



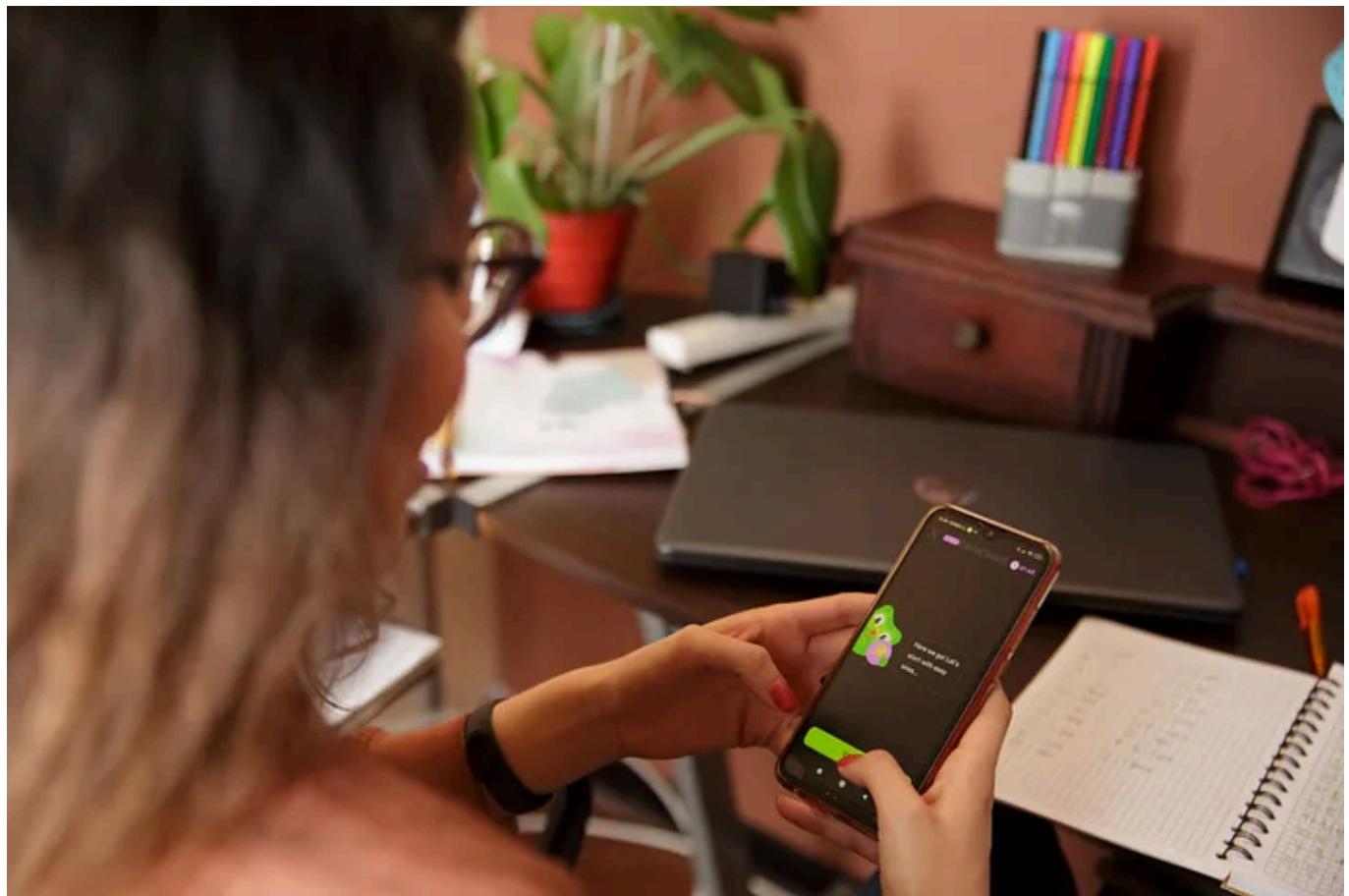
# Collaborative Learning in Duolingo: A UX Case Study



Bagus Dwiyoga

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11 min read · Jul 18, 2022



Familiar with the energetic owl? Source: Duolingo.

*Disclaimer: This is a learning project on Dibimbang.id UI/UX Bootcamp. I am not affiliated with the company or the competitors. It is fully for exploration and learning purposes.*

Duolingo is one of the most common learning apps in the world. Asking your friends now: who doesn't even hear about it? The cute green owl mascot — called Duo — become one of the lure points of Duolingo. The bird seems never run of energy — a good persona to be friends with for many learners, right?

**Imagine:** You want to learn a specific language on Duolingo but the learning process is feeling bored and you don't meet any tough challenges — you can beat it smoothly and perfectly. On other hand, it is good for you because your knowledge is already good enough for a specific topic. But you think it is a nice idea to combine learning and competing. *You are looking for a rival.*

The case study is trying to uncover the possibility and know the user's perception of this idea. You can be a rival for your friend, doing a point race on a Russian lesson about the genetic noun, then you share it on your social media, so your mutual know you have beat someone on Duolingo. Or you are looking for a Korean native to hear how they speak a word on his way, then show off to your peer. Seems interesting?



Current gameplay.

First, let's take a look at the existing Duolingo app. The learning process or flow is individual learning. It means users don't interact with other players.

I separated the flow into 3 stages based on the goal.

- 1. Pre-game:** Give the user control over what they will learn. And also inform them about the limitations — like the possible topic for their current level.
- 2. In-game:** Responding to questions. It also locks users in a situation that is very suggested to finish the lesson. If they leave it, the progress will be lost — or there is no autosave progress system. It will psychologically make users consider whether they will abort the current progress/achievement or not.
- 3. Post-game:** Celebrate the user with a bunch of rewards such as XP, diamond points, etc.

