning goals of each student individually.

LEARNING ANALYTICS

Eduten's learning analytics are based on the learner profile built and maintained by the Eduten AI Learning Engine as the students complete the exercises. The learning analytics in Eduten help the teacher to provide better pedagogical feedback and support for each student, though the learning analytics are provided to higher level education leaders as well. For example, Eduten's school analytics help the principals and other school leaders make data driven decisions and provide better support for their teachers.

Furthermore, Eduten's learning analytics are available at a city, province or national level, though these kinds of reports are generally designed bespoke to fit the specifics and needs of each organization that oversees education activities in their region. One example of this is the governmental Finland Education Evaluation Centre (FINEEC) that uses the learning analytics available in the Eduten's Finnish version to evaluate the status of Finland's national education system.

SUPPORT FOR BOTH SUMMATIVE AND FORMATIVE ASSESSMENT

The Eduten platform is also a powerful assessment tool. By conducting tests and exams through Eduten the teacher is able to quickly measure the status of the learning process of each student. The exams utilize Eduten's gamified or theoretical exercise types at the choice of the exam designer, and the teacher will receive the results automatically after the exam is completed. The student answers can be scored automatically by Eduten or manually by the teacher. It is also easy for the teachers to create their own questions for the exams.

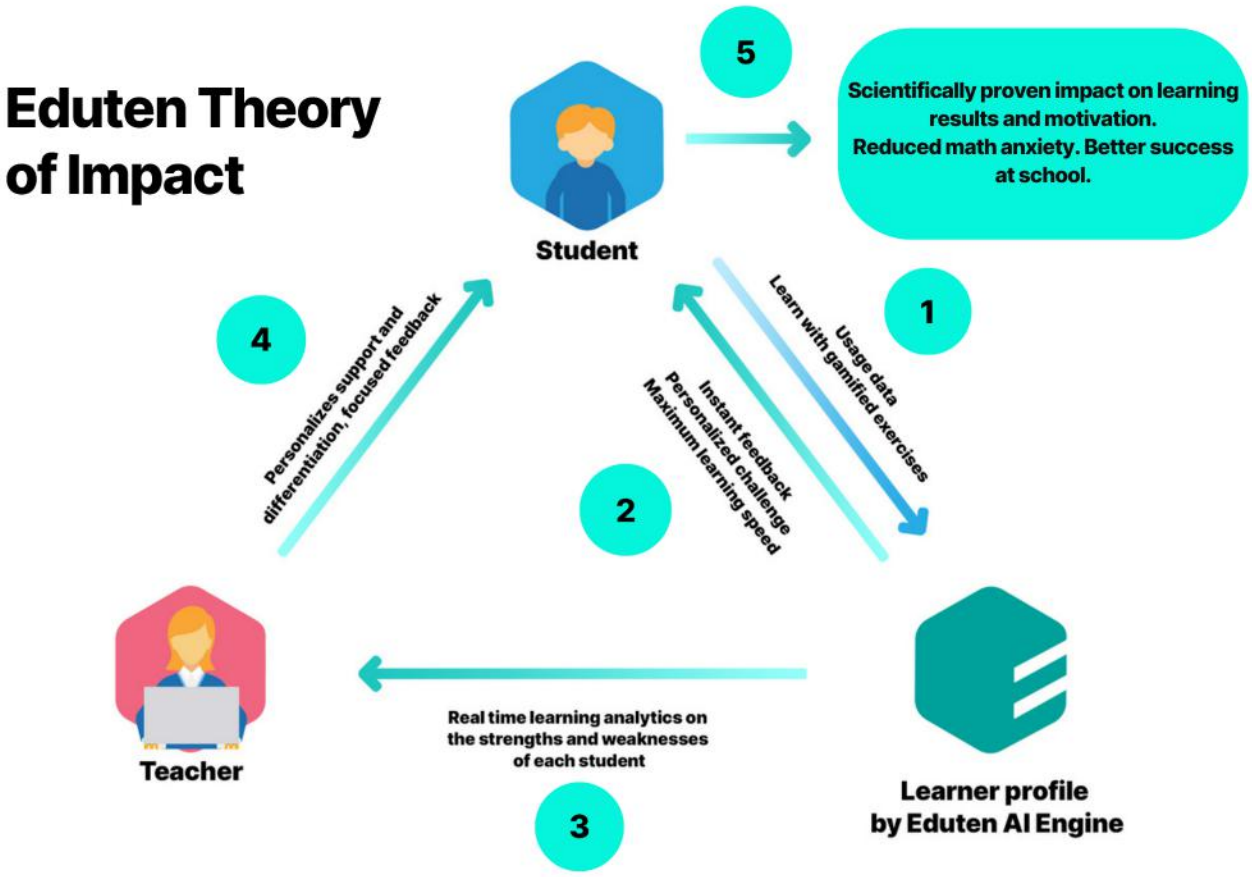
Eduten's assessment features offer support for both formative and summative assessment. Teachers can create and give quick tests to students to measure their

progress, and education institutions can use Eduten to create and distribute and run eg. national level assessments. Eduten's analytics will then show the results of the assessment automatically without any extra work needed from teachers or other parties.

EDUTEN SUPPORTS ANY SUBJECT

Lastly, while Eduten's content library consists mostly of mathematics exercises, the Eduten platform is not limited to any one subject. In Finland teachers use Eduten to provide high quality pedagogical exercises for every subject covered by Finland's curriculum.

Eduten is available for the education experts of Mongolia to create tailor made exercises and other contents for any subject. All Eduten's features, eg. AI-based learning analytics and gamification systems are automatically used by such custom contents.



ADAPTING FINNISH EDUCATION EXPERTISE FOR OTHER NATIONS

Eduten Ltd has a deep experience in adapting Finnish educational excellence for other nations and cultures. After working with education experts in more than 50 countries it is clear that while education systems main purpose is similar to all countries, there also are many differences. For example, details related to teacher training systems, pedagogical principles, linguistic differences, cultural aspects, the mix between private and public schools create a unique holistic education environment for each country.

This means that every educational solution must always be localized and adapted to the local education system when it is implemented.

Eduten Ltd achieves this by partnering with local education experts, and cooperating with them to adapt the Eduten platform's exercises, curriculum and features to be suitable for each target country. Sometimes this localization project only requires slight alignment of Eduten's content library and courses to match the target system, and sometimes it requires translation and even creation of bespoke contents to support the local schools better. Also the teacher training program will be customized according to the needs of the teachers.

Background of the Mongolian National Impact Pilot Project

Digital Transformation in Education

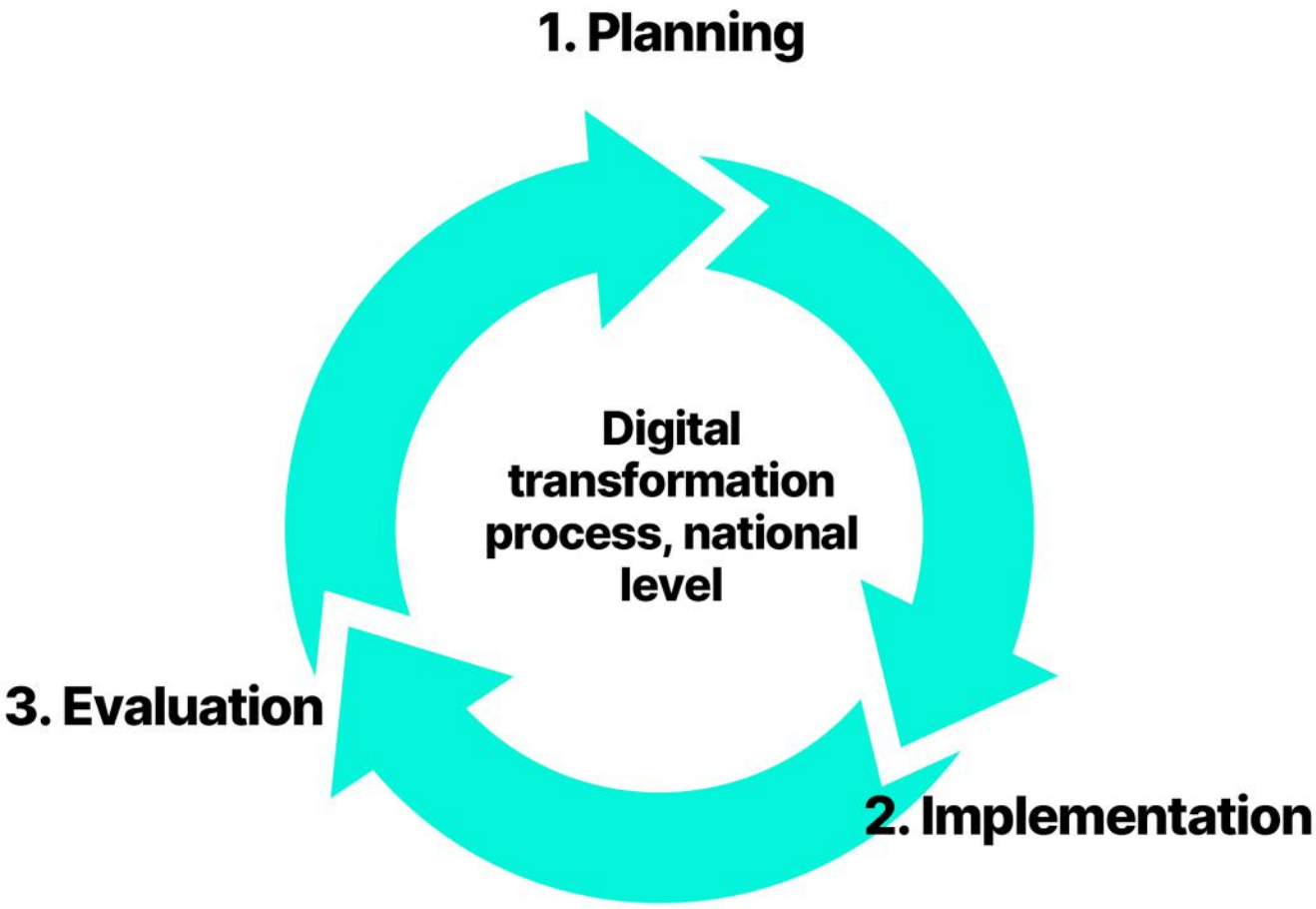
Digital transformation in education refers to the comprehensive integration of technology into all aspects of the learning process, revolutionizing traditional educational methods and enhancing student engagement, collaboration, and access to knowledge. It involves leveraging digital tools and devices, such as online learning

platforms, educational apps, and artificial intelligence, to create immersive and personalized learning experiences.

Digital transformation enables educators to adopt:

- innovative teaching approaches, facilitate remote and blended learning;
- customize learning paths to cater to individual student needs;
- gain deeper understanding of learning processes through learning analytics;
- empower learners with essential digital skills required for the future.

By embracing digital transformation, education becomes more accessible, interactive, and adaptable, fostering a dynamic and inclusive learning environment that prepares students for the challenges and opportunities of the digital age.



Digital transformation isn't a single, isolated action or phase that can be finished and dismissed. Instead, it's a cycle involving meticulous planning, practical implementation, and consistent evaluation. For it to be effective, successful, and cost-efficient, digital transformation must include the entire educational infrastructure.

This requires that the needs, desires, and demands from all layers of the educational system be heard and taken into account. It's imperative to engage everyone, from the ministry to the students and parents, and all other stakeholders in between. Furthermore, it's crucial for all stakeholders to comprehend the purpose behind the digital transformation and to recognize the personal benefits they stand to gain from it.

