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# How We Turned Stress To Success? One Word: Gamification.

Imagine an elementary school classroom. It's 7:55 AM, five minutes before the annual math test. The air is thick with tension. Some children fidget in their seats, others stare blankly into space. One is frantically trying to memorize formulas at the last minute. This is an all-too-familiar scene in schools worldwide.

Now, imagine that same classroom, the same test, but this time the children are smiling. They're excited. They can't wait to begin. Sounds like a fantasy? This is precisely the reality we've created at Ludus. But let's start from the beginning.

One year ago, we assembled a team of education experts, designers, and software engineers with one mission: to change the way children learn and experience mathematics. We knew it was a monumental challenge. After all, math is one of the most intimidating subjects for many students. How do you turn fear into excitement? Anxiety into enthusiasm? The answer, we discovered, lay in a world that children already know and love: the world of games.

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## What is Gamification?

Gamification involves applying game-design elements and principles in non-game contexts to motivate and increase user engagement. The goal is to leverage the natural human propensity for competition, achievement, and social interaction to drive desired behaviors and improve user satisfaction. In recent years, gamification has emerged as a powerful tool in the field of eLearning, revolutionizing the way learners engage with course material. By incorporating game elements and mechanics into educational content, gamification has proven to enhance learner engagement and motivation.

## Our Research Journey & Findings

We delved deep into the world of gamification. We studied academic papers, interviewed experts in education and visited elementary schools, observed math classes, and talked with students and teachers. These were our Findings:

01.

### Reduces Test Anxiety

By transforming the testing experience into a game-like challenge

02.

### Boosting Motivation

Gamification greatly enhances motivation.

03.

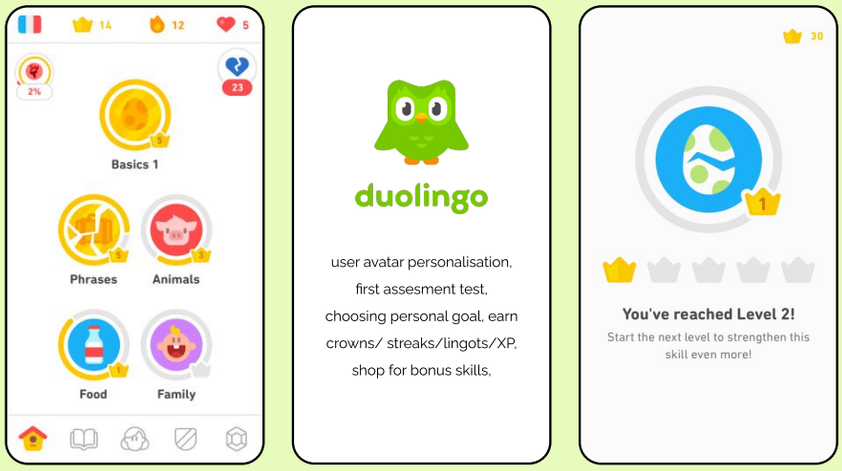
### High Engagement

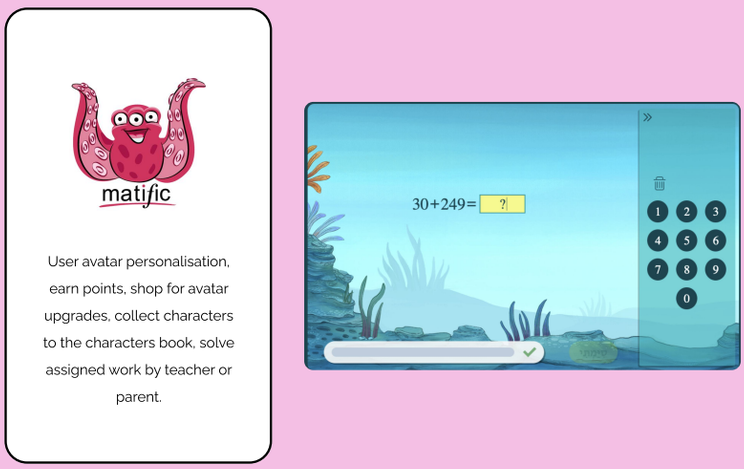
Gamification keeps students engaged and active throughout the learning process.