However, there is no human-to-human interaction in the current flow. Although there is Duo (the owl mascot) always accompanying the user, the role is not to accomplish the same task/goals. The duo is simply accompanying, not adding value — such as a real-world accent, dialect, tone, and so on.

## Goal

[Open in app ↗](#)



Search



Write



~~2. To meet users in one room.~~

3. To adopt a new method of learning a language.

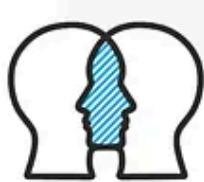
## Problem

1. The lonely feeling while learning a language.
2. The interaction is human to device.
3. Users lack the motivation to compare their progress with others.

**As usual, I use design thinking — like others.**



# Design Thinking



Empathize



Define



Ideate



Prototype



Test

Interaction Design Foundation  
[interaction-design.org](https://interaction-design.org)

Without you realize, maybe you've done these stages. Source: interaction-design.org

This method helps me tackle the pertinent problem based on empirical data – qualitative and quantitative. Despite there being many shortcomings in the research, this method lets the process be more dynamic so the invention or ideas can be changed and reiterated. Learn more in [this article](#).

## Empathize Your User

The goal has been set, and the research has just begun. I filtered 4 users to go further in a deep interview after blasted a survey. It consists of a non-wide age range. The age is ranged from 20 to 36.

## Interviewee Answers

SW, 23		PE, 25		MA, 23		RS, 36	
Prefer offline	Proses belajar dua arah yg cair	Prefer offline	Ada interaksi	Prefer online	Jadwal bisa diatur sendiri	Prefer both	Offline harus lebih commit
Terpengaruh peer di sosmed	Isi waktu luang saat pandemi	Langsung memberi contoh	Latihan saat waktu luang	Gratis	Salah/betul bisa diretry	Suka proses yg fun	Tertarik dengan sistem skor
Predik komunal	Butuh penjelasan yg lebih simple	Validate ilmu yang didapat	Terbatas hanya skill yg 1 arah	Punya kontrol atas materi	Malu buat interact tutor	Cari orang yg satu tujuan	Cari orang yg satu tujuan
Need peer yg "senasib"	Comparing knowledge	Sulit koreksi speaking	Tukar knowledge bareng teman	Prefer ke yg teach useful context	Prefer sendiri	Comparing buat tau kompetensi	Ranking memacu motivasi
Mau bantu teman saat belajar	Ambisius	Sendiri ga ada tolok ukurnya	Comparing skill	Inferior dengan skill teman	Komparasi achievement	Muter otak biar menang	Ambisius
Semangat saat ada saingan	Mau dapat pengalaman	Ingin jadi kompetitif	Mau better than others	Komparasi skor buat improve	Try to win the game	Nyari fun	Semangat rank system
Ada hasrat komparasi	Ga mau kalah kalah ada skornya	Using fact to strengthen	Show off skills	Try to be better than others	Ada kepuasan saat lawan kalah	Komparasi diri dengan stranger	Happy saat bisa level up
Hadiah sebagai iming2	Prove self-competency	Ready saat udah punya skill	Ready saat udah prepare well	Semangat kalau sistemnya adil	Victory is the main purpose	Avoid turun level	Hate system error
Benci kecurangan	Hate privilege (I.E. pay to win)	Happy when the prep is useful	Hasil sesuai harapan	Menghindari kecurangan	Everyone start dari 0 bareng	Add user lama	Diskusi
App ga tanggap kecurangan	Sistem persaingan yg adil	Suggest when sudah tau game	Curang	Challenge saat main dgn teman	Diskusi	Membuka pertanyaan baru	Follow up pertanyaan
Ajak teman dengan prestasi	Ajak teman biar bonding	Storyteling soal keseruan game	Ajarin sampai lumayan paham	Membiasakan dengan cara main			
Lebih banyak diskusi	Bagi tugas sama rata	Visi belajar grup yg jelas	Role play is not bad				
Ada interaksi	Tiap orang punya role	Role play sesuai tema	Dibuat kelompok				

What they said.

The questions on the survey were divided into 2 different topics. The first one is about general questions such as their experience and what app are they using to learn a language. The second one is to try to relate their learning process and collaborative activity.

The interview is more interesting. These are the list of questions:

1. Their preference and reason for online or offline learning.
2. Their benchmark for online learning apps and the reason.

### 3. The communal learning style and their need for it.

### 4. The competitive behavior trigger and the goal of why they want to be competitive.

To make the context more understandable, — especially for the 3rd and 4th points, I asked them to imagine the situation while they are playing Among Us. Although the game is communal, the role and how they are completing the role task are different things. I ask them about what are their preference: completing the task alone or trying to accomplish the task together (walk-in group).

There is 1 answer about completing the task alone, which told them about their preference to do it perfectly. It leads to ambitious behavior. They are challenged to do it alone; to be the first who complete all of their tasks; to feel the adrenaline being chased by Impostor; etc. *What a brave person.*

There are 3 answers about the walk-in group, which tell them about their preference to do it securely. They told, “The game is between Room-mate and Impostor. Just 2 roles. It is no use for Room-mate to compete with each other. Just by beat and find the Impostor, we can win the game”. *They told us how to play the game.* It consists of an interesting point.

But what if we changed the rule? You are competing with each other, by a point system. The one who completes the task first will get an additional point. Will you hunt the individual point? Or will you ally to be secure? Which one will you consider?

The point system will change the behavior, and combining it on a learning platform is an interesting case.

Back to the case study. Those are the little piece of the interviewee's answers and interesting findings.