Digital transformation in Mongolia

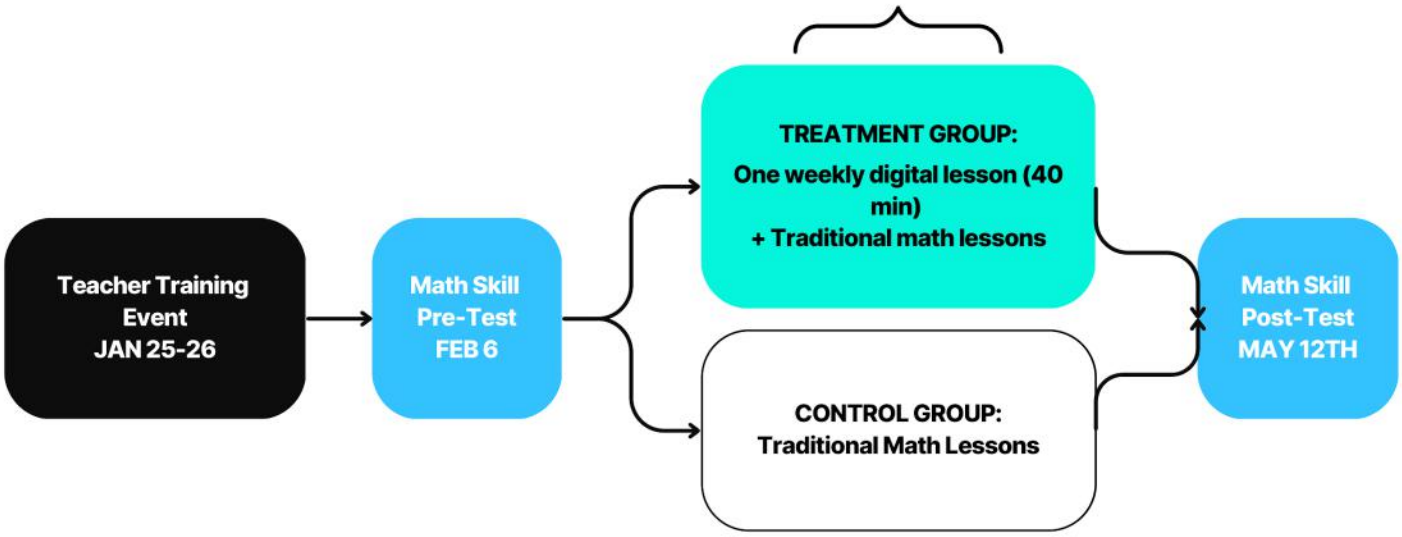
Mongolian government has decided to start to digitalise education in Mongolia. One of the first experiments was to pilot Finland Math and Eduten in several schools in Mongolia.

In early 2023 Eduten Ltd and the Mongolian National Institute of Education Research (MNIER) arranged a research pilot to study the impact of the Eduten platform on the skills of Mongolian students. To collect a representative sample data MNIER selected a total of 1000 students in 18 schools across the country to participate in the study. 9 of these schools were selected as treatment schools and the rest were designated as the control group.

The pilot consists of a teacher training event, pre- and post-assessments of students' mathematics skills, and 12 weeks of digital lessons for the treatment group between the tests. The test battery used in the pre- and post-tests was the same, and analyzing the results of both groups will reveal Eduten's learning impact on the students' mathematics skills.

The 12-week classroom use period included 2 weeks of vacation (week 3 and week 8 of the pilot). At the time of the writing of this report, the classroom use period has concluded and the post-test assessments have been conducted. However, the analysis and comparison of the test results is not yet complete.

TIMELINE:



Teacher training

Teacher training program for Mongolia Impact Pilot was done using an onsite training model. Eduten's expert local team trained all the pilot teachers in Ulanbaatar and after the training monitored the progress in Finland in cooperation with the Ministry experts. All training materials were provided by Eduten and translated into Mongolian by the localization team.

The teacher training program was held on 25–26.01.2023. The training followed the agenda below:

	DAY 1-MINISTRY OF EDUCATION		DAY 2- LOGARITHM SCHOOL	
	Teacher Stream	**Principal Stream**	**Teacher Stream**	**Principal Stream**
9.30	**WELCOME TO THE TRAINING: Minister L. Enkh-Amgalan**		**Opening the Day/ Reflections**	
10-11	**Education in Finland: Dr Erkki Kaila**		**Weekly Schedule With Eduten Pilot**	
11-12	**Impact Pilot (research): Dr Einari KurvinenIntro to Eduten, Competition**		**Eduten Demo in a Classroom. Insights from an Eduten Classroom- A Teacher's Perspective, Dr Einari Kurvinen**	**Insights about Eduten - A Principal's Perspective, Dr Erkki Kaila, Mrs Odkhoi Bold**
12-13	**LUNCH**		**LUNCH**	

13-14	**Eduten Basic Training, Dr Einari Kurvinen**		**Summary for Teachers, Dr Einari Kurvinen**	**Summary for Principals, Dr Erkki Kaila**
14-15	**Eduten Advanced, Dr Einari KurvinenTraining**	**Educational Leadership in Finland, Mr Makke Leppänen**	**Closing Ceremony, Mr Henri Muurima, Minister L. Enkh-Amgalan**	
15-16	**Eduten Advanced Training, Dr Einari Kurvinen**	**Data-Based Leadership in Mathematics, Dr Erkki Kaila**		

Head of Pedagogy

Dr. Einari Kurvinen

Head of Research

Dr. Erkki Kaila

Global Head of Partnership

Makke Leppänen

CEO

Henri Muurimaa

The teacher training program were divided into modules. Below are listed some modules in the training program:

MODULE	DESCRIPTION AND NOTES
Basic Eduten training	Gives the teaches basic knowledge on how to get started with Eduten including the underlying pedagogical principles based on best practices in Finnish classrooms.
Advanced learning analytics	Deepens teachers' knowledge on learning analytics. Shows examples on how and when to use the reports provided by Eduten. Also drills into details of individual students and helps analyze the needed actions.

Assessment	**Learn the power of formative (continuous) assessment and the difference to summative assessment (typically exams). improve learning results with timely interventions.**
Exams with Eduten	**Learn how to build and conduct exams in Eduten.**
Co-teaching with Eduten	**Best practices for co-teaching and using learning analytics to support planning and executing lessons with more than one teacher.**

By completing these modules teachers deepened their knowledge and gained valuable insights of the best practices based on Finnish pedagogics. The teachers received digital badges / certificates by completing the modules successfully. Teachers' progress on their learning journey can be always followed on school, municipality or national level in the Eduten platform.

Training program for principals and school administrators

School leaders are in a critical position to support their teachers in realizing Eduten's benefits with their students. Eduten training program included a module for school leaders to ensure they knew how Eduten can support themselves in completing the digital transformation project at their school and how school leaders can best support their staff in digital transformation.

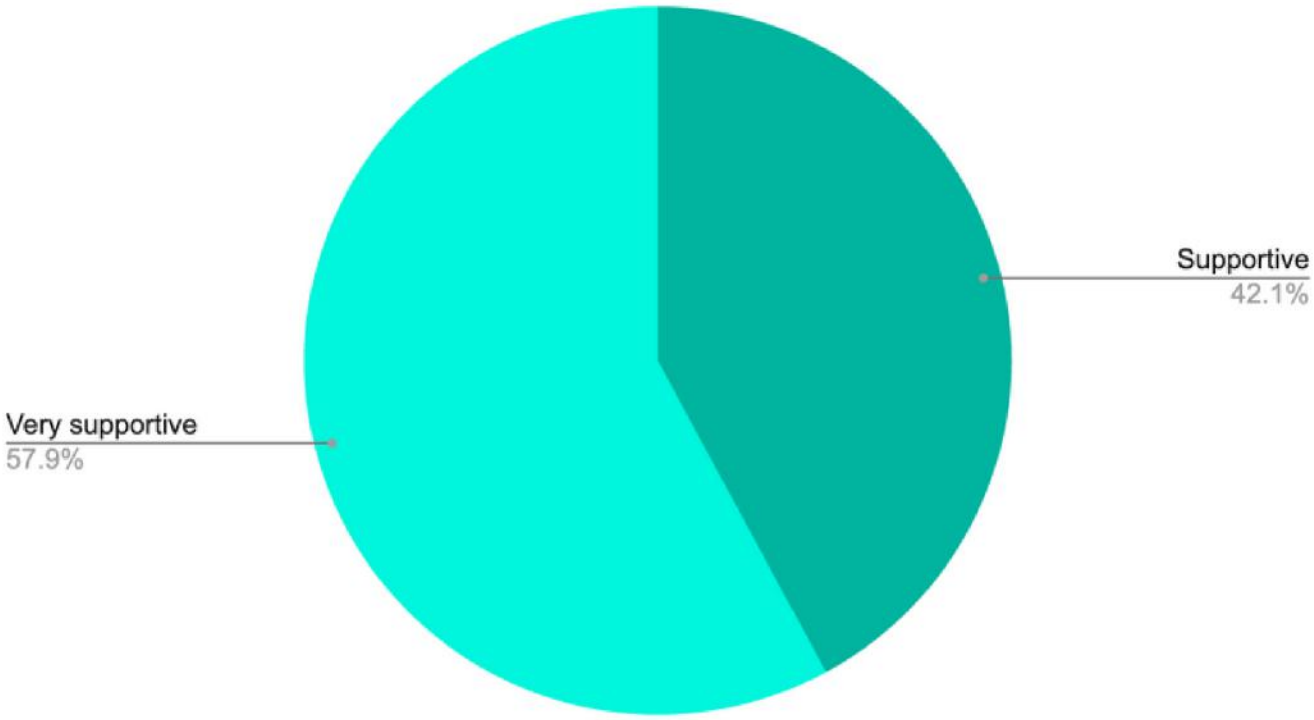
Feedback from the pilot:

Management survey

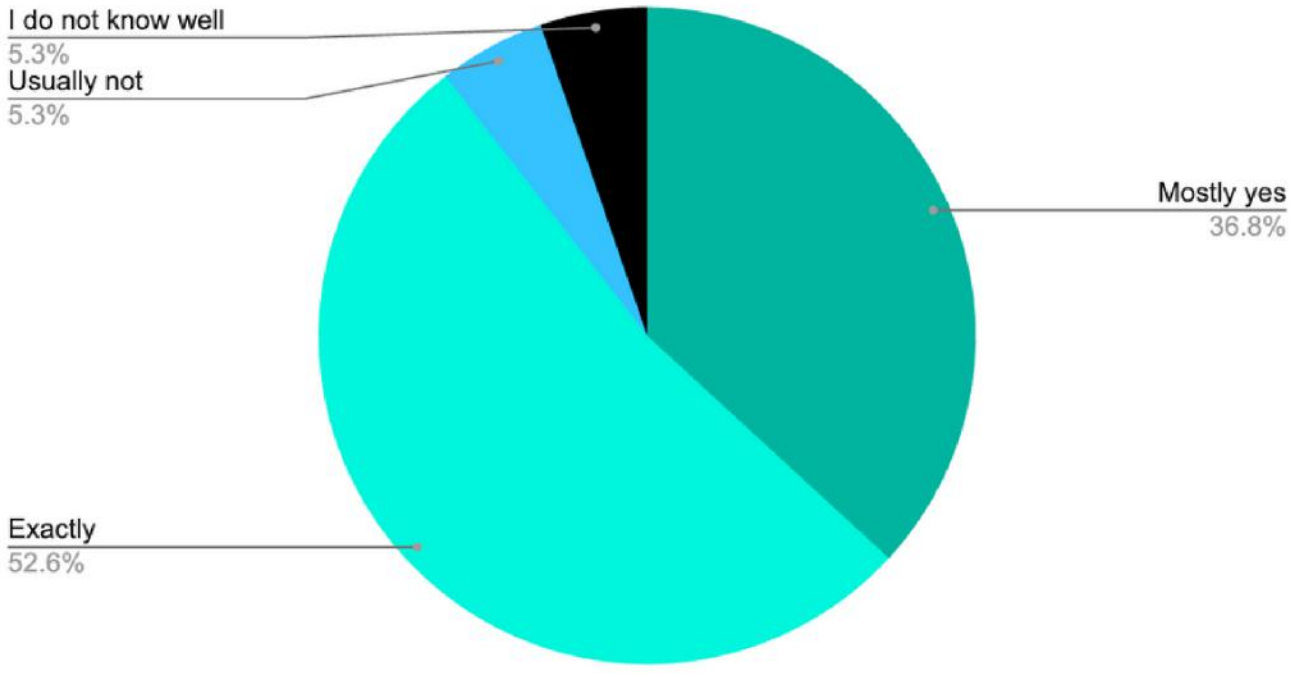
Below are the analyzed responses to the management survey, providing insights into the preparedness of the educators and platform effectiveness.

QUESTION	AVERAGE RATING (1-5)	SATISFACTION RATE
Is your school prepared to use the Eduten platform for further teaching and learning? Are the knowledge and skills of your school teachers sufficient?	**4.0**	**84%**
Please rate the Eduten platform's effectiveness in supporting mathematics education.	**4.4**	**89%**
Please rate the Eduten platform's effectiveness in supporting mathematics education, focusing on its compatibility with the national curriculum in terms of content.	**4.3**	**89%**
Please rate the Eduten platform's effectiveness in supporting mathematics education, focusing on its provision of resources for exercises and assignments.	**4.5**	**89%**
Please rate the Eduten platform's effectiveness in supporting mathematics education, focusing on its ability to stimulate students' interest and desire to study mathematics.	**4.5**	**89%**
Please rate the Eduten platform's effectiveness in supporting mathematics education, focusing on its role in assisting school management in monitoring and evaluating the progress of teachers' and students' learning activities, as well as determining the necessary support.	**4.2**	**84%**

ARE YOU SUPPORTIVE OF FURTHER NATIONAL USE OF THIS PLATFORM?



