

1. Italify

A project by the Group **SUSA**:

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Value Proposition: Watch, Practice, Thrive

2. Problem and solution overview

Problem Overview

Many individuals striving to learn Italian encounter significant challenges due to the absence of cultural immersion. Traditional learning approaches often fail to engage learners in authentic real-world contexts, which is crucial for acquiring not just the language, but also an understanding of the cultural nuances that accompany it. This gap between conventional language education and practical application hinders learners' ability to effectively communicate and fully grasp the Italian language.

Solution Overview

Our primary objective is to enhance the Italian language learning experience by integrating engaging and effective methods that bridge the gap between classroom learning and real-life application. Italify is designed to combine daily practice routines with interactive content and advanced AI technology. This approach not only immerses learners in authentic language use scenarios but also personalizes the learning journey to their individual needs, thereby significantly improving their language proficiency and cultural understanding.

3. Needfinding

In order to identify the challenges and needs faced by individuals learning Italian, we aimed to understand the diverse experiences of learners at various proficiency levels and backgrounds.

Immediate Users:

- Student A: A 24-year-old male international student at Politecnico di Torino, preparing for an official Italian language test. His motivation to learn Italian is fueled by his relationship with an Italian partner. Selected randomly from students at Politecnico di Torino, his basic knowledge of Italian and his preparation for the language test made him an ideal immediate user for our study.
- Student B: A 32-year-old male, newly arrived at the University of Turin, with no prior experience living abroad. Highly motivated to learn Italian to immerse himself in the culture, he represents an immediate user keen on quickly integrating into Italian society. He was recruited through an open invitation on a social media platform for new international students.

Lead Users:

- Professional C: A 41-year-old female, formerly an international student, now working as a private physiotherapist in Turin. Her journey from basic to advanced proficiency (C2 level) in Italian, beginning her learning in 2011, provides an invaluable lead user perspective. She was introduced through a personal connection.
- Professional D: A 28-year-old female, a former international student who has lived and worked in Italy for nearly four years. Her transition from an international student in Bergamo to a professional in Milan offers deep insights into the practical uses of Italian in both personal and professional settings. She was recruited through a mutual acquaintance.

Domain Expert:

- Educator E: Aged 60+, with over 42 years of experience living in Italy and teaching Italian to international students. Her extensive experience and academic background in Italian literature position her as a key domain expert. She was contacted through a personal network and interviewed online due to her residence in Perugia.

Observation

An observation session was conducted in an official Italian class (A1 level) at Politecnico di Torino, focusing on listening skills, the use of articles, and speaking exercises. Key findings include:

- High engagement and participation when learning activities were contextualized.
- Students experienced difficulties with articles and gender-associated words, highlighting areas needing targeted support.

Methodology

Our methodology involved conducting semi-structured interviews with both immediate users and domain experts to gather comprehensive insights into the Italian language learning process. These interviews were crucial in understanding the diverse experiences, challenges, and needs of learners at different stages of their Italian language journey.

Immediate Users:

- **A:** Interviewed at the Politecnico di Torino, specifically on the upstairs sofas of the Polito's R building. This setting was chosen to create a comfortable environment conducive to open discussion. The interview was conducted by Homayoun Afshari, with Sajjad Alvandkoohi assisting. The session was audio-recorded for accuracy and later analysis.
- **B:** Also interviewed in the Polito's R building, leveraging a familiar

and accessible location for the participant. This interview was conducted by Ugur Ziya Cifci, with assistance from Homayoun Afshari, and was similarly audio-recorded to ensure detailed note-taking and analysis.

Lead Users:

- **C and D:** Both interviews were conducted online via Google Meet, accommodating the geographical constraints and schedules of the participants. These sessions were led by Sajjad Alvandkoohi, with User C's session assisted by Ugur Ziya Cifci and User D's by Setayesh Farzin. The digital platform allowed for a flexible interview process while still capturing the depth of the participants' experiences through audio recording.

Domain Expert:

- **E:** Given her significant experience and insights into teaching Italian to international students, User E's interview was also conducted online via Google Meet due to her residence in Perugia. The session was facilitated by Sajjad Alvandkoohi with Setayesh Farzin assisting. Utilizing online tools for this interview allowed us to tap into User E's valuable expertise despite the distance.

Each interview was meticulously planned and executed with the aim of creating a relaxed atmosphere that encouraged candid responses. The choice of interview locations, whether in-person or online, was guided by the need to ensure convenience for participants and the effective gathering of insights. Audio recordings across all interviews were essential for capturing the nuances of each discussion, enabling a thorough analysis post-interview.