Then, it should be grouped to get a more clear classification. It is called **Affinity Map**.

## Affinity Map



Find similarities among them. Do you find another group?

Simply, an affinity map will help to collect qualitative data and then compose a better understanding of the user. It will also avoid trapping UX researchers by over-wide data that cannot be processed in the next stage. Data are valuable, but the processing is a different thing and it is no less important.

## Competitor Analysis

	Cake	Rosetta Stone	Busuu	Duolingo
<b>Scoring &amp; Rank System</b>	Yes. With Star, to compete on the worldwide league.	No.	No. Just an escalated difficulty pattern.	Yes. Worldwide league and on the list of friends.
<b>Invite Friends</b>	No. Just seeing worldwide users.	No.	Yes. Invite friends to use the app.	Yes. Invite friends to use the app.
<b>Escalating Stage System</b>	No. The stage has been chosen for users.	Yes. Escalated well.	Yes. It escalated well from easy to tough lessons.	Yes. It escalated and move to different topic.
<b>Reward &amp; Punishment</b>	Yes. Reward: Love point & stars point; Punishment: Lost a love point.	No.	No.	Yes. Reward: Love point; Punishment: None.
<b>Collaborative Learning</b>	No.	No.	No. It is a mutual correction between 2 user.	No.

Each of them has its style.

I also conducted a mini competitor analysis. As you can see, each app has its strength and weakness. Of course, there are many apps and factors that I can involve in this analysis. But, there similarity among them: none of them work on the collaborative learning topic. Many of them are involving other users in using the app by inviting them to be new users or pursuing them with a kind of referral-benefit system, that's all. Or to know the personal points got from personal exercise. No real-time competition.

The points above will become the primary solution that I worked on for this project: linking competitive behavior and learning a language purpose.

## Define The Problem

The various answer has been linked to certain criteria. And now, the next task is to create an imaginal person with all of these characters. It is called User Persona.

## Persona: The Discuss-holic



He declared himself a lifelong learner because he wants to learn as many things as possible, especially social sciences. He thinks it can help him to understand society well.

**Age:** 26

**Job:** Postgraduate Student

**Major:** Sociology

**Location:** Bali, ID

**Frustrations:**

- The existing learning process is not interactive.
- Didn't find the benchmarks to correct him.
- Studying alone is boring.
- He feels like interacting with a robot.

**Needs:**

- Understand great insights in various languages.
- Learn a foreign language together with others.
- Involved in a fun learning environment.
- Gather info about studying abroad.

**Habits:**

- Having a small talk with others.
- Reading certain books.
- Using public transportation.
- Writes a daily journal.

**Behaviors:**

- Organize the class discussions.
- Working educational research.
- Looking for abroad study opportunities.
- Looking for ideas on Quora.

An imaginal person.

This person has his own life and activity—just like a normal person. It means he has complex attributes, such as needs, pain points, and many more. And when accomplishing his daily needs—especially for this scenario, he found many obstacles. This part is called User Journey Map.

# User Journey Map

## Scenario:

Adam wants to spend his free time wisely, by learning a new language on his phone. He has some basic knowledge of some languages, but he wants to improve it. He is looking for a challenging way to keep him focused and enjoy it.

## Goals:

- Learning a foreign language in Duolingo
- Make the learning process enjoyable
- Able to compare his knowledge with others