DID THE RESEARCH PROJECT'S RESULTS COMPARE TO YOUR EXPECTATIONS? SPECIFICALLY, WERE THERE MORE POSITIVE RESULTS OBSERVED THAN EXPECTED?



IN THE FUTURE, IF THIS PLATFORM IS USED FOR TRAINING AT THE NATIONAL LEVEL, WHAT WILL BE THE RESULTS AND CHANGES, AND WHY?

The assignment data is interesting, designed to develop the student in all aspects. It encourages learning useful skills for life. This will improve the quality of education and make full use of the training progress database, adapting to each child's differences.

There's an advantage in being able to interact with technology; it provides students with something lightweight yet substantial. The increase in electronic classrooms and school materials is also beneficial. I found no negatives during the implementation.

Mathematical thinking will improve as students learn to interact with technology from an early age.

WHAT RESULTS AND CHANGES HAVE YOU (THE TEACHER) EXPERIENCED USING THIS PLATFORM?

It's very interesting that the students' activity has dramatically improved

The teacher’s teaching methods and technological skills have improved

The teacher's workload is reduced

The usage of the platform is up-to-date, and there's much to learn from advancements in technology.

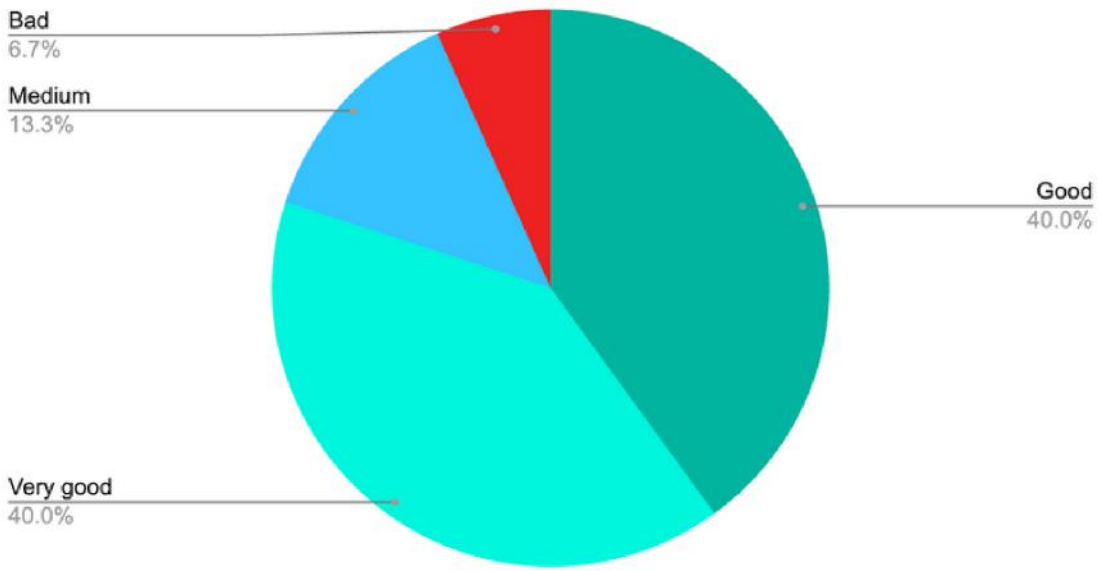
The teacher has developed, and the results of the training have improved

Teacher survey

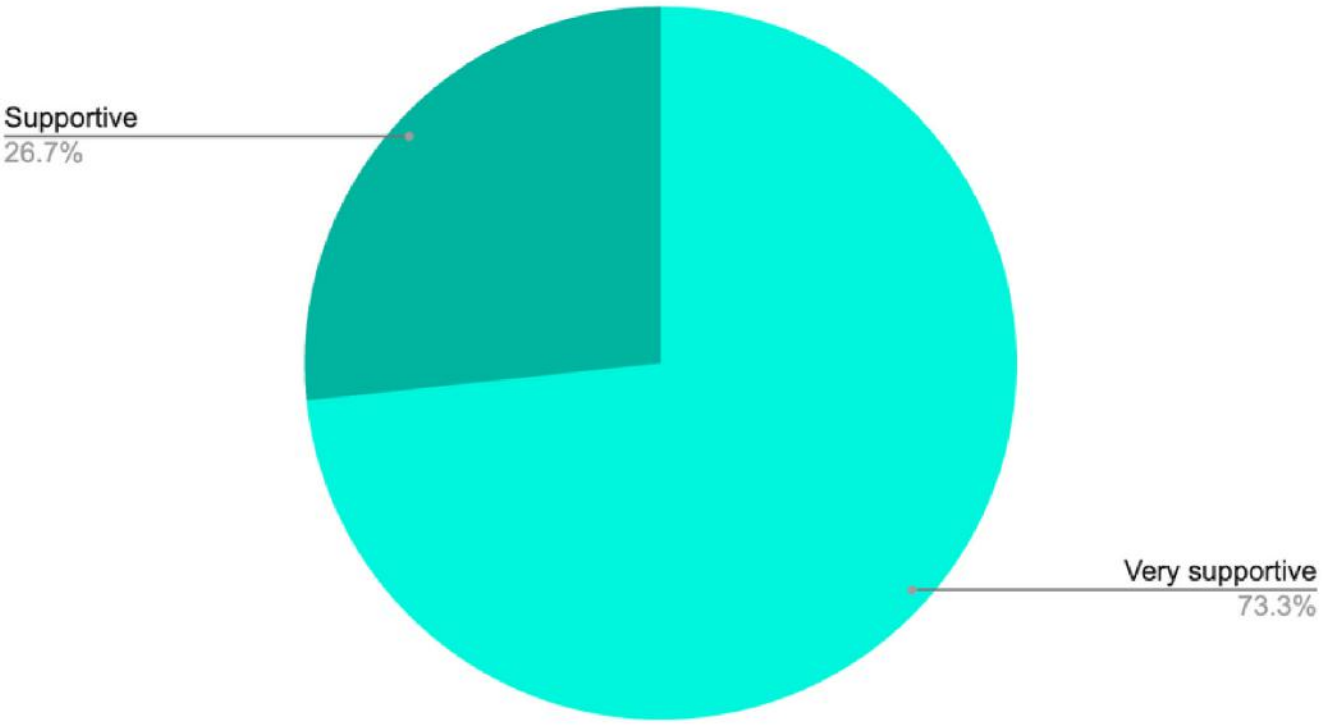
Below are the analyzed results from the teacher survey, offering valuable insights into their professional experiences with the platform. Detailed outcomes are outlined below.

QUESTION	AVERAGE RATING (1-5)	SATISFACTION RATE
Is your school prepared to utilize the Eduten platform for further teaching and learning? (Are the knowledge and skills of your school's teachers sufficient?)	**4.3**	**87%**
Please rate the Eduten platform's effectiveness in supporting mathematics education.	**4.3**	**87%**
Please rate the Eduten platform's effectiveness in supporting mathematics education. Specifically, its compatibility with the national curriculum in terms of content.	**4.2**	**87%**
Please rate the Eduten platform's effectiveness in supporting mathematics education. Specifically, its success in stimulating students' interest and desire to study mathematics.	**4.5**	**87%**

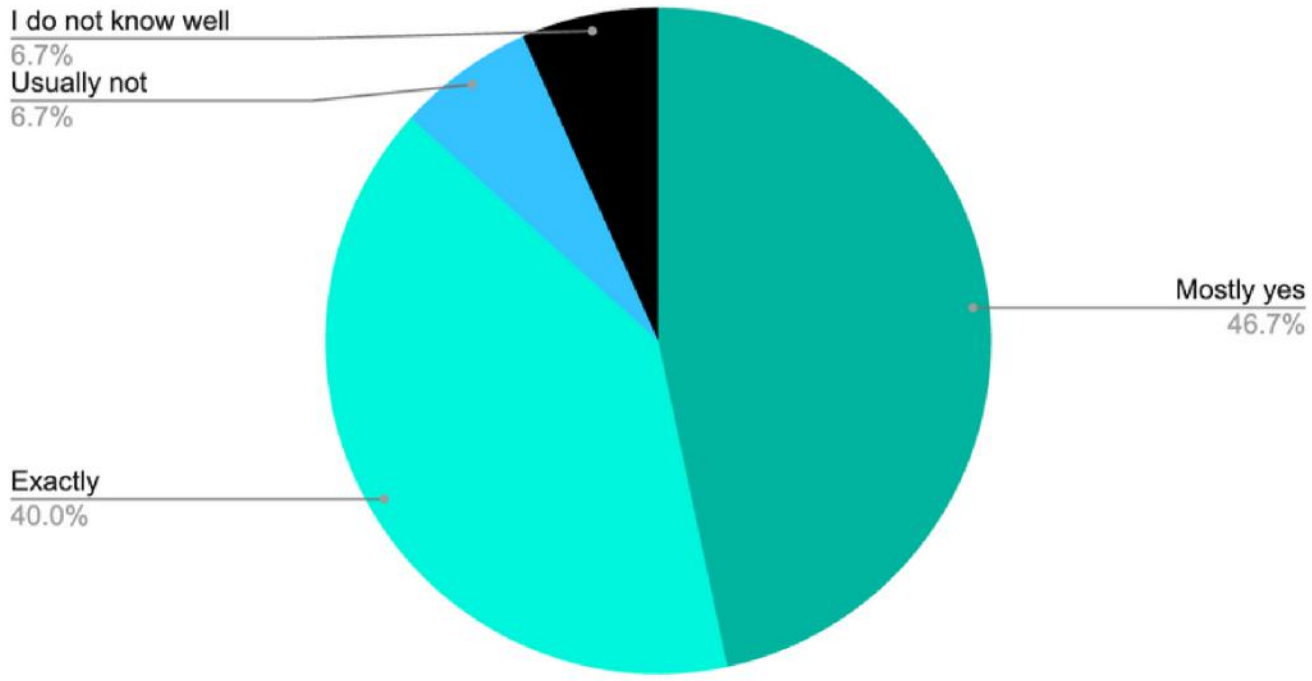
PLEASE RATE THE EDUTEN PLATFORM FOR SUPPORTING MATHEMATICS EDUCATION (EASING THE TEACHER'S WORKLOAD)



ARE YOU SUPPORTIVE OF FURTHER NATIONAL USE OF THIS PLATFORM?



HOW DID THE RESEARCH PROJECT'S RESULTS COMPARE TO YOUR EXPECTATIONS? SPECIFICALLY, WERE THERE MORE POSITIVE RESULTS OBSERVED THAN EXPECTED?



IN THE FUTURE, IF THIS PLATFORM IS USED FOR TRAINING AT THE NATIONAL LEVEL, WHAT WILL BE THE RESULTS AND CHANGES, AND WHY?

The thinking skills and speed of students will improve.

Every child will gain an interest in mathematics, consolidate their knowledge for a deeper understanding, be able to work in an online environment, and their ability to think intuitively will improve.

The speed of students will increase, allowing them to accomplish more in less time.

The teacher's workload will be reduced, the students' independence will increase, and they will be able to approach tasks from multiple perspectives.

A lot of positive things have been added, such as the child will be more interested in mathematics and will be able to spend more time on independent exercises.

Many positive elements have been added; the child will show more interest in mathematics and will be able to devote more time to independent exercises.

All opportunities for students to improve their English language skills, self-reliance, and overall development have been made available, and the workload of the teacher has been eased.

WHAT RESULTS AND CHANGES HAVE OCCURRED IN PARENT RELATIONSHIPS, ATTITUDES, AND INVOLVEMENT BY USING THIS PLATFORM IN TRAINING?

Parents no longer have to worry about doing their children's homework.

Parents' satisfaction is very positive; they have been able to follow their children's progress

You can easily monitor the progress level of your child.

WHAT ARE THE RESULTS AND CHANGES IN STUDENTS USING THIS PLATFORM FOR LEARNING?

Feedback from a student: "I started to think logically, developed an interest in mathematics, and my speed of problem-solving increased."

Our students learned to remain focused, increased their speed, and learned the value of unity and collaboration.