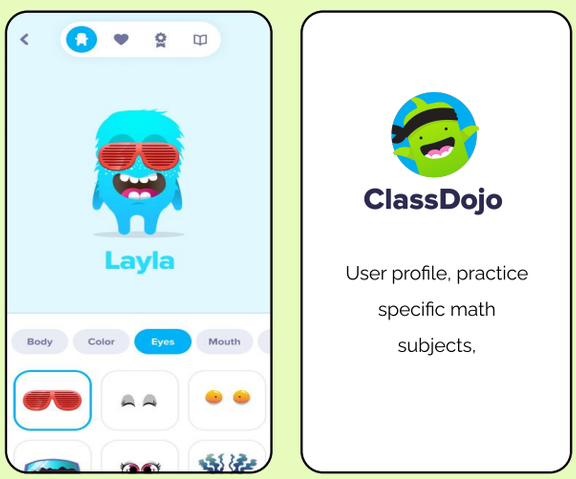
## Market Research

We also conducted extensive market research, analyzing other educational applications and how they use gamification. We studied popular apps like Duolingo for language learning, Matific for math education, and Class Dojo for creating educational games. From Duolingo, we learned about the power of streaks and daily goals. Matific showed us how to make math problems more visual and interactive. Class Dojo inspired us with its user-generated content approach, showing how educators can create custom games for their students.

Moreover, we examined gaming apps to understand what children find enjoyable. This research helped us identify key elements that make games addictive and fun, which we could then adapt for educational purposes.




Virtual Teacher - Mascot- Students are guided through the app by a virtual teacher. The teacher gives the students the support, encouragement, and guidance they need just as their classroom teacher gives them.

A Progress Map- The student's progress in math is presented visually so that the student can observe it, follow it and learn from it. Each app offers a unique progress map that helps students navigate the math topics being taught, and also motivate them to continue learning

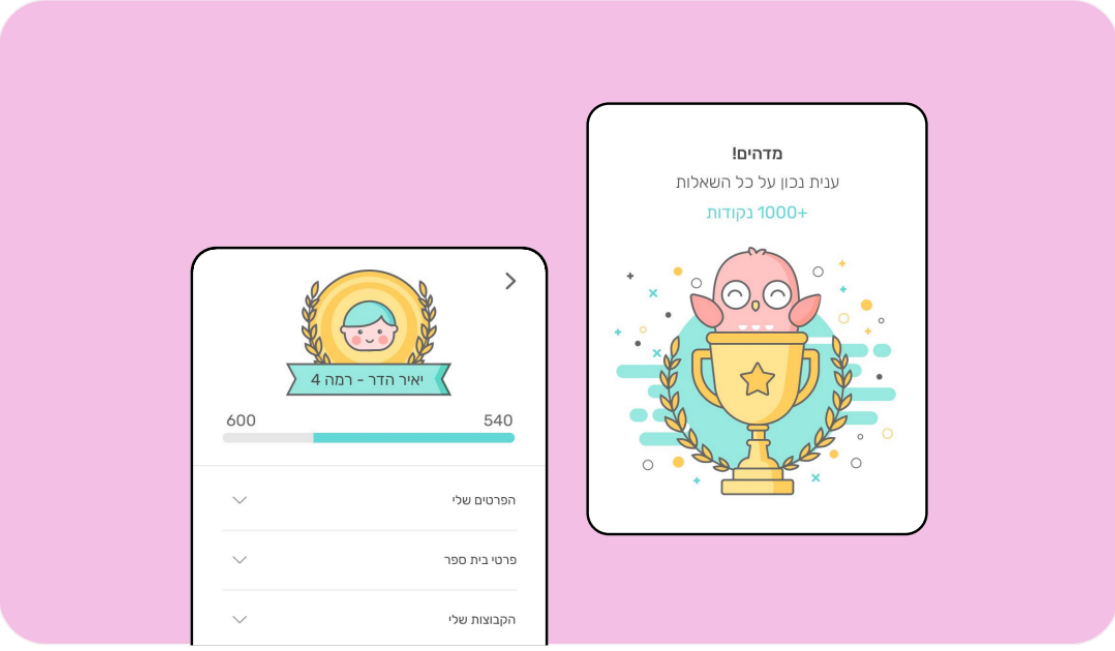
Virtual Student - Avatar - There is a reflection of the student in the form of a personalized Avatar. Whenever the students succeed in the app exams, the Avatar levels up their ranks, looks and abilities. In fact, the student wants to keep getting better at math so that his avatar can also evolve in the game.

