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1-2022

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#### Citation

Singapore Management University. Play, not pay. Learn languages the Duolingo way. (2022).  
Available at: <https://ink.library.smu.edu.sg/pers/604>

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# Play, not pay. Learn languages the Duolingo way

28 Jan 2022

*A Carnegie Mellon University Professor, who is also the creator of CAPTCHA and RECAPTCHA, wants to give everyone equal access to education through free lessons on a mobile app. He is Luis von Ahn*

For anyone who wishes to learn a new language for free, Duolingo would come up as “the world’s best way to learn a language” in online search results. Going by its 40 million active monthly users, Duolingo is by far the most popular online platform, with millions of iOS and Android mobile users rating it 4.7 out of 5. Launched in 2011, Duolingo’s debut was met with an overwhelmingly response of 10 million downloads in the first year, earning itself Apple’s iPhone App of the Year in 2013. Since then, the app has appealed to users across a wide spectrum of society, including Bill Gates and Syrian refugees who were reportedly using Duolingo to pick up new languages.

Duolingo carries one of the largest selections of 40 languages, including the most-widely spoken, moribund and even fictional ones. Fans of Games of Thrones TV series may be thrilled to note the Dothraki language on the app, while finding Klingon would be to the delight of Star Trek fans.

## GAMIFIED LEARNING

The formula for Duolingo’s huge popularity is simple: fun and light-hearted lessons. Gamification is at the core of its design, with the generous use of game elements such as cartoon characters, one of which is a green owl named Duo, its official mascot. An animated Duo would cheer on learners as they progress and complete a unit of lesson.

“The hardest part of learning a language is staying motivated”, said Duolingo creator **Luis von Ahn**, “so we spend a lot of effort trying to make Duolingo more fun.” Lessons are never boring and include a range of tasks with varying difficulty – learning new words on pictorial flash cards, matching words of the same meaning in two languages, listening and speaking exercises, as well as translating sentences. Occasionally learners would come across witty sentences, such as “I would sell my mother-in-law for a Euro”. As learners progress and move up a ‘skill tree’, they earn experience points, gems, and crowns. Motivated learners can also compete on weekly leaderboards with users from all over the world.

To learn a language effectively, von Ahn figured that “you have to turn it into a habit”. In an attempt to encourage return usage of the app, Duolingo would send out daily notifications using a sophisticated artificial intelligent system that customised the message content for the individual. These messages were programmed to be sent around the same time learners completed their previous lesson. Persistent reminders have become such a Duolingo characteristic, that memes started appearing on social media depicting Duo threatening users inactive for two days at knifepoint, “Beg for your life!” The Duolingo team even joined in with their

own version of an April Fools' Day prank, in which a life-sized Duo would show up physically in front of learners to remind them to practice.

## **LUIS VON AHN, THE INVENTOR OF CAPTCHA**

Besides the fun factor, Duolingo stands out as a completely free app among its competitors which include household names like Rosetta Stone and newer apps like Babbel and Memrise. Founded with a social mission, the decision to go free was rooted in von Ahn's growing up experiences in poverty-stricken Guatemala and his belief that poor people should also be given equal access to education.

Born in Guatemala City to a well-off Spanish-speaking family, von Ahn had the privilege of studying at a private American school in his hometown. He observed the local indigenous people could barely afford quality education, let alone learning a foreign language. Whereas for him, his command of English was a clear advantage in qualifying him for further studies in the US, and eventually obtaining his PhD at Carnegie Mellon University, where he subsequently became a professor.

It was at Carnegie Mellon that von Ahn and his colleagues co-created CAPTCHA and RECAPTCHA. CAPTCHA are random images of squiggly text that users must type when accessing websites to ascertain them as humans instead of software robots. Ubiquitous since 2000, CAPTCHA has been used to prevent spam registrations, bogus responses to online surveys and fake comments.

Taking CAPTCHA a step further was RECAPTCHA, which was started as a meaningful project to digitalise 130 years of old news archives, turning valuable hardcopies into digitally accessible articles. Unknown to millions of web users who were seeking to authenticate themselves, they were in fact contributing to the digitisation process by converting chunks of unintelligible text into a machine-readable form – a process which could have taken months to digitise a year of archives but was completed in a few days.

The brilliant idea of digitalising libraries caught Google's attention. In 2009, the tech giant bought over RECAPTCHA and used it to build its Google Books digital library and Google Maps Street View. Along with an earlier invention sold to Google to enhance its image search function, von Ahn pocketed over US\$25 million, leaving him financially free to pursue other interests.

## **A DECADE OF EXPERIMENTATION, PIVOTING AND GROWTH**

Duolingo began as an academic project between von Ahn, a Lemelson-MIT Prize winner and his PhD student, Severin Hacker, after the former sold off RECAPTCHA to Google. Then began their experimentation in the business world. The initial business model - the provision of translation services to media companies - did not last long, and the founders had to turn to raising capital from investors like Google and high-profile personalities like Ashton Kutcher and Tim Ferriss. Pressure from investors to monetise forced the start-up to pivot to advertisements and subscriptions. These avenues proved to be lucrative, accounting for nearly 90 percent of its total revenue (US\$161 million) in 2020. The lowest yet fastest growing earnings came from its English

proficiency certification service, known as Duolingo English Test, an alternative to widely accepted exams such as TOEFL and IELTS.

In a mere decade from 2011 to 2021, Duolingo grew rapidly from a start-up to a unicorn and then to a Nasdaq listed company with an estimated market valuation of US\$3.7 billion. Its growth trajectory in the edtech industry is enviable – high revenue growth of 129 percent year-over-year in 2020, high gross margin of nearly 72% and positive free cash flow indicating the company's liquidity.

Being one of the few mission-driven firms whose value creation made financial sense to investors, von Ahn declared on IPO day in July 2021: "IPO is not a goal in itself, it's simply a stepping stone to achieving our mission". And he had that mission deeply ingrained in him: "To develop the best education in the world and make it universally available".

*This is an adapted version of the SMU Case, "[Duolingo: Play, Not Pay, to Learn Languages](https://cmp.smu.edu.sg/case/5156)". To see the full case, please click on the following link: <https://cmp.smu.edu.sg/case/5156>" at the end of the article.*

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