There was an increase in the speed of thinking, learning of logical and mathematical reasoning, boosting of self-esteem, and setting personal goals.

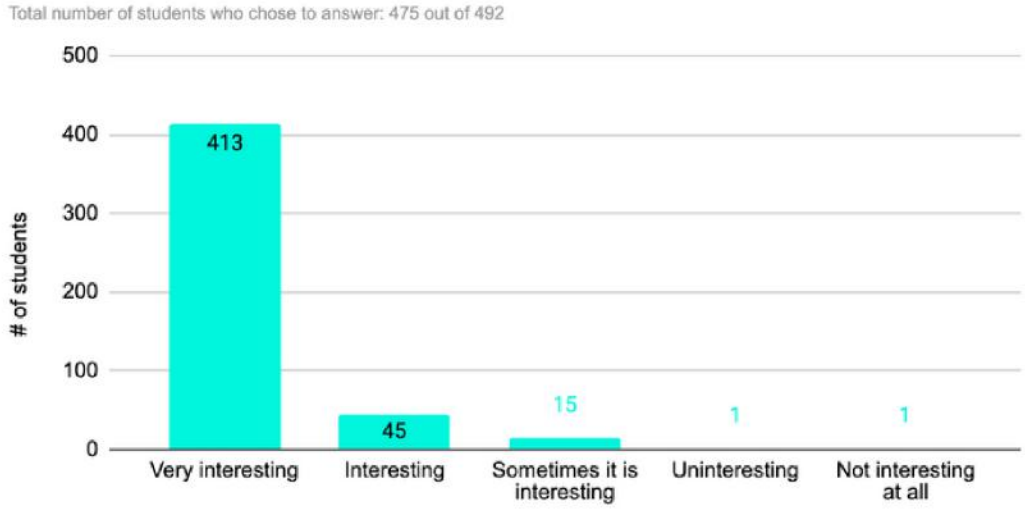
Pupils are becoming more active, creative, inquisitive, and eager to develop.

Student survey

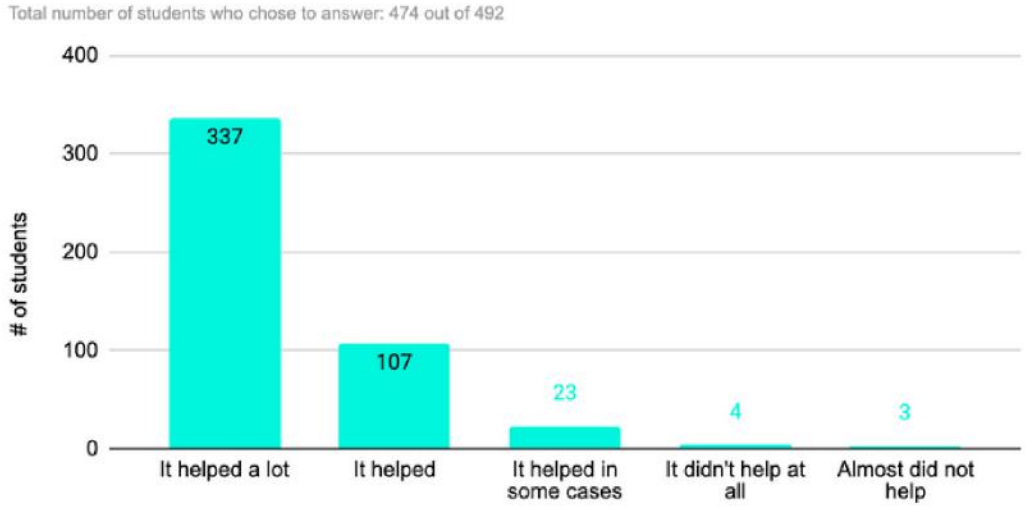
Below are the analyzed results from the student survey, providing valuable insights into their academic experiences with the platform. Detailed outcomes are presented below.

PLEASE NOTE: Variations exist in the total number of responses for each question because answering them was not mandatory.

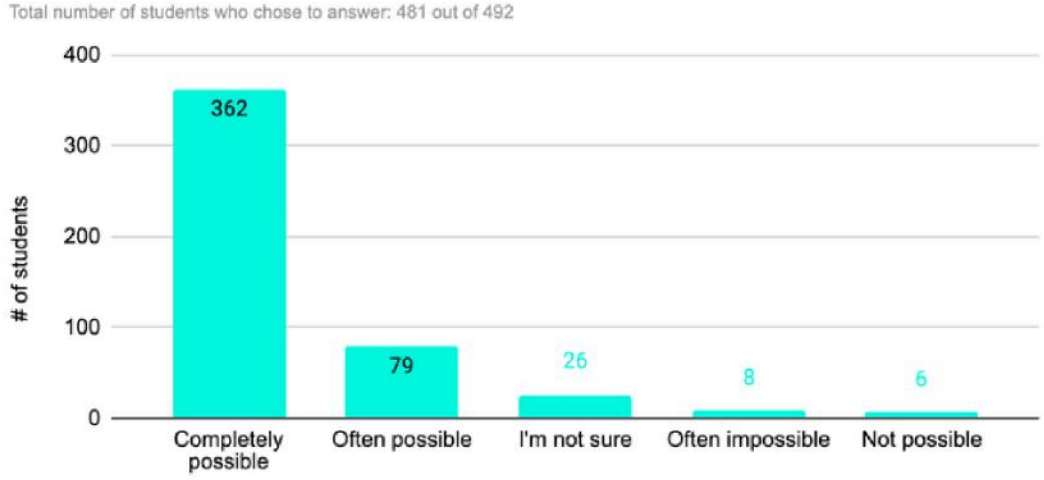
IS EDUTEN INTERESTING



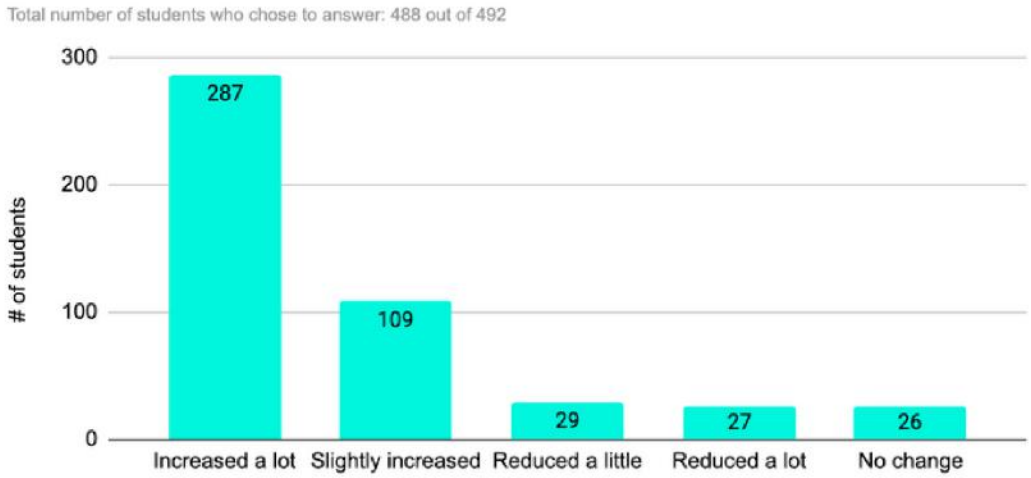
HAS EDUTEN HELPED YOU UNDERSTAND YOUR MATH LESSONS BETTER?



IS IT POSSIBLE TO USE EDUTEN FOR DEVELOPING MATHEMATICAL KNOWLEDGE AND SKILLS INDEPENDENTLY?



HAS THE AMOUNT OF TIME YOU SPEND STUDYING MATH CHANGED SINCE STARTING TO USE EDUTEN?



WHAT RESULTS AND CHANGES HAVE YOU EXPERIENCED AFTER USING THE EDUTEN PLATFORM?

I like mathematics more

It was very interesting. Eduten is better than the traditional way of learning mathematics.

I started paying attention to mathematics lessons.

I became more interested in my studies.

I like mathematics more. I want to do all my studies on a tablet.

I have become very intelligent and quick-thinking.

It Improved memory and attention

I can think faster; I have become very smart.

I improved at math after taking the Eduten course.

Tasks that used to take 40 minutes are now done in 20 minutes.

I learnt to like mathematics and became a quick thinker.

Conclusions

CONCLUSIONS: MANAGEMENT SURVEY

The pilot project implemented by Eduten in Mongolian schools has proven to be very successful among management. The general preparedness of the schools to use the platform for further training was rated 4.0 out of 5, indicating the teachers' adequate knowledge and skills for implementation. Satisfaction (percentage of answers ≥4) in this area stands at 84%.

The Eduten platform's effectiveness in supporting mathematics education was also favorably reviewed, with satisfaction rates all around 89%.

Specifically, its real contribution to improving the quality of education was rated 4.4, compatibility with the national curriculum was rated 4.3, provision of resources was rated 4.5, and its ability to stimulate student interest was rated 4.5. In terms of aiding school management in monitoring and evaluating learning activities, the platform achieved a rating of 4.2 with 84% satisfaction.

Management showed significant support for broader use of the Eduten platform, with all of the respondents being either supportive or very supportive. The survey revealed that the project's results aligned with expectations of all of the respondents, 36.8% of whom found more positive results than anticipated.

In open-ended responses, management noted improvements in student engagement and educational quality, citing the platform's interesting assignments and ability to adapt to individual students' needs. They also recognized the Eduten platform's role in helping students interact with technology and the consequent positive impact on mathematical thinking.

CONCLUSIONS: TEACHER SURVEY

The teachers who participated in the pilot project similarly expressed a high level of satisfaction. The Eduten platform's readiness to be used for further training was rated at 4.3, indicating strong teacher preparedness and skills. Satisfaction in this aspect stands at 87%.

In terms of the platform's effectiveness in supporting mathematics education, ratings ranged from 4.2 to 4.5 with a satisfaction rate of 87%. This signifies the Eduten platform's positive impact on improving the quality of mathematics education, its alignment with the national curriculum, and its success in sparking students' interest in mathematics.

Easing the teacher's workload was seen as a beneficial aspect of the platform, with 80% rating it as good to very good. An overwhelming 73.3% of teachers were very supportive of wider use of this platform, with a further 26.7% being supportive. When asked about the project's results compared to expectations, all of the respondents reported their expectations were either mostly exceeded or met.

Teachers noted several positive potential impacts if the Eduten platform was used nationally: improved thinking skills and speed, increased student interest in mathematics, and reduced teacher workload. They also observed enhancements in their teaching methods, technological skills, and a reduction in workload. Parents no longer needed to help with homework and could easily monitor their child's progress, which increased parental satisfaction.

The teachers also shared student feedback, reporting increased logical thinking, problem-solving speed, focus, unity, and collaboration. The students also showed more activity, creativity, and eagerness to develop, further underlining the Eduten platform's success.

In conclusion, the Eduten company's pilot project in Mongolian schools has garnered overwhelmingly positive responses from both management and teachers. The user-friendly platform, aimed at improving mathematics education, has clearly

demonstrated its effectiveness by achieving high satisfaction and rating scores across multiple facets of teaching and learning. This positive impact is further substantiated by the pilot's excellent activity data, reflecting the Eduten platform’s crucial role in stimulating student engagement, easing teacher workload, and improving the overall quality of education. The strong support expressed for the platform's broader national use, combined with its evident benefits, makes a compelling case for its potential to revolutionize mathematics education on a larger scale.

CONCLUSIONS: STUDENT SURVEY

Student feedback offers an equally positive perspective on the pilot project implemented by Eduten in Mongolian schools. A remarkable 90.1% of the students found the platform interesting or very interesting. This demonstrates the platform's significant ability to engage students and enhance their learning experience.

The platform's effectiveness in improving students' understanding of mathematics was also highly rated. 93.6% of the students reported that Eduten helped them understand math lessons better. This underlines the platform's vital role in enhancing student comprehension in mathematics.

Furthermore, 91.7% of students felt that Eduten provided support for developing mathematical knowledge and skills independently. This aspect of self-directed learning is crucial in modern education.

Finally, the platform seems to have had a positive influence on the amount of time students dedicate to studying mathematics. Notably, 82.8% of respondents reported an increase in their study time since they started using the platform. This shows that the platform successfully motivates students to devote more time to studying mathematics, reinforcing the overwhelmingly positive feedback from the management and teacher surveys.

Pilot activity and implementation report

6TH FEBRUARY - 14TH MAY, 2023

Overview

The activity and success of students was evaluated over 9 schools in 3 different regions (the capital, the Aimag and the Soum). The pilot student consists of 4th grade students.