Armed with these insights, we set out to design Ludus, incorporating various gamification elements to create an engaging and effective math learning experience.

## Implementing our findings:

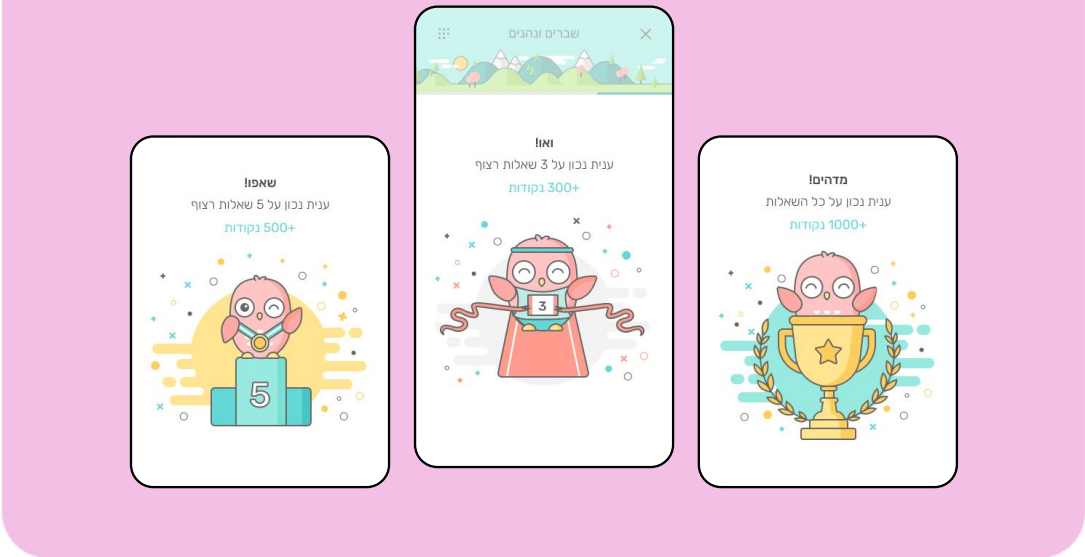
### 1. Gain Points:

Points are a basic gamification element that rewards users for completing specific actions. They serve as a form of immediate feedback and motivation. In Ludus, we added points to encourage users to complete lessons. Each lesson or practice session earns users points, which accumulate over time. Eventually, users can use these points to level up their avatars and purchase items to upgrade their avatar in the Ludus digital shop.