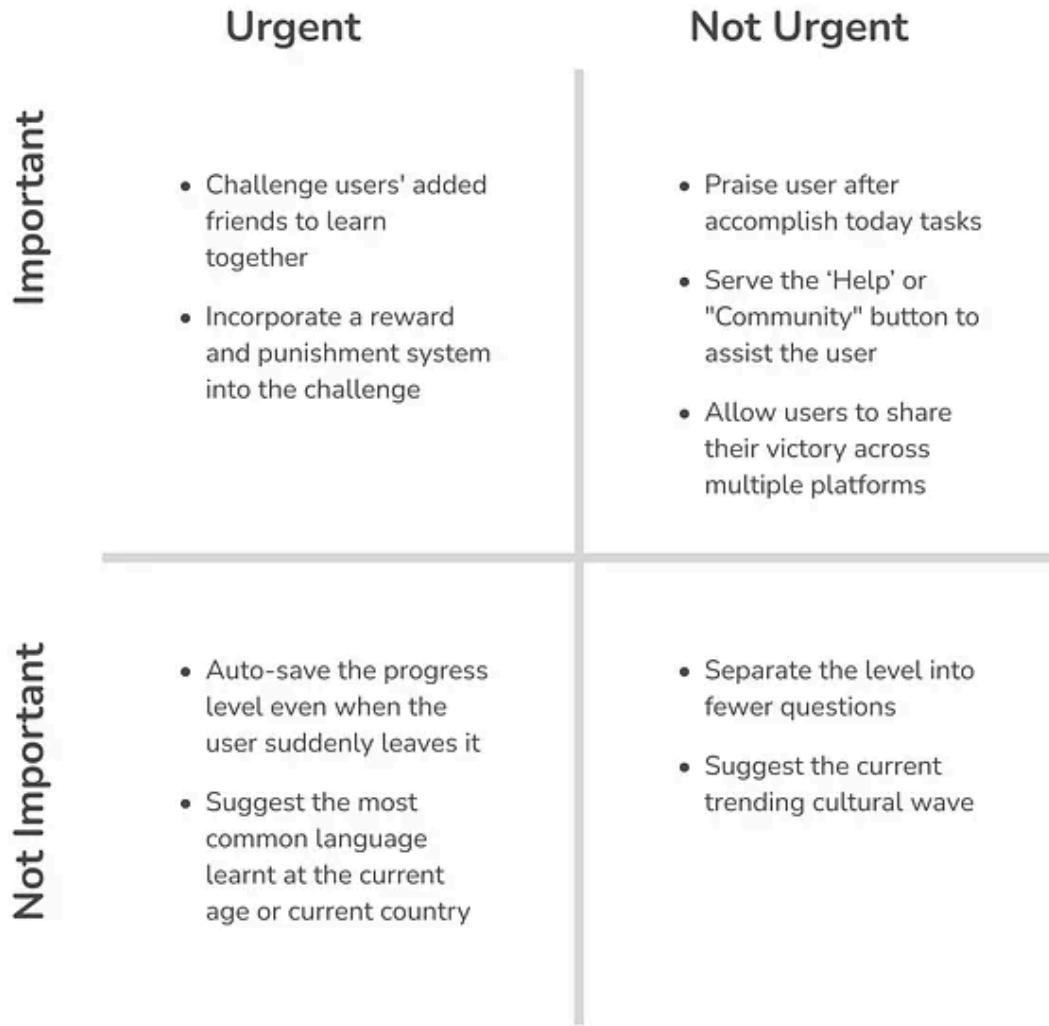
Stage	Discovering ➔	Picking ➔	Focusing ➔	Comparing ➔	Finishing ➔
Action	Picking a language learning app	Picking a language target	Start the learning process	Display the result	Close the app
Task List	<ul style="list-style-type: none"> <li>Ask friends about language learning apps</li> <li>Launch the App Store/ Play Store</li> <li>Enter related keywords</li> <li>Install certain language learning app</li> </ul>	<ul style="list-style-type: none"> <li>Open the app</li> <li>Log in</li> <li>Scroll the language target options</li> <li>Pick one of them</li> </ul>	<ul style="list-style-type: none"> <li>Choose certain learning stages or levels</li> <li>Type in the answer</li> <li>Pick the right answer-card</li> <li>Speak the correct pronunciation</li> </ul>	<ul style="list-style-type: none"> <li>Displaying the experience points</li> <li>Scrolling the points among others</li> <li>Displaying the personal progress (daily/weekly/monthly)</li> </ul>	<ul style="list-style-type: none"> <li>Close the league ranking page</li> <li>Close the offering overlay</li> <li>Shut down the language learning app</li> </ul>
Think	"Too many similar apps I don't know what to choose"	"It's my time to shine, baby!"	"So, this is the way to play and learn. I will try my best."	"Their progress or exp points are awesome"	"So, I reached my cognitive limit"
Emotion					
Opportunities	None	<ul style="list-style-type: none"> <li>Suggest the most common language learnt at the current age or current country</li> <li>Suggest the current trending cultural wave</li> </ul>	<ul style="list-style-type: none"> <li>Separate the level into fewer questions</li> <li>Serve the 'Help' or "Community" button to assist the user</li> <li>Auto-save the progress level even when the user suddenly leaves it</li> </ul>	<ul style="list-style-type: none"> <li>Challenge users' added friends to learn together</li> <li>Incorporate a reward and punishment system into the challenge</li> <li>Allow users to share their victory across multiple platforms</li> </ul>	<ul style="list-style-type: none"> <li>Praise user after accomplish today tasks</li> </ul>

Problems = opportunities.

A user journey map is a visual representation of the steps a person takes to achieve a goal. You can see his beginning point and the many steps he tries to do until the task is completed. The obstacles are the fuel for the researcher to develop a better solution and experience for him.

Many ideas have been written to solve the obstacles. Then, it should be prioritized to focus on the research progress. The idea is valid, but we can't process all of it to the next stage. I am using Eisenhower Matrix to prioritize the idea.

# Eisenhower Matrix



Eliminate some of them to focus.