Activity is a key metric for evaluating the success of implementation of the pilot program, how well Eduten integrated into the class rooms and how suitable the Finnish pedagogy based digital learning solution is for Mongolian classrooms. The pilot includes 2 weeks of vacation (week 3 and week 8 of the pilot).

General analytics

NUMBER OF SCHOOLS	**9**	**NUMBER OF CLASSES**	**15**
TEACHERS	**15**	**ACTIVE STUDENTS**	**520**
LESSONS	**257**	**WEEKS**	**14**

Trophies

Trophies serve as a critical measure for teachers when assessing student effort and engagement. Each student is expected to earn at least a bronze trophy every week. Failure to secure this trophy suggests that the student has not completed the tasks assigned by the teacher. When students earn higher-level trophies such as silver, gold, or diamond, it demonstrates their willingness to exceed the basic requirements and push their boundaries.

The color of the trophy corresponds to the percentage of points a student has earned from a lesson. Specifically, bronze represents 50%, silver denotes 70%, gold signifies 90%, and diamond indicates a perfect score of 100%.

				
TOTAL	**7121**	**5559**	**4760**	**4129**
HOW MANY STUDENTS ACHIEVED EACH WEEK	**98%**	**76%**	**65%**	**57%**
GLOBAL	**28%**	**20%**	**16%**	**13%**

Accuracy, time on task and solved tasks

Accuracy reflects the difficulty level of the exercises. Ideally, it should range between 70% and 90%, with 85% being the optimal level for sustaining engagement, motivation, and enhancing learning outcomes through appropriate challenge. If accuracy dips below 70%, the exercises could be too challenging, potentially leading

to frustration and anxiety. Conversely, if accuracy exceeds 90%, the exercises may not be challenging enough.

On a weekly basis, students should aim to solve more than 180 tasks. Solving over 300 tasks per week is considered excellent. In terms of active learning time, measured by the time used, a minimum of 30 minutes per week is expected. However, a more recommended duration is 60 minutes or more.

TOTAL

These figures represent the cumulative total achieved by all the students over the 14-week pilot period. For a more comprehensive understanding, please refer to the weekly averages provided in the table below.

Tasks	Accuracy	Time used
4 241 366	78%	15 497h 20min

WEEKLY AVERAGE

The table below presents the average weekly results per student. For context and a point of comparison, it also includes the global average according to Eduten data.

	Tasks	Accucracy	Time used
Mongolia	583	78%	2h 7min
Eduten average	139	84%	26 min

Differentiation

Differentiation is a pedagogical method that allows teachers to tailor the difficulty level of exercises to each student's individual needs. Altering the differentiation

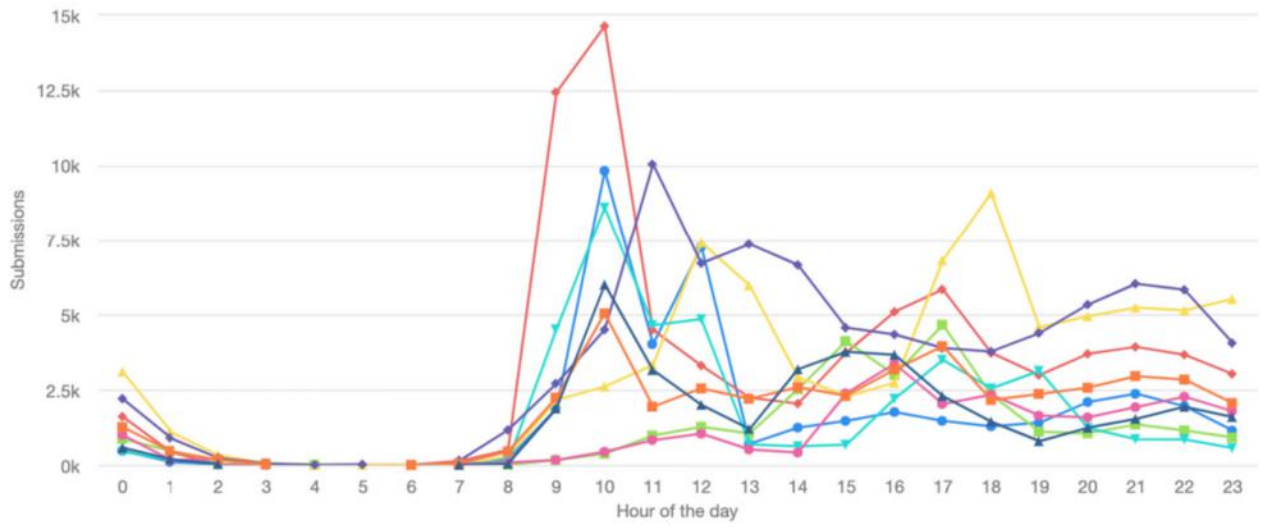
settings can impact the overall reported accuracy. In subsequent results, we observe an increase in weekly accuracy levels, likely due to teachers applying more rigorous differentiation and thus enhancing learning outcomes.

87% of teachers adhered to the suggestions made by Eduten's AI engine for differentiating student tasks, tailoring the content to be either easier or more challenging as recommended. The worldwide average adherence to such suggestions stands around 50%.

Active hours

Monitoring student activity by the hour provides us with valuable insight into when students are utilizing Eduten. It helps us discern the amount of work completed during school hours and the extent of effort put in after school, at home.

The following chart exhibits a balanced distribution between school-based and at-home learning activities.



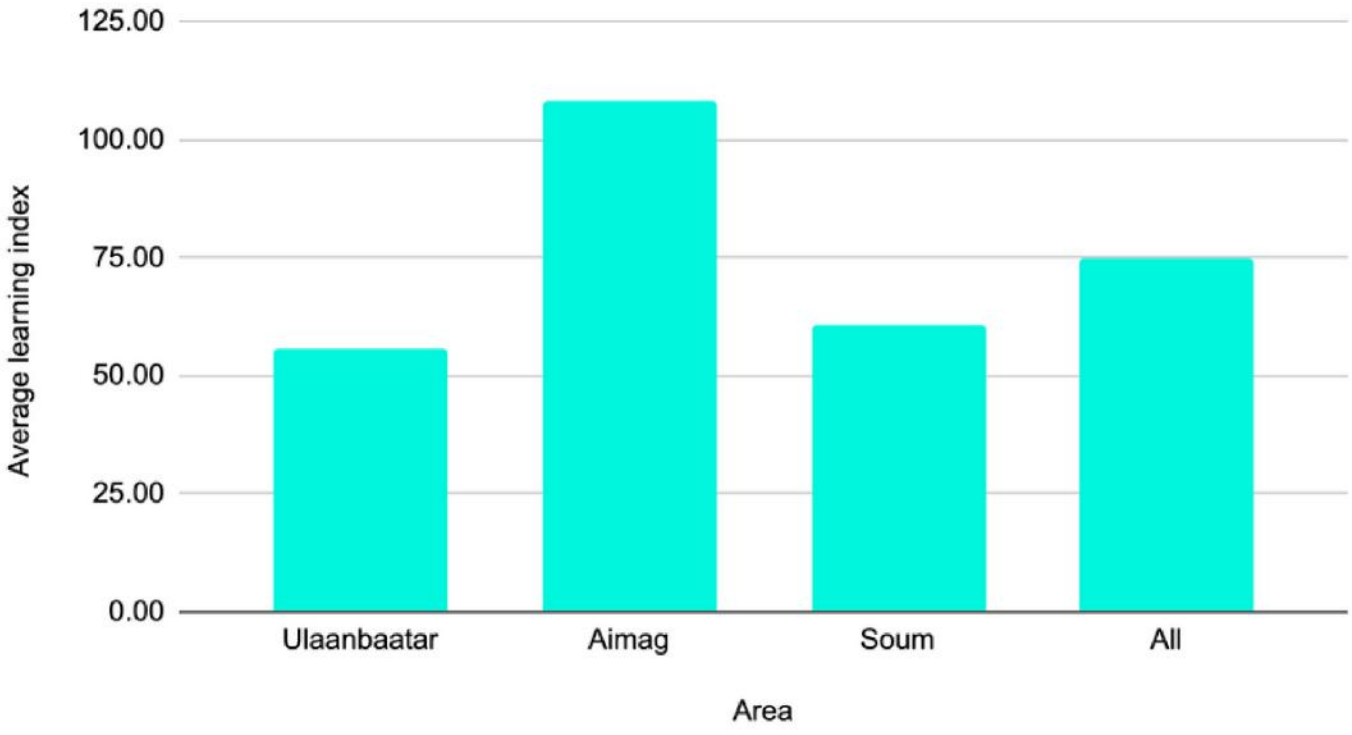
Area comparison

Eduten's learning analytics enables a straightforward comparison of performance and activity across various schools. The ensuing analytics offer insights into the discrepancies among different schools. Furthermore, these results will be categorized by area for a more comprehensive understanding.

Learning index

Learning index is a calculated value based on overall student activity, their ability to fulfill goals (achieve trophies) and accuracy. Learning index shows the potential for improvement of students in a class. Based on our previous studies, learning index over 15 indicates a high probability of improving learning results. Zero learning index gives no improvement over traditional learning.

AVERAGE LEARNING INDEX BY AREA



The learning index is high for all the schools. Interestingly on average the learning index is lowest in schools in Ulaanbaatar. The lowest result is from a Soum school but the average result from Soum schools is higher than in Ulaanbaatar. The Aimag schools position themselves highest by a clear margin.

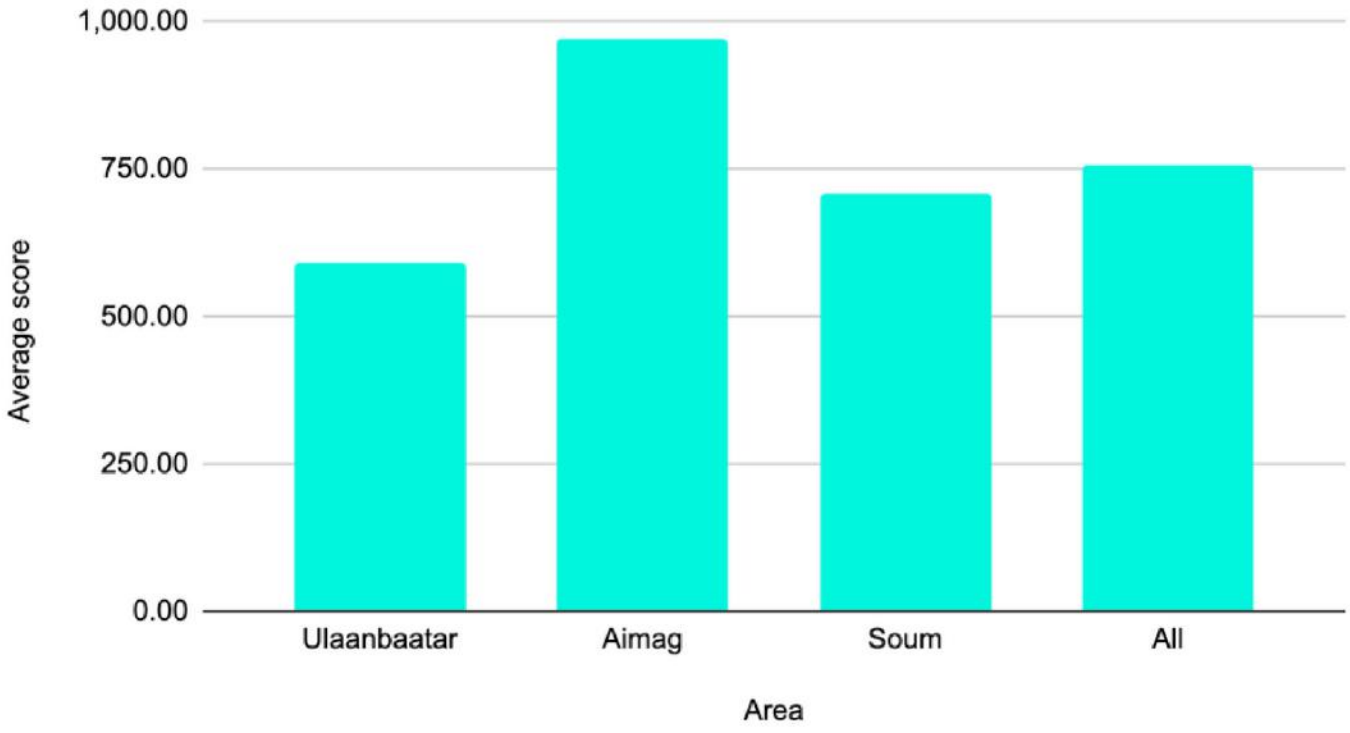
Student activity

Student activity measures the percentage of students in a school who have completed exercises on Eduten within a selected time frame. During the pilot, every participating school reported at least 100% activity, corresponding to the predefined number of students. Some schools had additional student accounts set up, which resulted in activity levels exceeding 100%.

