

Duolingo's Design Process

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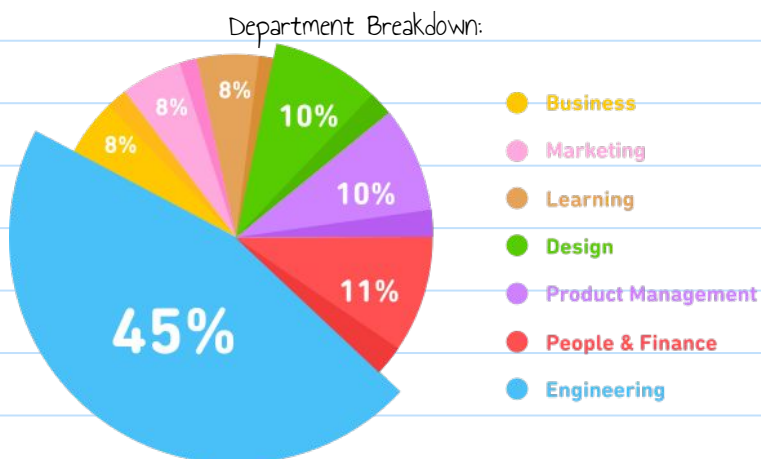


What is Duolingo?

Duolingo is a language learning company. Their primary product is a language learning app. They have also expanded into language learning tools for schools and language proficiency testing.

Why Duolingo?

We wanted to research a technology company with jobs in multiple categories of STEAM. Duolingo is a technology company, but it is not just a company of engineers. Duolingo offers a variety of career options, such as software engineers, data scientists, illustrators, and product designers.



Fun fact: Team Member Sidhi Dhanda owns stock in Duolingo and currently has a 662 day Duolingo streak. Really, she has a fractional share worth \$1.

By The Numbers...

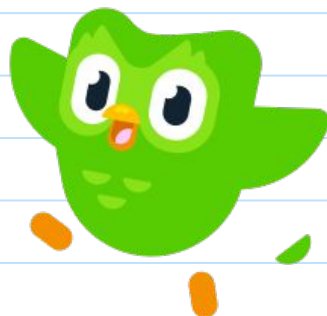
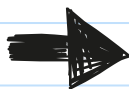
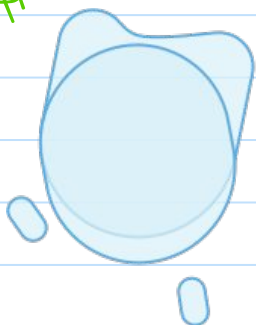
35+

Languages are offered on the Duolingo app.

40,000,000

Monthly users.

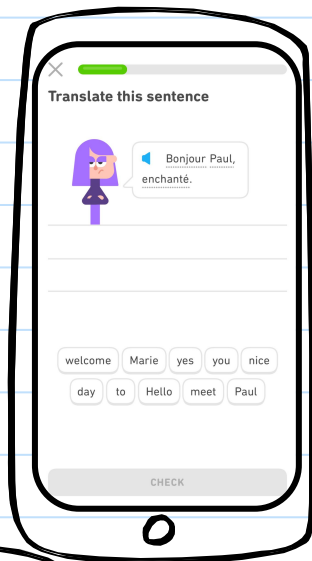
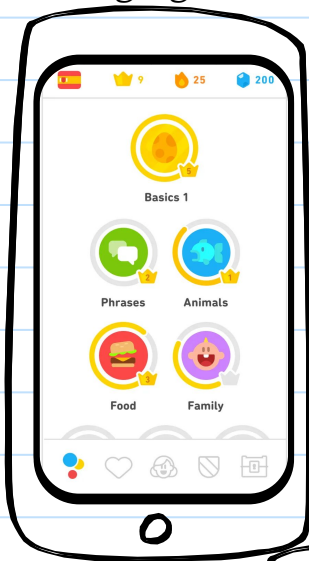
July, 28, 2021



Duolingo became publicly traded.

Inside The App

The images, below, show different screens inside Duolingo. In the app, users select a learning task and they go through a short, gamified lesson to improve their language skills.



Sources

We read business magazines and newspaper articles to learn about Duolingo. We also spoke with three Duolingo employees.