## Ideate The Solution

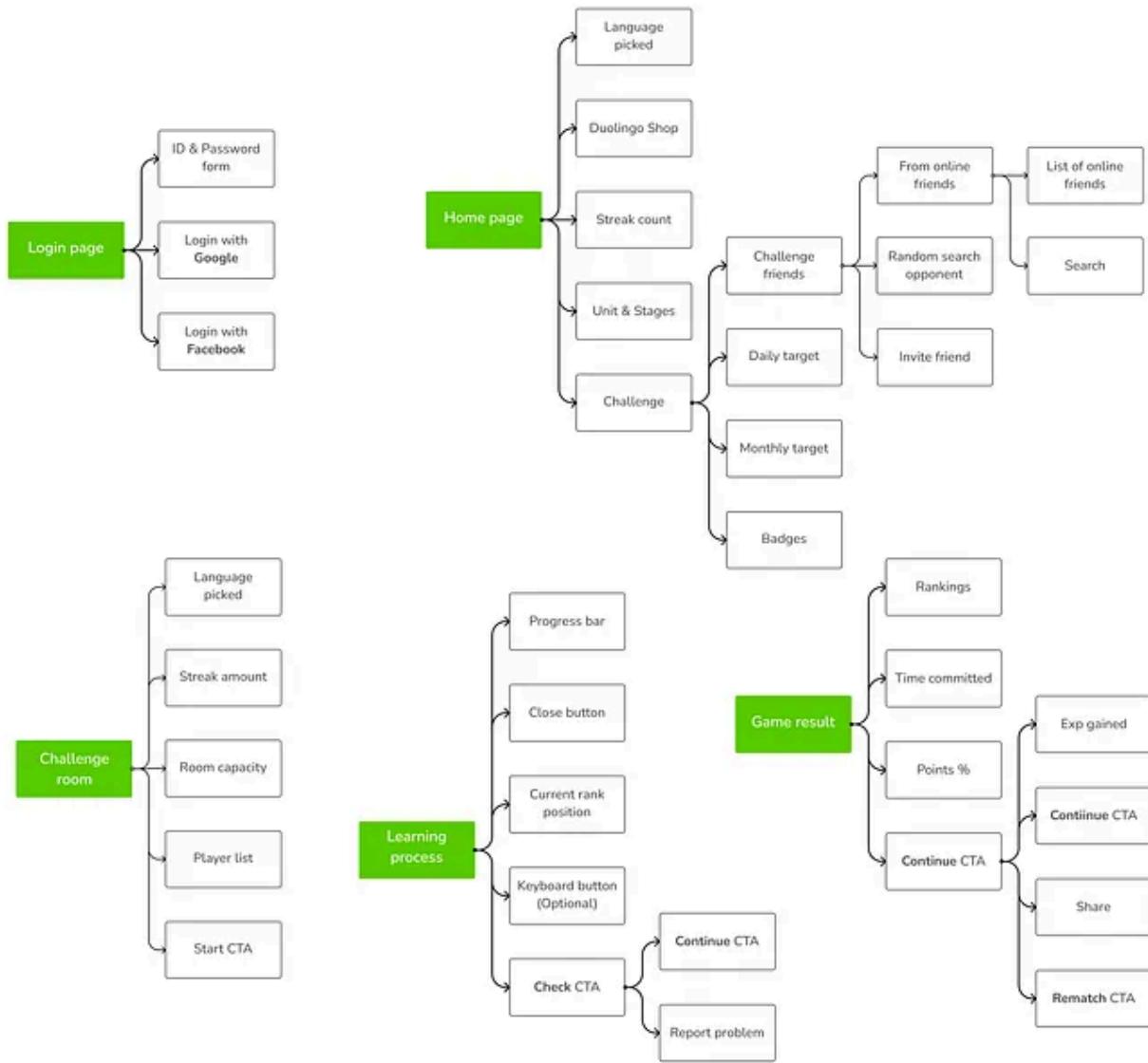
Trying to solve these problems, let's through to the **How Might We** stage. At this stage, we are wondering about the solution without mentioning any real product. Just discover and find any way to solve it, the rest is on the next stage.



How Might We, some sudden ideas.

We have got a proposed idea to solve those problems. Because it is a digital product, we should start to imagine what it looks like, what is inside it, why it needs to be placed here, and many more about information architecture. It will greatly aid in focusing on the previous task and avoiding distractions such as unnecessary buttons or designs. Be clear with what the user needs.

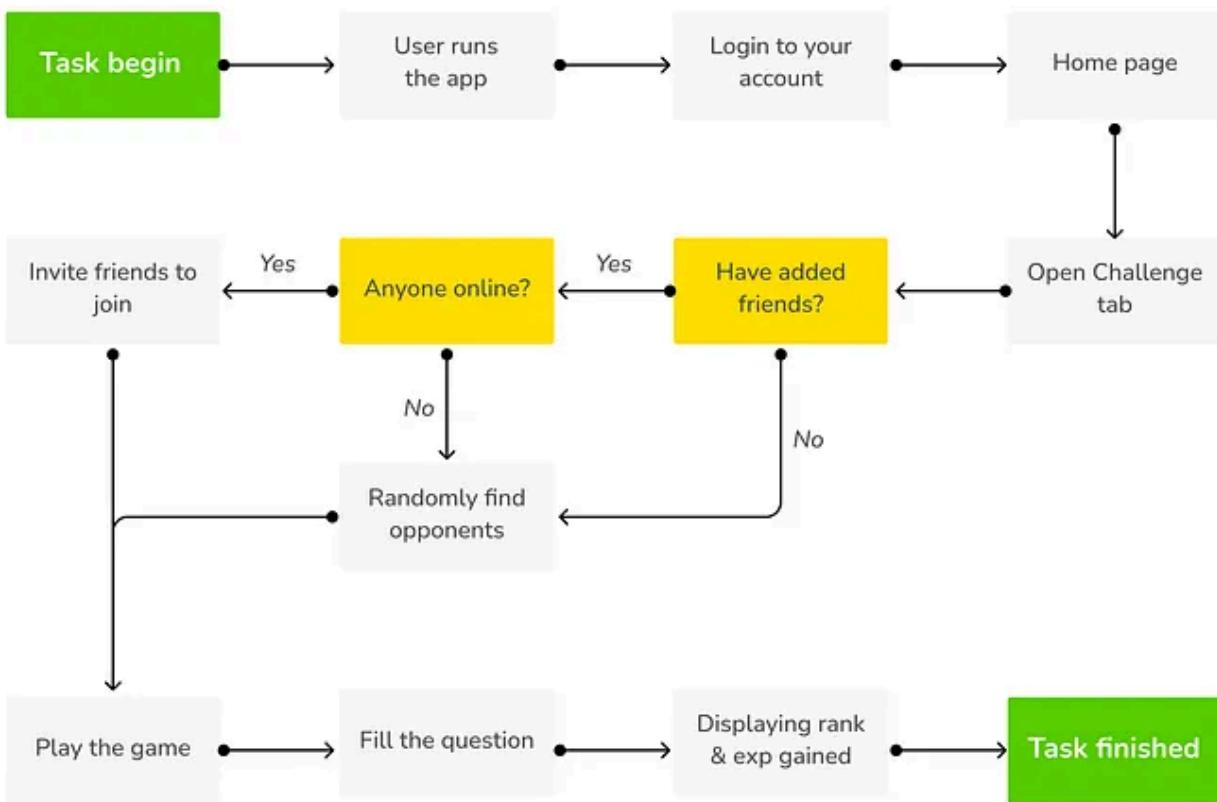
# Information Architecture



Like a physical building, a digital product also has important aspects that build a proper and useful product.