Weekly score per student

Every correct answer a student provides in Eduten earns them points. Monitoring these scores provides a comprehensive overview of both the amount of work students are accomplishing and their level of success.

AVERAGE WEEKLY SCORE BY AREA

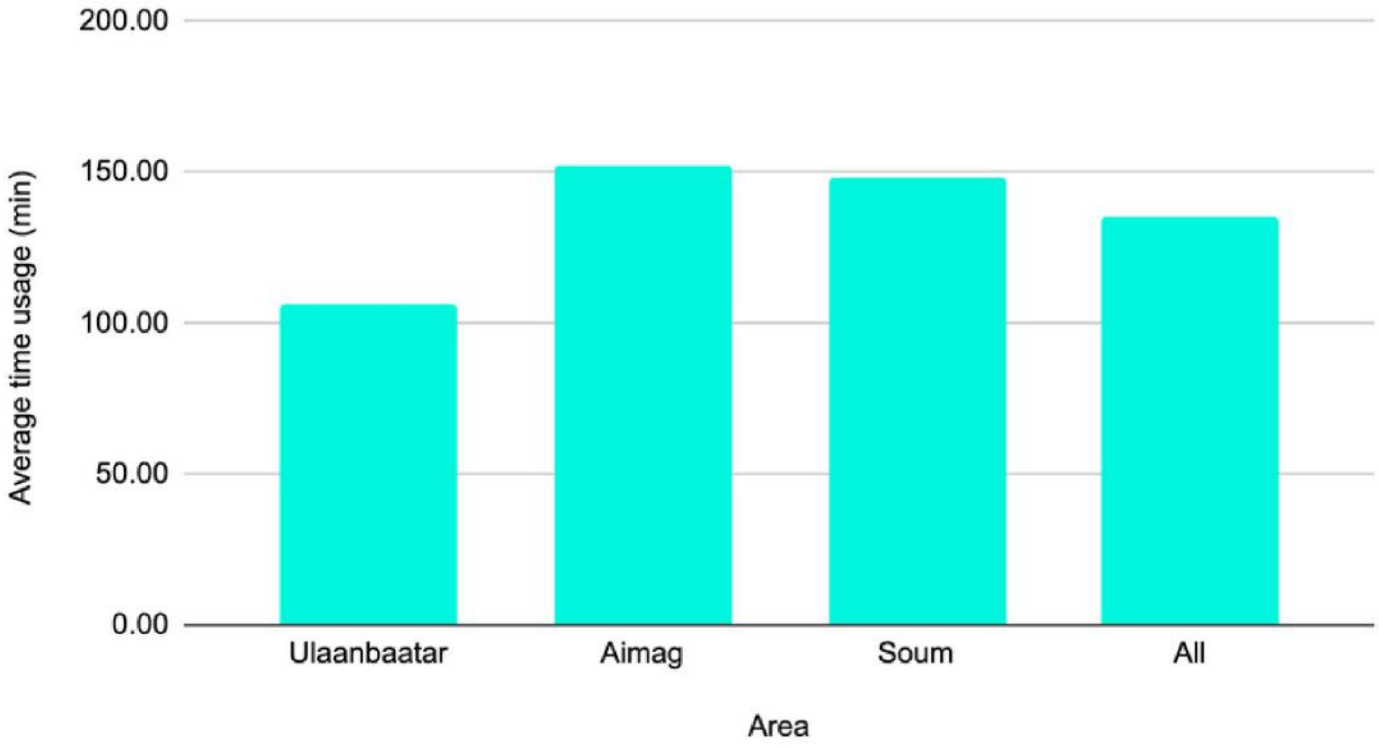


Scores are closely linked to the Learning Index, leading to similar outcomes in these two measures. All participating schools perform considerably above the recommended level, yet distinct differences exist among them. The lowest recorded result comes from a school in the Soum. However, the overall lowest average score originates from the schools in Ulaanbaatar.

Weekly time on task per student

Eduten keeps track of the time students spend on each exercise, from the moment they start until they submit it. This effectively captures only the active learning time and does not account for the time spent exploring and selecting exercises.

AVERAGE WEEKLY ACTIVE LEARNING TIME BY AREA



When it comes to 'time on task', the differences between schools narrow significantly. All schools achieve 'time on task' figures well above the recommended level.

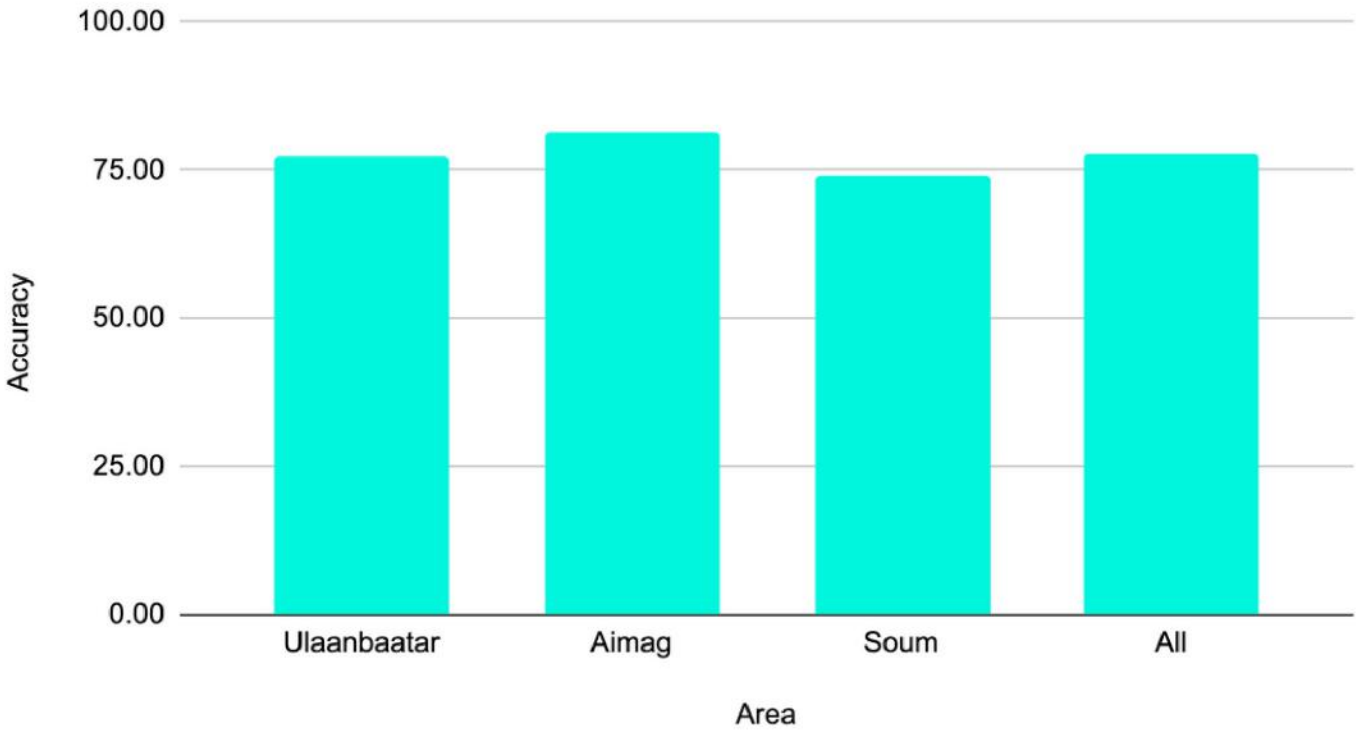
However, two schools in Ulaanbaatar record the lowest time, with an average of 84 minutes per student per week. Comparatively, schools in the Aimag and the schools in Soum fare almost equally, positioning Ulaanbaatar in third place.

Considering a lesson in school is 40 minutes the average weekly time indicates high usage at home.

Accuracy

Accuracy reflects the ratio of correct to incorrect answers provided by students. The recommended accuracy range is between 70-90%. Generally, this measure helps us gauge the overall difficulty level of exercises and their appropriateness for students. By adhering to the suggested differentiation actions, teachers have the ability to fine-tune this aspect.

AVERAGE ACCURACY BY AREA



All results below 80% fall within the recommended range, albeit at the lower end. The accuracy figures vary the most compared to the other metrics. In this case, the Soum schools reports the lowest average accuracy. However, the discrepancy between the areas isn't as pronounced as it is with other reported metrics.

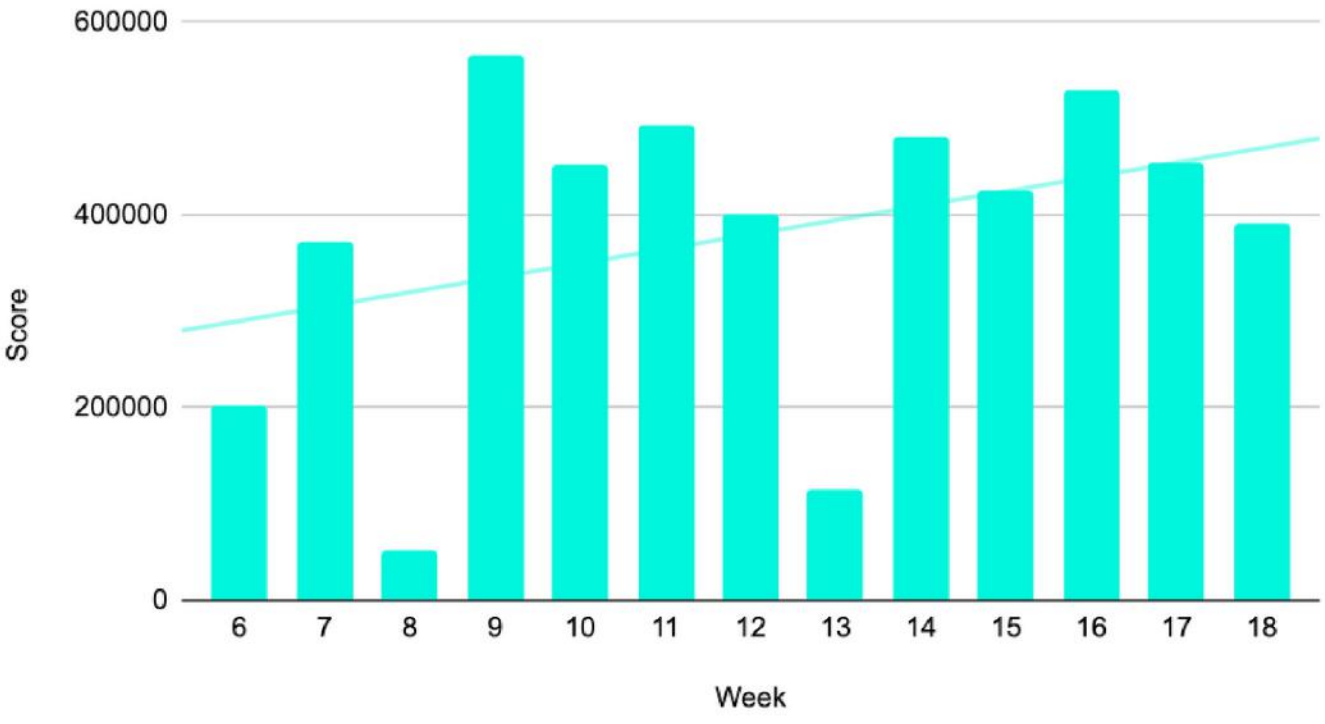
Weekly activity

Weekly activity provides a means to monitor student engagement and consistency over extended periods. In these charts, vacation periods (weeks 8 and 13) and special events can be easily identified.

Total weekly score

Every correct answer a student provides in Eduten earns them points. Monitoring these scores on a weekly basis provides a comprehensive overview of both the amount of work students are accomplishing and their level of success. While the number of exercises may vary from week to week, observing scores over an extended period allows us to identify trends.