Questions

Immediate Users: Our focus with immediate users was to delve into their personal experiences with learning Italian, including their initial challenges upon arrival in Turin, their motivations for learning the language, and the

methods they found most effective. We explored:

- Their current proficiency level in Italian and their targeted level.
- Early experiences and challenges faced when arriving in Torino.
- Strategies employed during ambiguous communication instances in daily life or academic settings.
- Motivations behind learning Italian and any specific goals, such as preparing for tests.
- The impact of previous language learning experiences on their Italian language journey.
- Their interaction with Italian culture and how it influences their learning process.
- The effectiveness of their current learning methods and potential improvements.

Lead Users: The interviews with lead users aimed to gather insights from those who have reached a higher proficiency level in Italian, focusing on:

- Their journey from initial learning to achieving their current proficiency level.
- Early experiences in Italy and how these influenced their language learning.
- The role of motivation in their language learning process.
- The effectiveness of various learning methods they have employed over time.
- Challenges encountered during the learning process and strategies to overcome them.
- Recommendations for improving the Italian learning experience for new learners.

Domain Expert: An experienced Italian language teacher provided insights on:

- The impact of mastering Italian on international students' academic and social integration.
- Common cultural and linguistic challenges faced by students.
- Teaching strategies employed to address these challenges.
- Evaluation of difficulties in reading, listening, speaking, and writing skills among students.
- Opinions on the use of tests and workbooks as learning tools.

- The paradoxical situation of learning Italian in an English-speaking academic environment.
- Strategies to maintain student motivation and engagement.

Results

The interviews with our immediate users, lead users, and domain experts unveiled diverse perspectives on the essential needs for effective Italian language learning. Each identified need was associated with the specific users who mentioned them, providing a clear link between user experiences and their requirements.

- **Need for Real-World Communication:** A strong emphasis was placed on the necessity for learners to engage in conversations with native speakers, enhancing both their linguistic skills and cultural assimilation. This need was highlighted by Immediate Users (IU) and Lead Users (LU), reflecting the broad consensus on its importance for effective language learning.
 - *Mentioned by: IU1, IU5, LU2*
- **Need for Immediate Feedback and Guidance:** The demand for prompt and detailed feedback on language use was identified across the board. Such feedback is crucial for learners to understand their mistakes and improve, especially in writing and speaking.
 - *Mentioned by: IU1, IU3, LU1, LU3, Domain Expert (DE)*
- **Structured Practice for Writing and Pronunciation:** There was a clear call for structured exercises tailored to writing, vocabulary, pronunciation, and grammar. These components are vital for overcoming linguistic challenges unique to the Italian language.
 - *Mentioned by: IU1, IU5, LU1*

- Motivation and Structured Learning Schedule: Maintaining high motivation levels and a structured approach to learning activities were deemed essential for sustained engagement and progression.
 - *Mentioned by: IU2, IU4, LU2, LU3*
- Leveraging Previous Language Learning Experiences: Utilizing learners' backgrounds in other languages was seen as advantageous for facilitating a smoother Italian language learning process.
 - *Mentioned by: IU4, LU3, DE*

Synthesizing

To organize and analyze the insights gathered from the interviews, we utilized a Miro Board, categorizing the identified needs into distinct themes. This visual representation helped us to pinpoint overlaps and unique aspects of the learning experience as expressed by our participants.

- Cultural Immersion and Communication: Highlighted the unanimous agreement on the value of integrating real-world conversational practice with native speakers into the learning process.
- Feedback and Improvement Tracking: Focused on the need for a mechanism to receive timely feedback and track learning progress, emphasizing the importance of recognizing and correcting mistakes.
- Structured and Personalized Learning: Addressed the call for tailored practice sessions that align with individual learner profiles, leveraging their existing language skills for a more personalized learning journey.
- Motivation and Engagement: Underlined the importance of keeping learners motivated through gamification, structured schedules, and clear progress indicators.

After thorough discussion and brainstorming, we refined our findings to a definitive top solution that addresses the overlapping needs identified:

The Definitive Top Solution

An immersive language learning platform that enables learners to interact with native speakers in real-world scenarios, provides immediate feedback and a personalized learning path and incorporates gamification elements to enhance motivation. This platform will offer structured exercises for writing and pronunciation while allowing learners to leverage their previous language learning experiences.

This solution effectively combines the need for real-world communication with the necessity of structured practice and personalized feedback, covering:

- Need for Cultural Immersion and Communication
- Need for Feedback and Improvement Tracking

By focusing on these core needs, our solution aims to provide a comprehensive and engaging Italian language learning experience that caters to the varied preferences and requirements of our users.