Let's move on to how users will interact with the product. Always keep in mind that the product is designed to solve the user's problems, so think about them and their circumstances. What is the user's entry point at the very beginning? What are the obstacles? What are the possibilities? What is the finished point? These are topics to create a proper user flow.

# User Flow



A linear flow — with a few possibilities.

## Gamification

The purpose is to bring joy to the learning process by adding game mechanics. The idea means combining two or more behaviors, and to make it more interesting and align with the existing Duolingo gameplay, it should create new gameplay. The adjusted and created games are:

1. Guess the drawing: Pick the suit word/sentence based on the opponent's drawing. There will be a board to draw from based on the user's chosen word or sentence. You will take your turn (as a drawer) and as the guesser.

2. Hear the voice: Pick the correct word or sentence based on the opponent's voice. There will be a recorder button to record and save the user's voice based on a chosen word or sentence. You will take your turn (as a speaker) and as the guesser.

And the next is the reward and punishment concept. The competition will be more exciting if there is a clear goal to achieve and a winner. The concept is to give double XP points for 1–3 ranks, and the rest below are not. Of course, the points are based on who can guess it correctly and quickly. The faster someone guesses it clearly, the more points he gets.

What if the user meets the more expert opponents? The concept is to adjust the user's opponents' level to become fair. An opponent with more than 5000 XP will not meet a very new user. The user with 5000 XP will also have a range of 5000–5500 XP. So, the game will be adjusted well.

## Create a Concept Prototype

Keep in mind that I separated the flow into 3 stages based on the goals for each stage. It will help me focus on certain developments if there is any feedback or improvement. Such as these comments:

“It needs additional gameplay” is part of in-game.

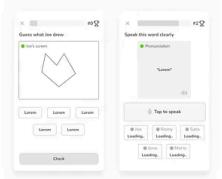
“Help users to easily recognize the feature page.” is part of pre-game.

“Direct user to be more motivated to share his achievement” is part of post-game.

Now, let's move to design tools. I created many wireframes to imagine the final result, although it is just full of *Loem ipsum* wordings. It hasn't been

filled with colors, mascots, or any high-fidelity components. Just a scratch design.

### Wireframe: In-game



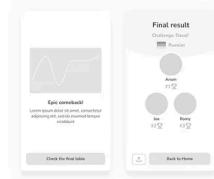
Guess the drawing by choosing the option below. At the advanced level, it should be typed rather than selected as an option.

The countdown bar on the top helps users know the remaining time they have.

Allow the user to see the opponent's response to make learning more enjoyable.

Give the user a chance to examine his answer before submitting it. The user has to tap the continue CTA manually.

### Wireframe: Post-game



Let the user know about his great effort. Such as the chart illustrated, his rank from the beginning until the game finished.

Always put the share button on. Let them save the achievements or show off to their peers.

Contrast the rank. One way is by vertically dividing. The rank means the difference between the results, so let them know the difference clearly.

### Wireframe: Pre-game



A new feature needs a proper introduction. A bottom sheet is one of a few ways to direct users to click it immediately.

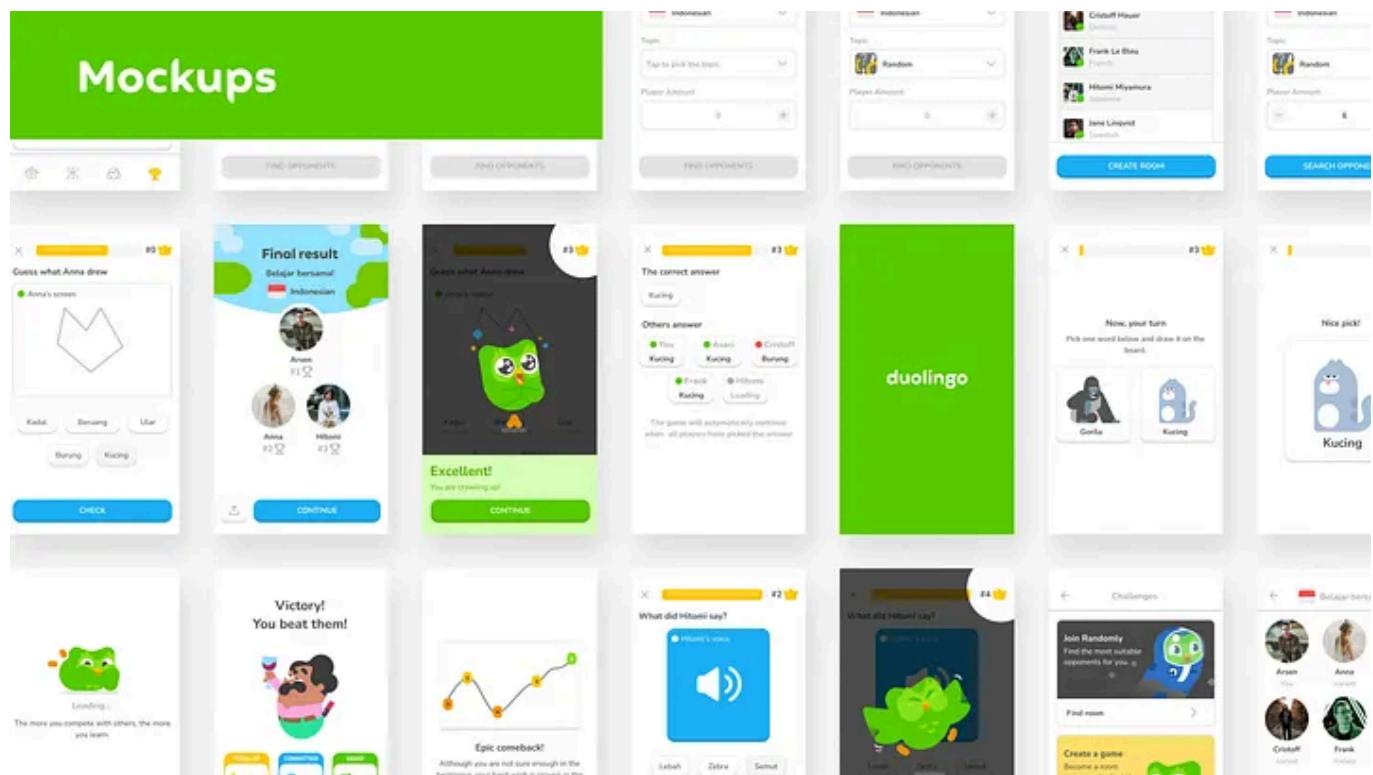
Play With Friends is part of the Challenge page, alongside the daily XP and monthly XP challenges.