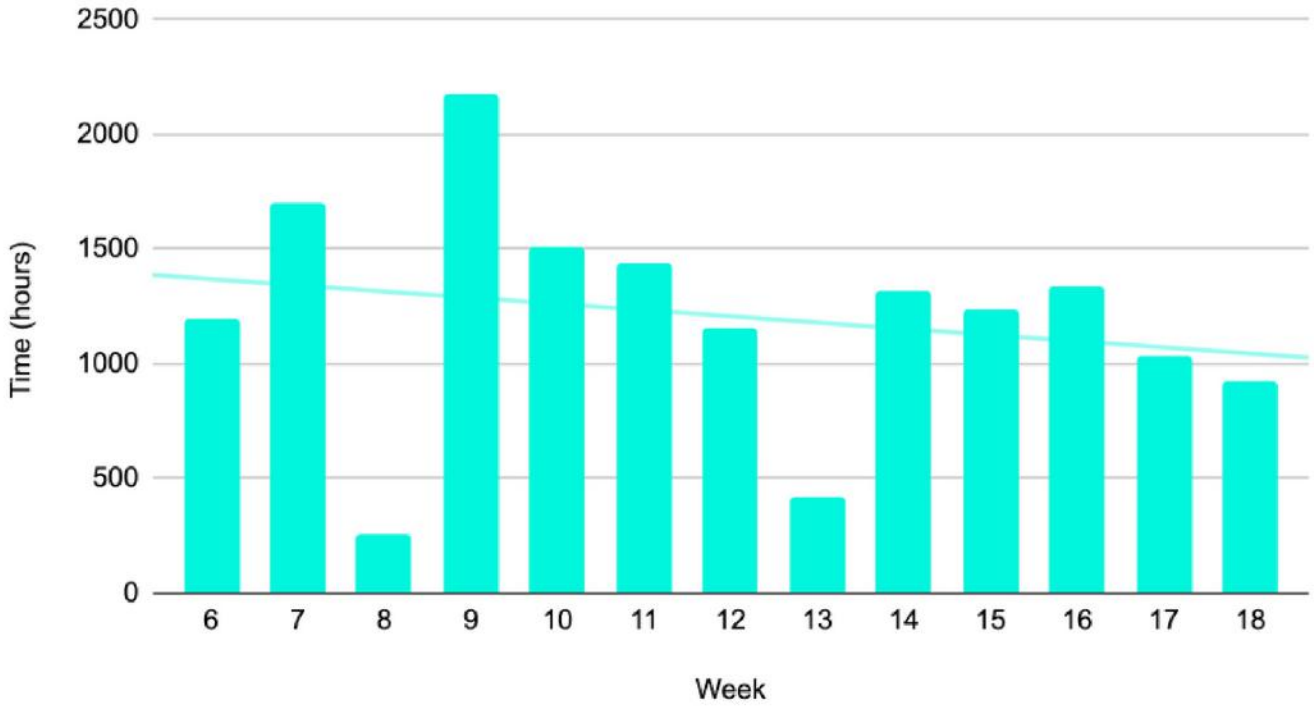
WEEKLY SCORE



Total weekly time on task

Eduten keeps track of the time students spend on each exercise, from the moment they start until they submit it. This effectively captures only the active learning time and does not account for the time spent exploring and selecting exercises. Typically, 'time on task' is higher initially and decreases as students learn to optimize their learning process.

WEEKLY ACTIVE LEARNING TIME

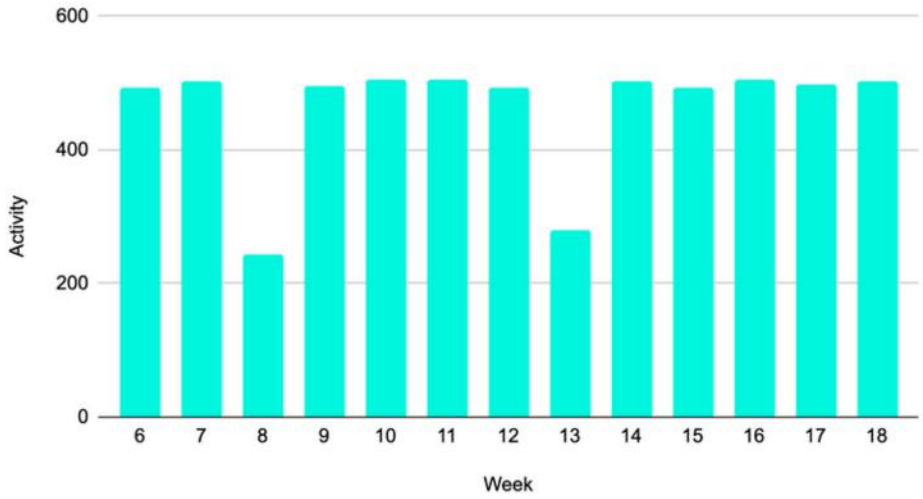


Students are spending a lot of time learning, more than what's usually suggested. But the graph shows that teachers and students are gradually finding the right balance on their own as time goes on. The best learning results are achieved with good balance and variation between learning methods.

Weekly active students

Weekly activity signifies how many students interacted with Eduten on a weekly basis. In an ideal scenario, the bars in the chart should maintain an equal height throughout, suggesting steady usage. The chart clearly shows when vacation times occur, as they cause visible drops in activity.

WEEKLY ACTIVITY

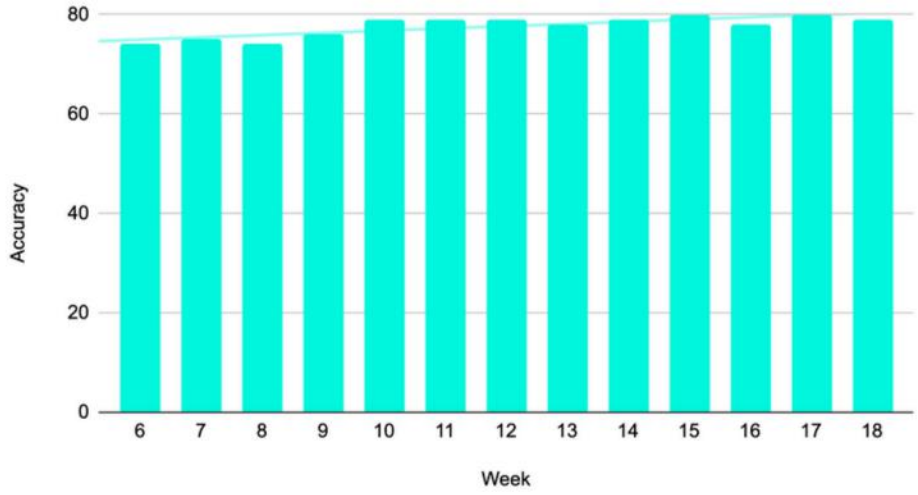


The student count remains quite consistent, with the exception of vacation weeks 8 and 13. Some variability is inevitable due to factors such as illness or other legitimate reasons.

Weekly accuracy

Typically, weekly accuracy tends to stay relatively stable over time, because as students progress the complexity of practiced topics increases. Vacation periods usually lead to a decrease in student activity, which could cause higher or lower than usual accuracy levels.

WEEKLY ACCURACY

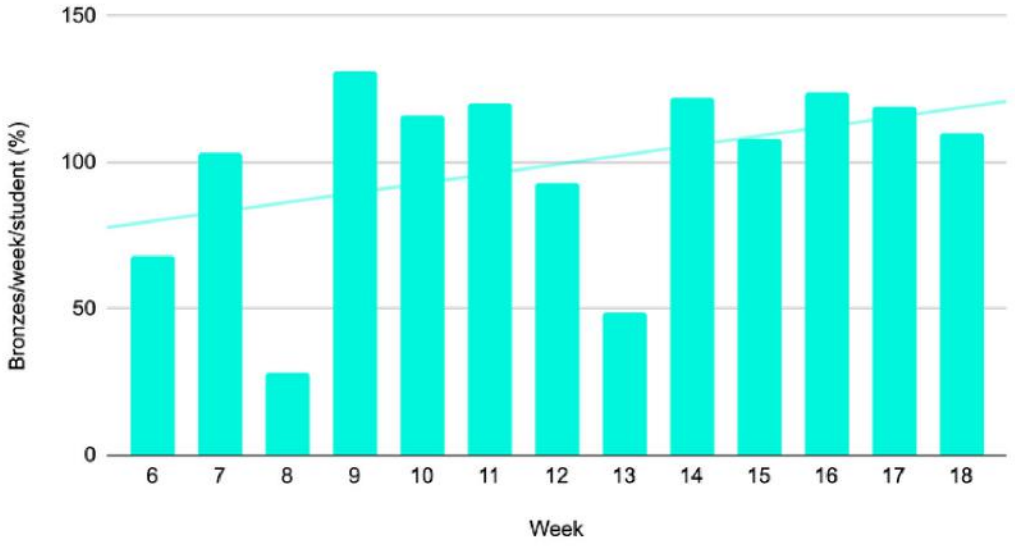


The increasing trend in weekly accuracy signifies above-average learning performance and skill enhancement among the students.

Engagement - Bronzes per student per week

The number of bronze trophies earned each week per student serves as a strong indicator of how many students meet the minimum weekly goal. If the engagement percentage exceeds 100%, it suggests that students, on average, secured more than one bronze trophy.

BRONZES PER WEEK PER STUDENT



There's a noticeable upward trend in engagement during the pilot period. This is a strong signal that Eduten fosters sustained motivation, rather than simply eliciting a short-term novelty effect

Conclusions

Drawing from the pilot conducted, the conclusions present a remarkable outlook of the performance and potential of the Eduten platform in Mongolian classrooms. Notably, student activity, when gauged across various parameters, exhibits significantly high rates compared to the platform averages. This pattern is consistent across all schools and regions, despite slight variations between individual schools and areas.

Teachers showcased proficiency in the use of personalization tools such as differentiation, further enhancing the teaching process. As the pilot program progressed, students demonstrated greater efficiency, solving more problems in less time and displaying increased engagement.

Student answer accuracy improved towards the end of the pilot, which displays clear progress in learning. This confirms that Eduten fits well and works effectively in Mongolian classrooms.

The proficiency of teachers in using Eduten is praiseworthy. The platform has been successfully utilized during school hours as well as at home. Such a balanced usage pattern demonstrates optimal engagement and it proved to be successful during the pilot, as indicated by the activity data.

Upon comparing results across different regions, the Aimag schools appear to perform the best, followed by the Soum schools, with Ulaanbaatar trailing behind. However, Ulaanbaatar slightly outperforms the Soum schools in terms of accuracy. This contrast is interesting, especially in the context of pre-test data. However, the Learning Index aligns well with the pre-test data.

Furthermore, no region faced any issues in connecting with Eduten and using it regularly in light of the activity data. Notably, the most active students are from areas outside the capital city, implying the wide reach and applicability of Eduten. However, there were reports of lacking devices and infrastructure in the rural areas.

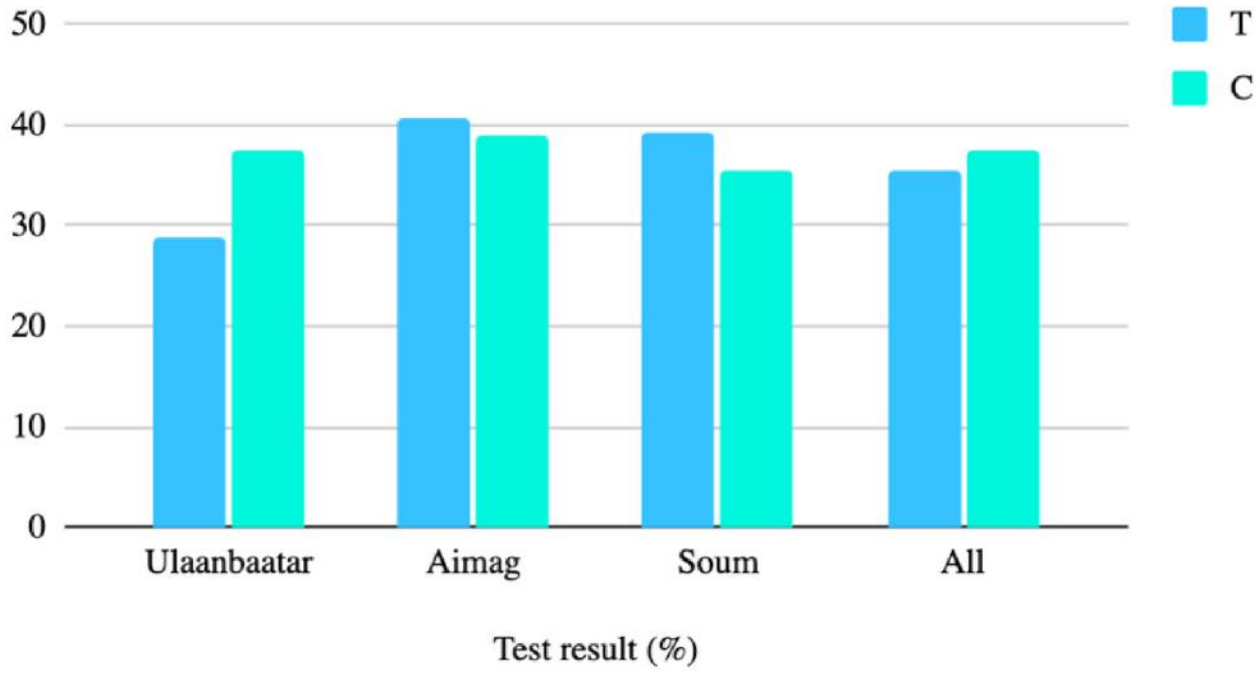
The Mongolian National Institute of Education Research (MNIER) has demonstrated exemplary performance in planning, designing, and implementing teacher introductions to the platform. It's recommended to adhere to these principles for future national implementations, owing to their proven effectiveness.