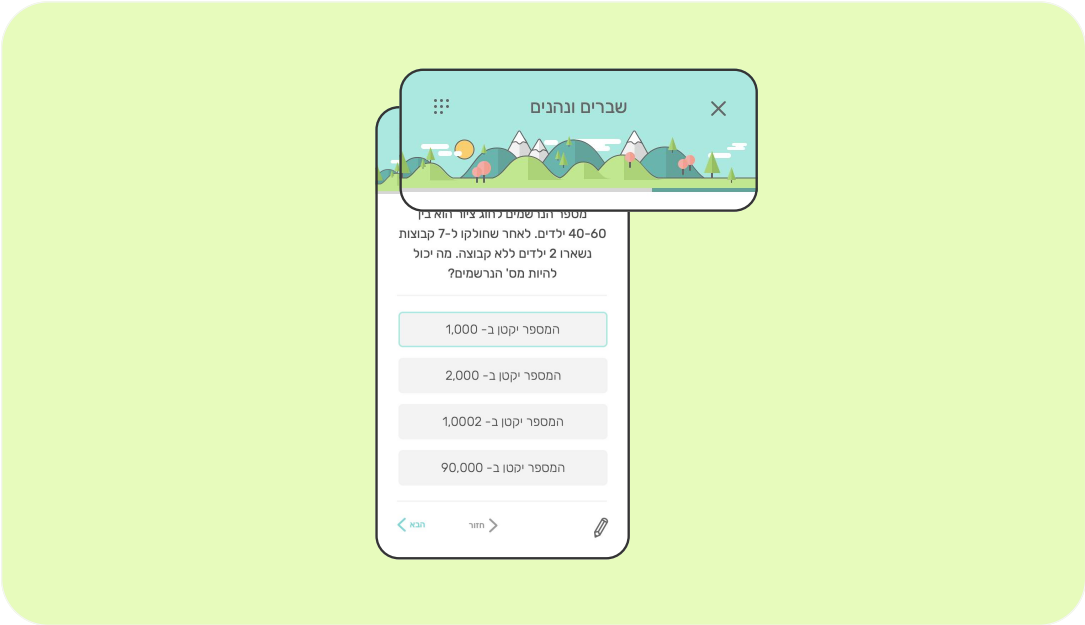

### 2. Combos and Encouragement:

When users successfully answer questions during a test, they receive encouragement and combos. A pop-up appears with an illustration and a phrase congratulating them on their success and specifying what they've achieved. For example, "Great job! You've solved 5 equations in a row!" This not only boosts their confidence but also creates a sense of momentum, encouraging them to continue their successful streak. The visual and auditory feedback creates a more immersive and rewarding experience, similar to what children experience in video games.



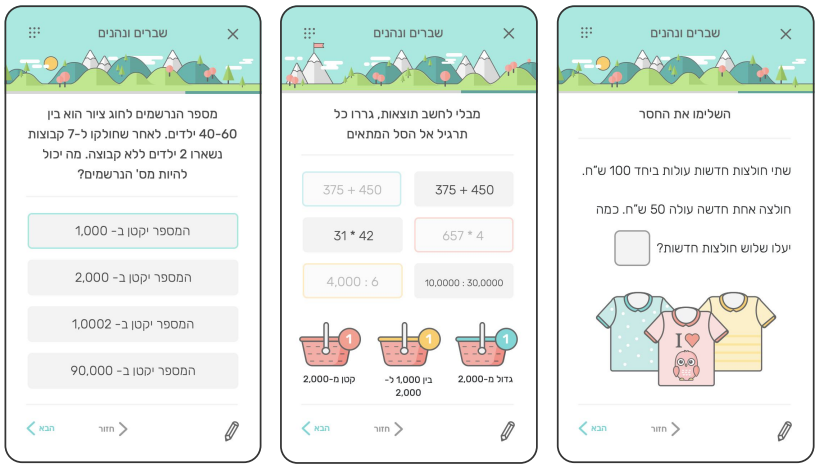

## 4. Progress Bar:

Progress bars visually represent how far a user has come and how much further they need to go to complete a challenge. This element provides continuous feedback and encourages users to keep going until they reach the finish line. In Ludus, we designed a progress bar to encourage users to complete math challenges. As users answer questions, the progress bar moves closer to 100% and reveals an entire visually appealing scenario. The progress bar is designed as a visual adventure to uncover, perhaps revealing a hidden treasure map or a magical landscape. This visual cue motivates users to complete the challenge, driving them to engage more deeply with Ludus features.