Because the reward of Play With Friends is doubling the XP, it can be used to push the daily XP easily.

The wireframes and some brief notes.

Then, color it with true Duolingo identity and fill it with Duo.

### Mockups



Slowly but steadily, Duo reveals himself.

## Design System

Core Brand Colors	Typeface	Button Variants
<p><b>Feather Green</b> 58CC02</p> <p><b>Mask Green</b> 89E219</p> <p><b>Eel</b> 4B4B4B</p> <p><b>Snow</b> FFFFFF</p>	<p><b>Font:</b> Feather A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0</p> <p><b>Font:</b> Nunito A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0</p>	<p><b>Standard Buttons:</b> Two button variants are shown: a white button labeled "Button" and a grey button labeled "Button".</p> <p><b>Speaking Buttons:</b> Three blue button variants are shown: one with a microphone icon and the text "Tap to speak", one with a dotted progress bar, and one with a solid progress bar.</p>

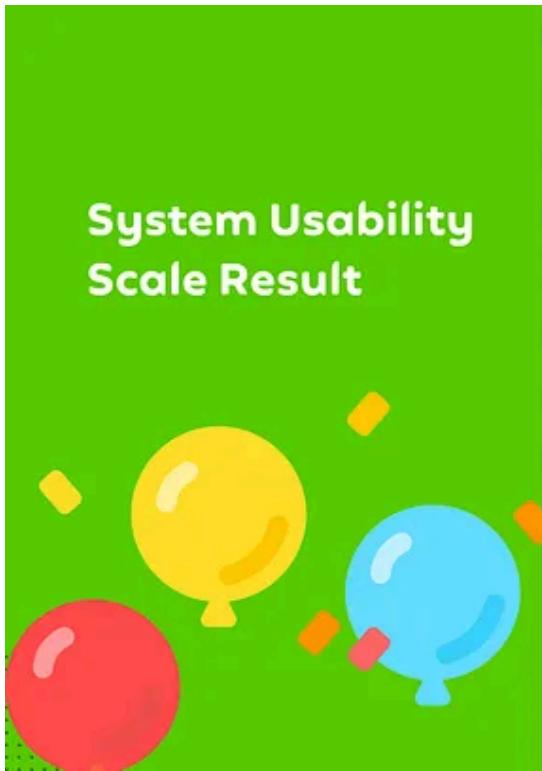
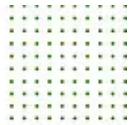
The rules about colors, typefaces, and button types.

## Idea Evaluation

To measure the prototype's accuracy and performance, usability testing should be conducted. It will lead to insightful feedback and improvement ideas. The prototype after UT is [here](#).

**Scenario:** Imagine you are a Duolingo user. Today, you want to learn Indonesian with others and gain double XP by challenging them.

**Task:** Please demonstrate your way of finishing the game by picking the proper answer, choosing “Kucing” when you have to draw, and choosing “Gorila” when you have to voice.



<b>Respondent 1</b> 25 years old Score: 90 Grade: Excellent	<b>Respondent 2</b> 36 years old Score: 97.5 Grade: Excellent
<b>Respondent 3</b> 22 years old Score: 92.5 Grade: Excellent	<b>Respondent 4</b> 25 years old Score: 92.5 Grade: Excellent
<b>Respondent 5</b> 24 years old Score: 87,5 Grade: Excellent	

Quantitative result.

Based on the test and SUS results, all of them are able to accomplish the task well. Because the proposed design tries to be similar to the existing app. The goal is to add a new feature and a new experience, not to create a new app with a Duolingo identity. Other good reviews are:

1. The little details, such as shadows, are like the existing app.
2. After answering, the Duo also celebrates users.
3. Easy-to-learn flow.
4. Provide a tutorial screen before the game starts.

Of course, there is some feedback from the testing:

1. There is no clear rank and point after answering.

2. There is no clear difference between selecting users and inviting them to play.

And the improvements after the test are:

The image shows three screens from the Duolingo app illustrating the 'Iteration' process. On the left, a large 'Iteration' heading is displayed above a text block stating: 'There is no clear rank and point after answering.' Below this is a 'Solution' section: 'Solution: Inform them of the gained xp after answering and the rank at the end of each question.' To the right, there are two screens. The first screen, labeled 'Inform XP', shows a green owl character with a crown, a progress bar, and the text 'Guess what Anna drew'. It displays a reward of '+70 XP' and says 'Excellent! You are crawling up!' with a 'CONTINUE' button. The second screen, labeled 'Ranking', shows a list of six users with their names, profile icons, and XP scores: Arsen (92 XP), Anna (88 XP), Frank (81 XP), Cristoff (66 XP), Hitomi (49 XP), and Asari (46 XP). Both the 'Inform XP' and 'Ranking' screens have a 'CONTINUE' button at the bottom right.