In summary, the pilot program's success validates Eduten as a valuable tool for enhancing teaching and learning processes in Mongolian classrooms. It holds promising potential for future national implementations, paving the way for amplified student engagement and performance.

Pilot results

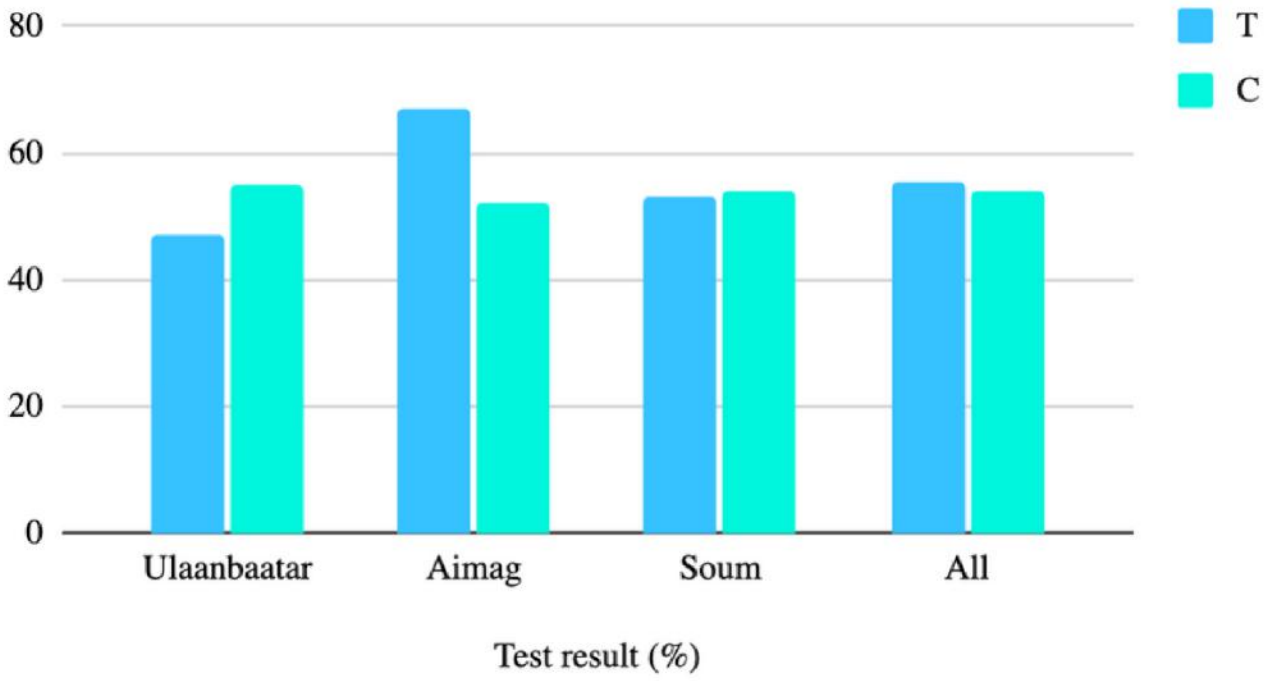
The effectiveness of the Eduten learning platform was studied by comparing student performance before and after using Eduten, against a control group who continued with their usual curriculum. A math test, created in partnership with MNIER, EEC, and Eduten, ensured alignment with the local curriculum. The treatment group used Eduten for one lesson per week and for homework, offering a practical measure of Eduten's impact on learning outcomes.

PRE-TEST



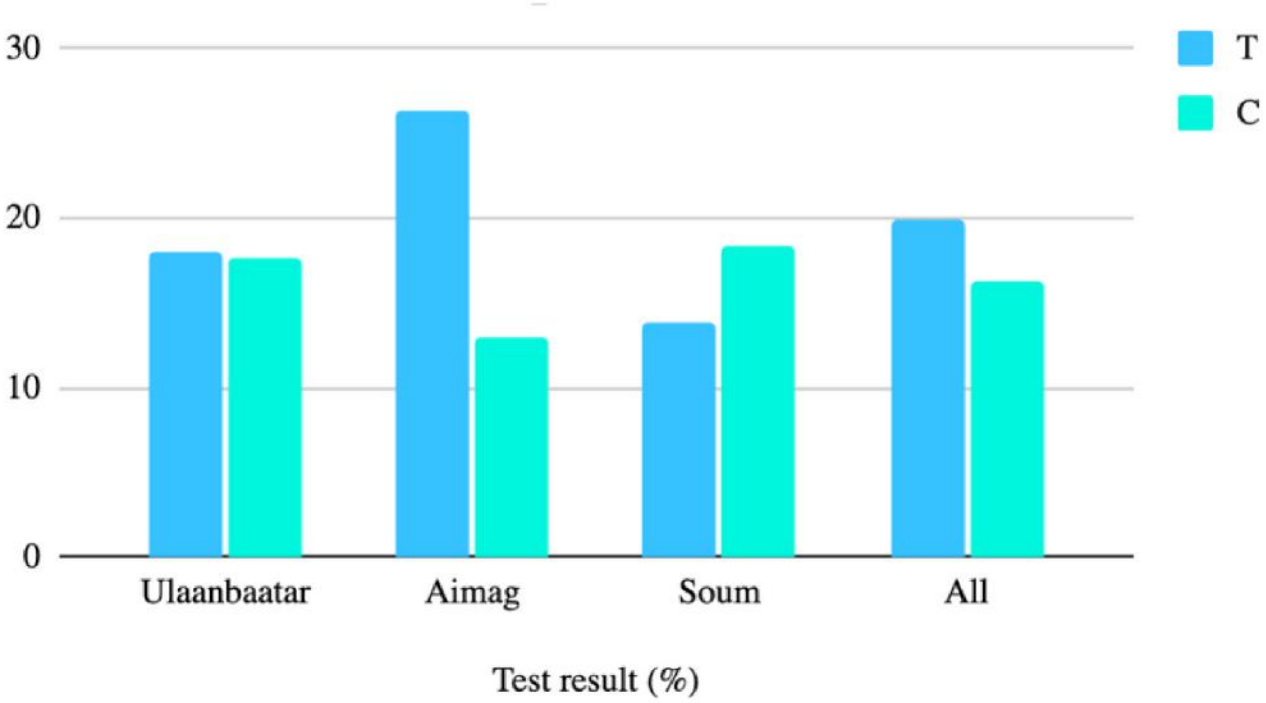
The pre-test outcomes indicate a minor edge in favor of the control group. While the overall variance isn't statistically significant, the disparity observed specifically in Ulaanbaatar is indeed significant.

PRE-TEST



In the post-test results, there's noticeable progress from the treatment group, who now exhibit superior performance relative to the control group. The efficacy of the treatment becomes even more evident when we evaluate the enhancement from the pre-test to the post-test.

IMPROVEMENT



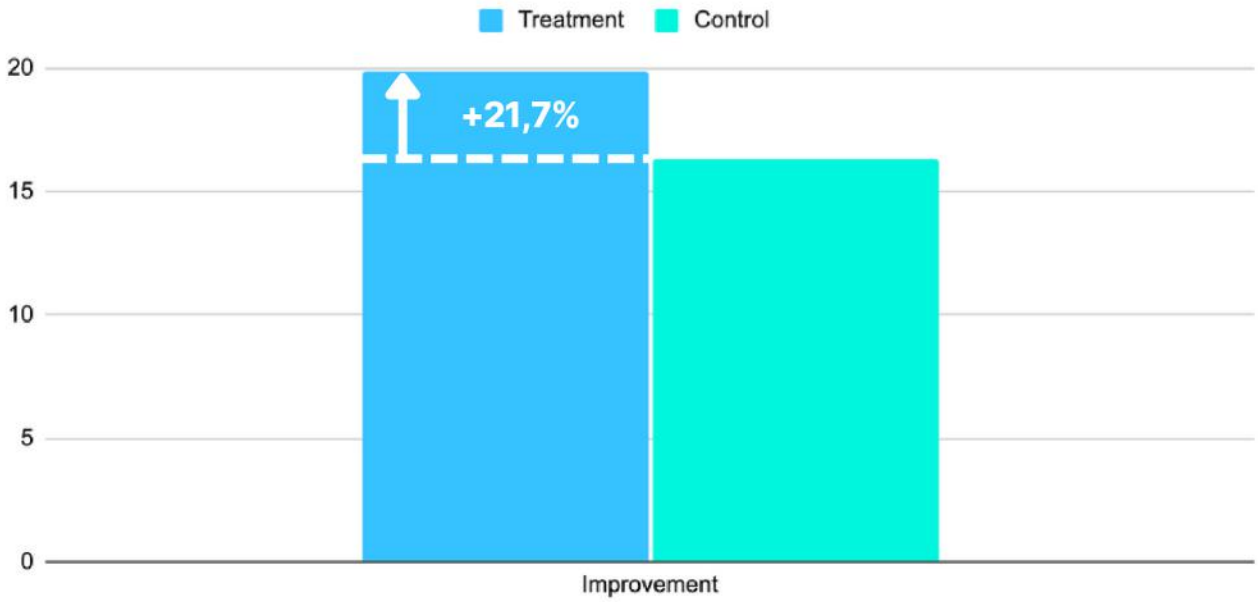
A closer look revealed that the control groups received additional math practice and training while preparing for performance assessments, thus diverging from the regular curriculum.

On the other hand, the treatment schools, due to the constraints of the pilot procedure, had to strictly adhere to their designated curriculum, and did not receive this additional math practice and training. This, coupled with the infrastructure challenges faced in the Soum region, provides a clear explanation for the observed outcomes in that area.

The discrepancy between results in Aimag and Ulaanbaatar is likely to stem from differences in school resources. Schools in Ulaanbaatar are generally more crowded compared to those in Aimag.

In general, despite the extra preparation efforts geared towards performance assessment by the control group, Eduten still demonstrates a distinct improvement in comparison. Treatment group improved 21.7% more compared to the control group.

TREATMENT VS. CONTROL



Conclusions

The analysis of learning outcomes reveals a considerable variety, not only at the individual level but also across different geographic regions. This variance in educational outcomes can be attributed to several factors, such as the availability of resources, the quality of teaching, and the socio-economic conditions prevalent in different areas. It's also worth noting that even on an individual level, outcomes can fluctuate due to personal aptitudes, learning styles, and motivation, among other factors.

However, in spite of these variations, the pilot research clearly demonstrates significant improvements only in 12 weeks when using the Eduten learning platform. This is even more remarkable given the additional practice carried out by the control group in preparation for performance assessments. It's indisputable proof of the effectiveness of Eduten that it was able to deliver improved results under these conditions. The findings suggest that the platform can offer significant benefits to students' learning outcomes and could be a powerful tool in the education sector.

When we consider this information in conjunction with the rest of the data collected throughout the pilot, it becomes evident that there are important lessons to learn. These can assist educators and policymakers in addressing the observed disparities between different regions. By discerning the factors leading to these variations and the manner in which Eduten has been successful in enhancing learning outcomes, we can develop targeted strategies to mitigate these differences. Such strategies could include implementing specific pedagogical techniques, modifying resource distribution, or introducing tailored support mechanisms in areas where they are most needed. A careful examination and application of this data can guide us in our pursuit of a more balanced and efficient educational system.