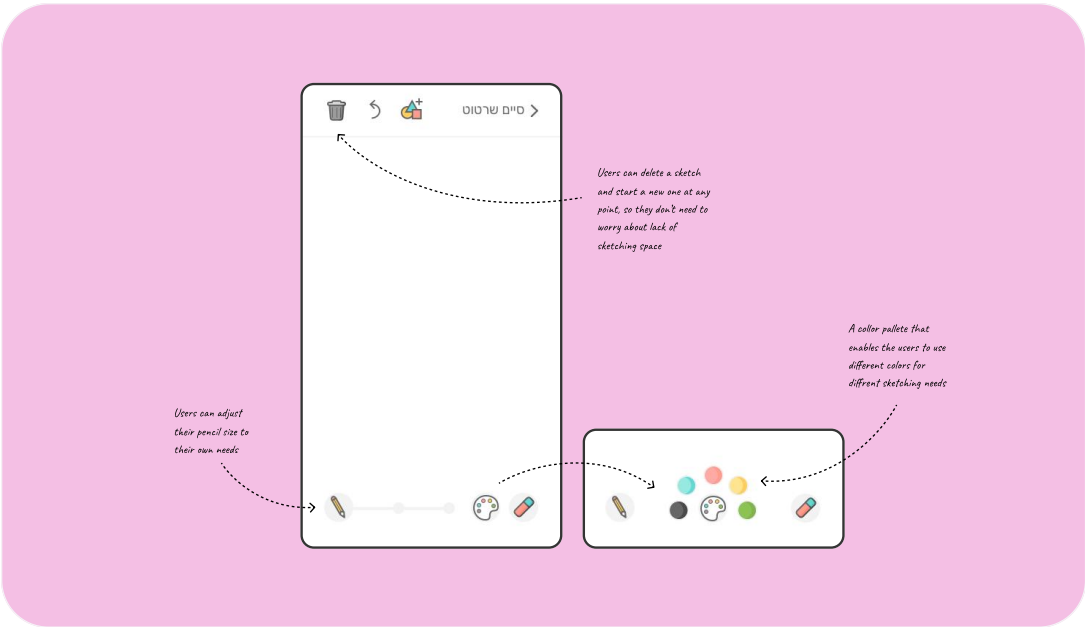

## 5. Interactive Exams and Challenges:

We created three different types of interactive questions, with illustrations that change according to the subject of the question. These include drag-and-drop questions, multiple-choice questions, and fill-in-the-blank questions. The dynamic visuals not only make the questions more engaging but also help in better understanding and retention of the concepts.



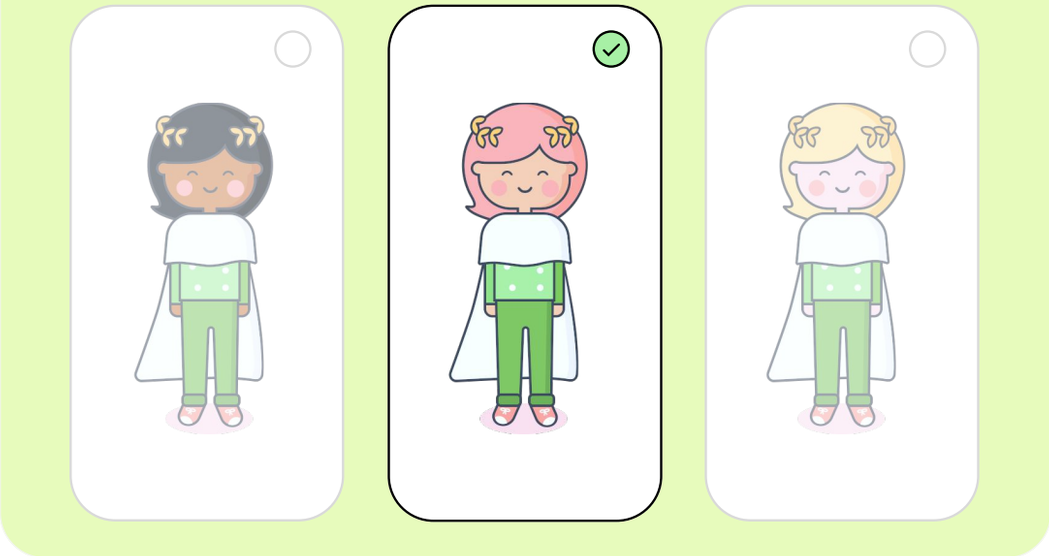

## 6. Sketches and Doodling Editor:

We added a drawing feature where students can sketch and doodle during the exam to solve math problems. They can choose different colors, thicknesses, and shapes according to their needs to reach the solution. This feature serves multiple purposes: it's fun and playful, full of color and joy, and it also fulfills an important function within the application. Students don't need to turn to external paper and pen, keeping them within the app and maintaining focus. Additionally, it reduces anxiety because if they need a break, they can just doodle and color until they calm down and return to the test.