Iteration

There is no clear rank and point after answering.

Solution: Inform them of the gained xp after answering and the rank at the end of each question.

Inform XP

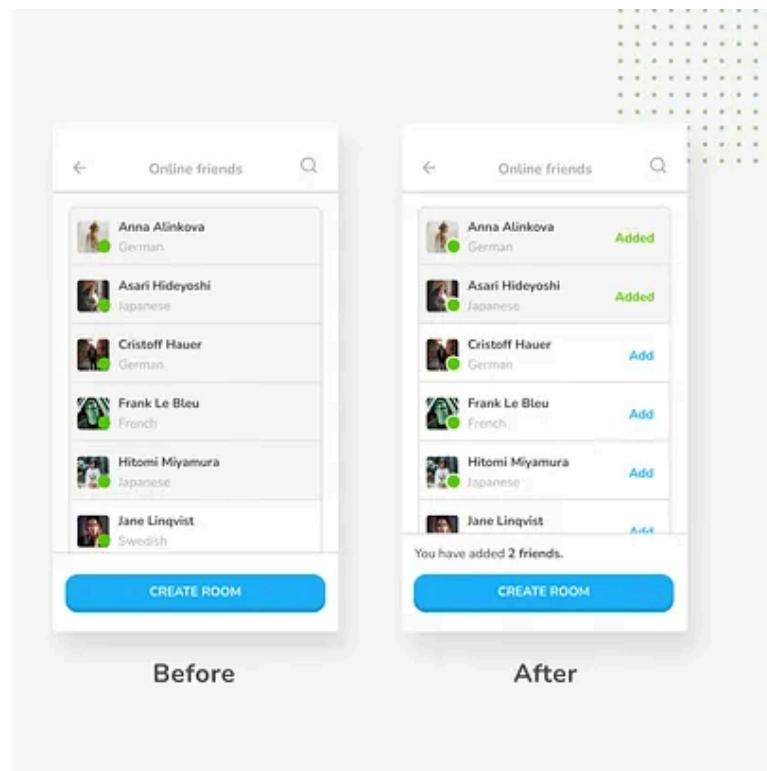
Ranking

Iteration 1

# Iteration

There is no clear difference between selected users when inviting them to play.

**Solution:** Make a distinction between invited and uninvited guests.



Iteration 2

## Other Findings

1. No matter with whom users are competing — with someone they know or even a random stranger, the competitive urge will appear. The previous hypothesis is that one of the biggest motivations for competing is that users want to prove their knowledge to their known peers. But based on the research, even with strangers, competitive behavior still plays a big role.
2. Despite the fact that Duo is a fictitious persona — a mascot — it plays an important role. Users do not feel alone in accomplishing the task. It is interesting because many companies and apps are using mascots to deliver their products. But in the Duolingo case, it plays a friend to cope with loneliness. It is like Doraemon but in a lite version.
3. Advanced comparing behavior will lead to flirting, insulting, or even bullying another user because he thinks he is better than others. The evidence comes from one of the testing respondents. He expresses his

desire for the live call feature in order to distract other users and make the process more enjoyable. but they also have the possibility of bullying them if there are any mistakes.

## Thank you. Feel free for any feedback.

Duolingo

Ux Case Study

UX Research



**Written by Bagus Dwiyoga**

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Draw the line.

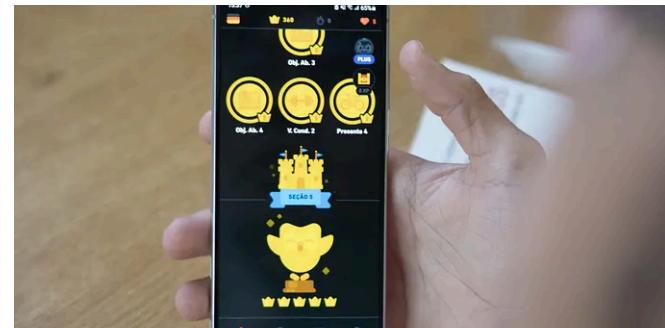
## No responses yet



Griffin

What are your thoughts?

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## #2

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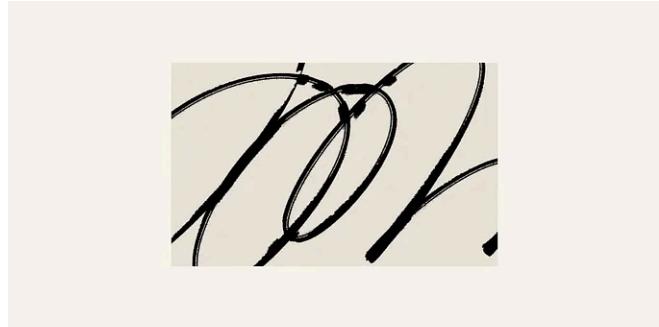
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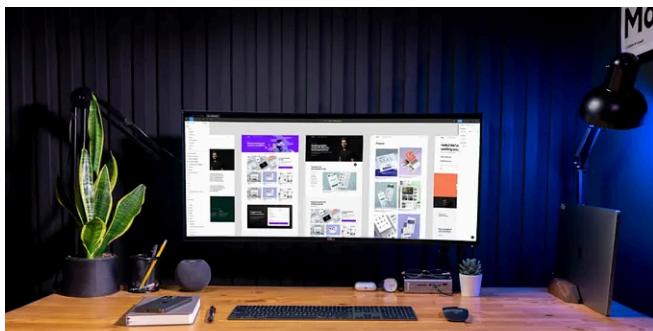
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