People Interviewed:

Cailyn Hansen

Software Engineer,
Duolingo for Schools



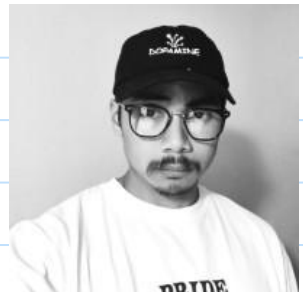
Anna Gusman

Product Designer,
New Initiatives



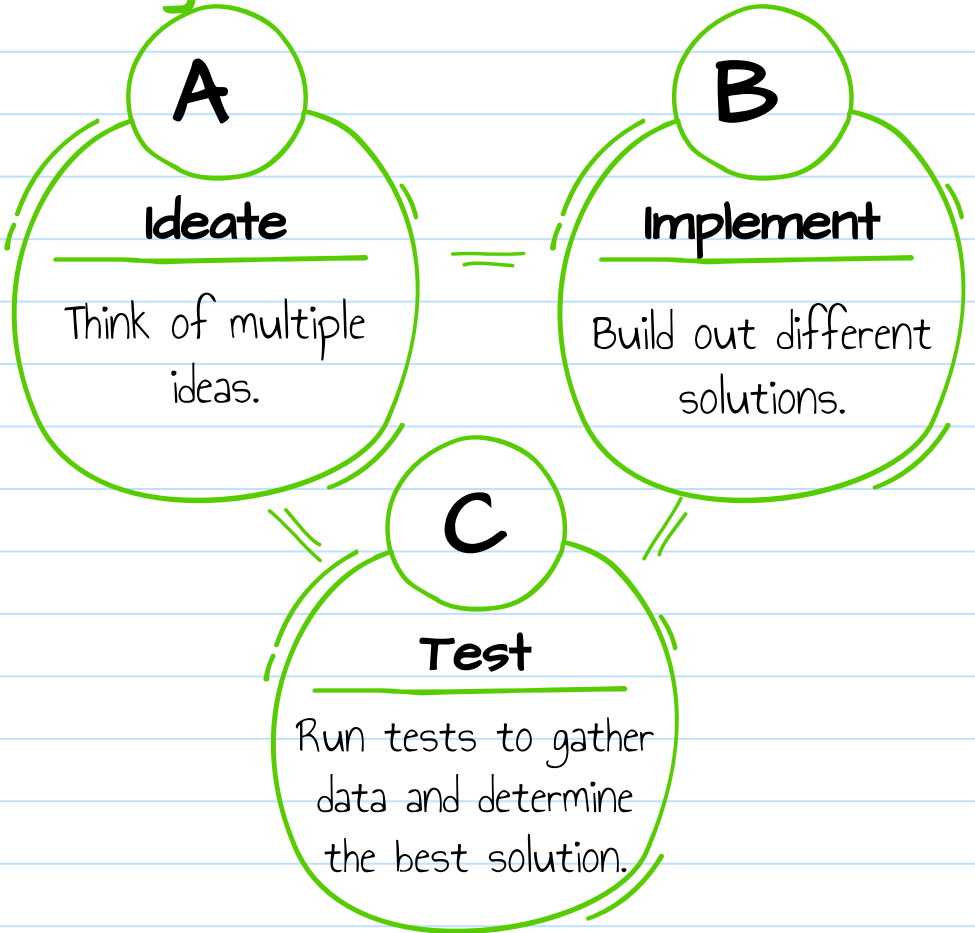
Robert Managad

Product Designer,
Monetization



Our conversations gave us specifics on how a feature goes from an idea to being fully rolled out.

Design Process 101



This is the most basic engineering process. Even though Duolingo is a professional technology company, their process to create new features mimics this.



Evolution of Duo

Duolingo's Design Process: Generating Ideas



Identify

Product designers identify how an existing feature can be made better. "It might be some words on the page, an illustration, or how we arrange the page. [Sometimes it's] not too big of a change at all," said Managad. Other times, it can be an entirely new concept. Designers get these ideas by talking to users.

Ideate

Designers start drawing different ideas on paper for concept validation. "The idea is basically to propose several different directions and see what parts really resonated with users," said Gusman.

User Feedback

After showing their ideas to users, designers have a stronger understanding of what they are trying to create. They can then develop a low-fidelity interface, often in black and white, in Figma.

Finalizing Idea

One-Pager

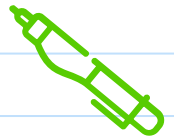
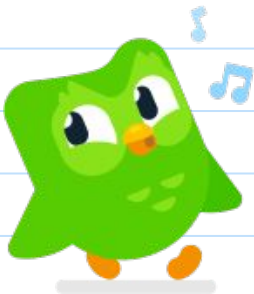
This document explains to executives what the problem is and potential solutions.

Iterations

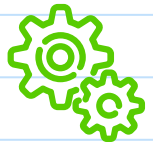
More design iterations happen, and designers get more feedback from users. These iterations start looking more like an interface in the Duolingo app.

Engineering Role

Engineers are involved throughout this entire design process even though they are not writing code. "[Engineers] help us understand what is reasonable to build, what is possible, and what are the technologies that we have," said Anna.



Implementation



"Spec" Document

After the final design is decided, a specification or "spec" document is made for engineers. This explains details about the design and potential implementation challenges.

Coding

Before coding, an engineer will sometimes speak to a product designer or another engineer to determine the best way to design the code.