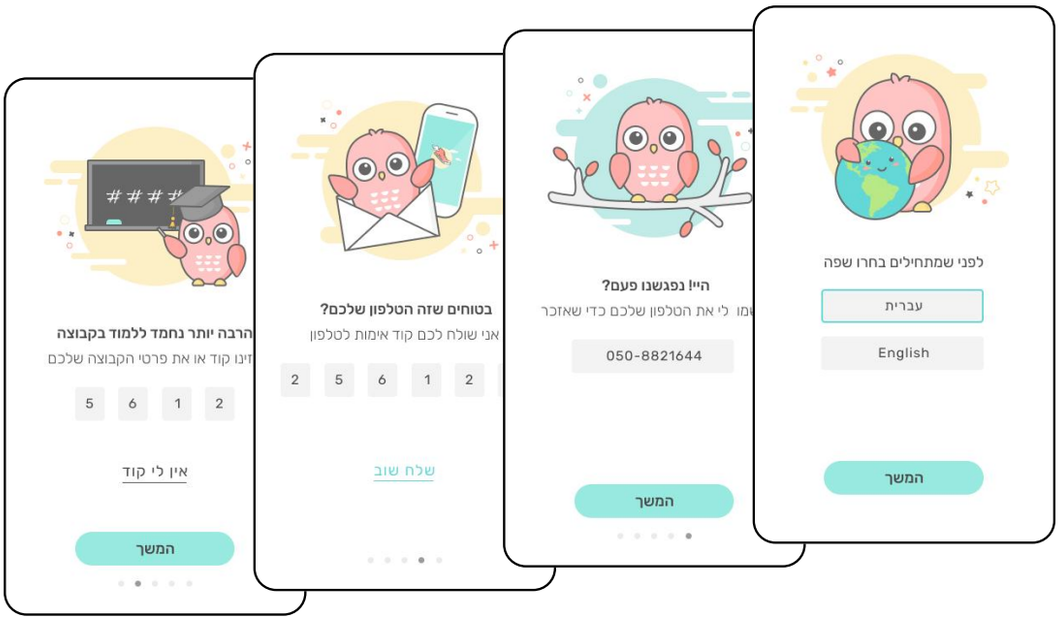

## 7. Personalized Avatar:

Each user has an avatar that can be customized to match the student's appearance or personality. This creates a sense of identification and ownership for the student. As students progress and achieve in Ludus, their avatar evolves and grows stronger, visually representing their learning journey. This system creates a personal connection between the student and their learning, tapping into intrinsic motivation.



## 8. Digital Tutor - Ludi:

We introduced a digital teacher called Ludi the Owl, who guides students through their learning journey. Ludi appears at key points, offering encouragement, explanations, and tips. This character serves as the digital representation of a teacher within the app, providing a friendly and familiar presence that helps students feel supported throughout their learning experience.




## Results Beyond Our Expectations

After a year of intensive development, we were ready for a field test. We partnered with 2 elementary schools. 250 students used Ludus for an entire semester.

| -40% | +35% | +50% | +60% |
|---|---|---|---|
| Decrease in reported anxiety levels before math tests. | increase in average math scores. | improvement in students' self-perceived math ability. | Increase in the time students voluntarily spent practicing math. |

**"For the first time in my career, I see students excited to solve equations. They're competing to solve more problems during breaks!" Galit, a sixth-grade math teacher**

## The Future of Learning

At Ludus, we're not just changing how students learn math, but also how they feel about it. This isn't just technology; it's an educational revolution.

We continue to learn and evolve. We're now working on integrating Augmented Reality (AR) technologies to make mathematical learning even more tangible. Imagine learning geometry by "building" 3D structures in the air, or understanding functions by "walking" along curves in the classroom space.

At Ludus, we believe the future of math learning is exciting, enjoyable, and effective. And we are determined to lead this revolution, one equation at a time, one game at a time.

Because ultimately, our goal is simple: to transform mathematics from a scary enemy into a good friend, for every child.