Developing code is test-driven. During the writing process, specific tests are made to see if the code passes, small changes are made to the code to make it work.

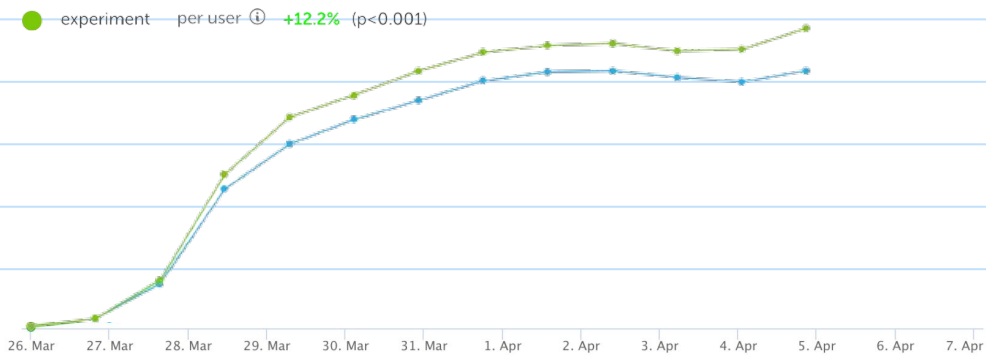
Testing

Once a new feature is developed, Duolingo does A/B testing with a control group and an experimental group. The new feature is slowly rolled out to a small percentage of users to gather data.

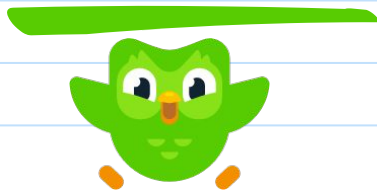
User Testing

Key metrics, such as the number of started learning sessions, are collected to measure the success of a new implementation. Designs have between 10-25 key metrics. Data collection takes a minimum of two weeks and sometimes months. Data is analyzed to decide a feature should be pushed to all users.

Total Session Start



This chart is from A/B testing Duolingo ran when implementing leaderboards into iOS. Between 100 and 200 different experiments are running at a time.



Comparing Processes

Iteration

Our process, like Duolingo's, is highly iterative. We built over three different robots because we knew that our first designs would not be the best ones.

Collaboration

Our building process is slightly more collaborative. We have multiple team members working on one part of a build at a time. At Duolingo, engineers mainly code individually.

Testing

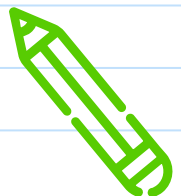
Duolingo engineers focus on breaking their code. They find cases where the code will fail and fix it. We know the different cases in which our robot is strong and weak, and we design game strategies around this information.



Similarities and Differences: Documentation

We do not make one-pagers or spec documents. The topics covered in these documents are ones we verbally communicate to each other. Initially, Duolingo did this too. "I think early on when it was a startup, it was less of a process. It was sometimes grabbing coffee with the CEO and him saying, 'sounds good'. There was still that sign off, but it wasn't as formalized." said Hansen.

Duolingo Designers document their process so that non-designers can understand. Inside Figma, they explain what is happening in a design and why certain decisions are made. In our engineering notebook, we focus on presenting our choices so anyone can repeat our process. Some employees, like Robert, share weekly updates on their work. We complete daily notebook entries on what we accomplish.



VEX Prepares Us



Respect the Process

VEX exposed us to the engineering design process. We learned that finding the most effective solution requires many iterations. We know the importance of testing.

Ask Questions

VEX teaches us to be resourceful and not be afraid to not know an answer. We ask each other when we have questions, but we also rely on online forums such as Stack Overflow. Engineers at Duolingo do the same thing.

Cross-Functional Thinking

Our builders understand that what they change affects our programmers and our driver.

Duolingo's Hansen believes that this is a critical skill for engineers. "Are you somebody who's only focused on engineering, or can you think about how this is going to affect designers and ways other disciplines interact with engineering?" said Hansen.

References

Websites

- <https://www.cprime.com/resources/what-is-agile-what-is-scrum/>
- <https://www.agilealliance.org/agile101/>
- <https://study.com/academy/lesson/what-is-agile-programming-definition-methodology.html>
- <https://curriculum.vexrobotics.com/curriculum/intro-to-engineering/what-is-the-engineering-design-process.html>

Photos

- <https://www.duolingo.com/team>
- <https://blog.duolingo.com/improving-duolingo-one-experiment-at-a-time/>
- <https://www.theverge.com/2018/12/13/18137843/duolingo-owl-redesign-language-learning-app>
- <https://blog.duolingo.com/shape-language-duolingos-art-style/>
- <https://design.duolingo.com/identity/logos#landscape-lockup>
- <https://www.linkedin.com/in/robertmanagad>
- <https://medium.com/@cailyn.e.hansen>
- <http://2016.lunargala.org/>

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Thanks