4. Tasks and Storyboard

In developing Italify, we identified specific tasks that align with the needs and concerns expressed by our immediate users during the interviews. These tasks are crucial for our target population as they directly address the core aspects of learning Italian: engagement with content, progress tracking, and personalized feedback. Each task is designed to progressively build upon the learner's experience and competency.

Simple Task: Find a Video of Personal Interest or Favorite Theme

- This task allows users to select videos on topics they are personally interested in or passionate about. It caters to the need for engaging content that resonates with the learner, making the language learning experience more enjoyable and relevant.

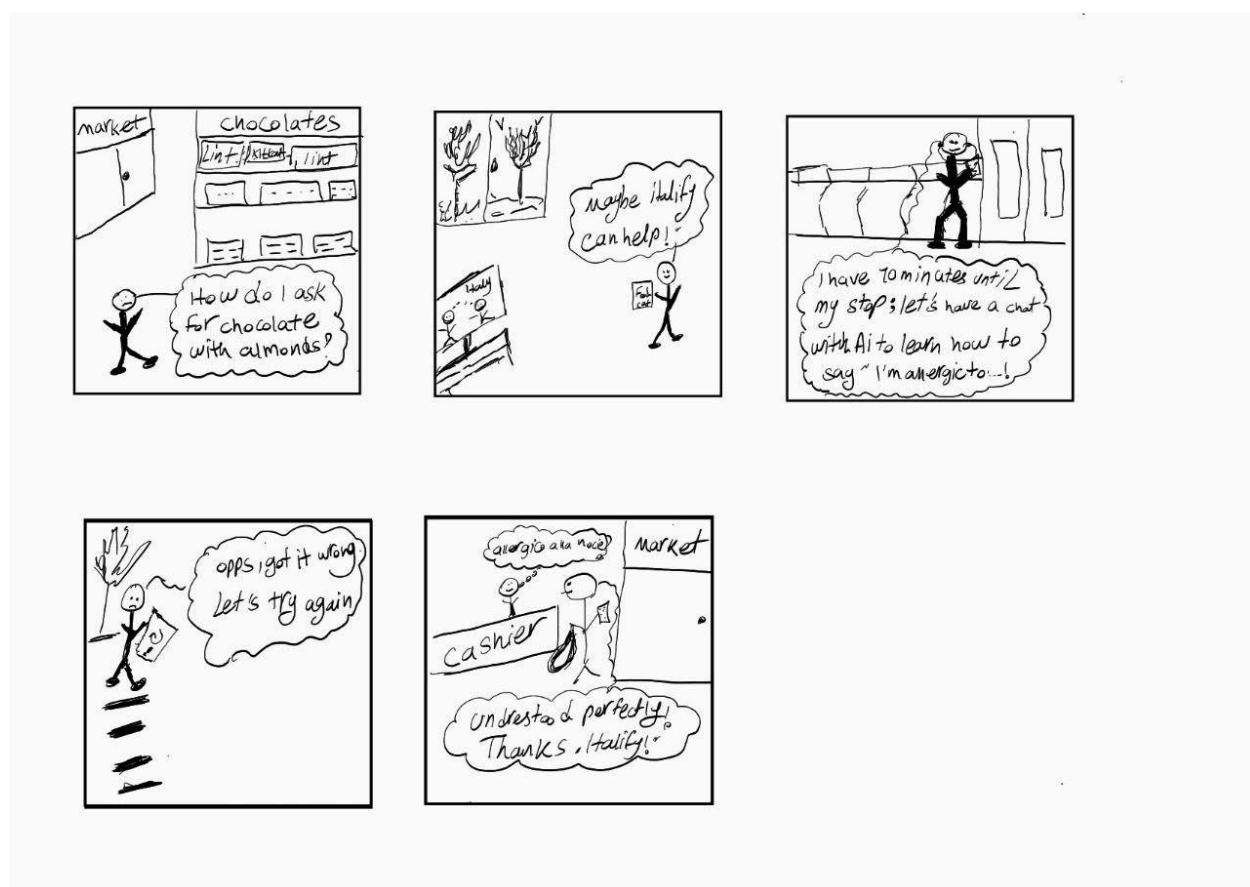
Moderate Task: Earn Points by Completing Exercises Correctly to Unlock Harder Lessons

- Here, users are motivated to correctly complete exercises to earn points, which are then used to unlock more challenging lessons. This task introduces a gamification element that not only motivates learners but also ensures that they are adequately prepared for advanced content.

Complex Task: Chat with the AI to Get Detailed Feedback and Clarify Any Possible Doubts

- The most advanced task involves interacting with an AI to receive detailed feedback on exercises and clarify any doubts. This task addresses the need for immediate, personalized feedback and guidance, allowing learners to understand their mistakes and learn from them.

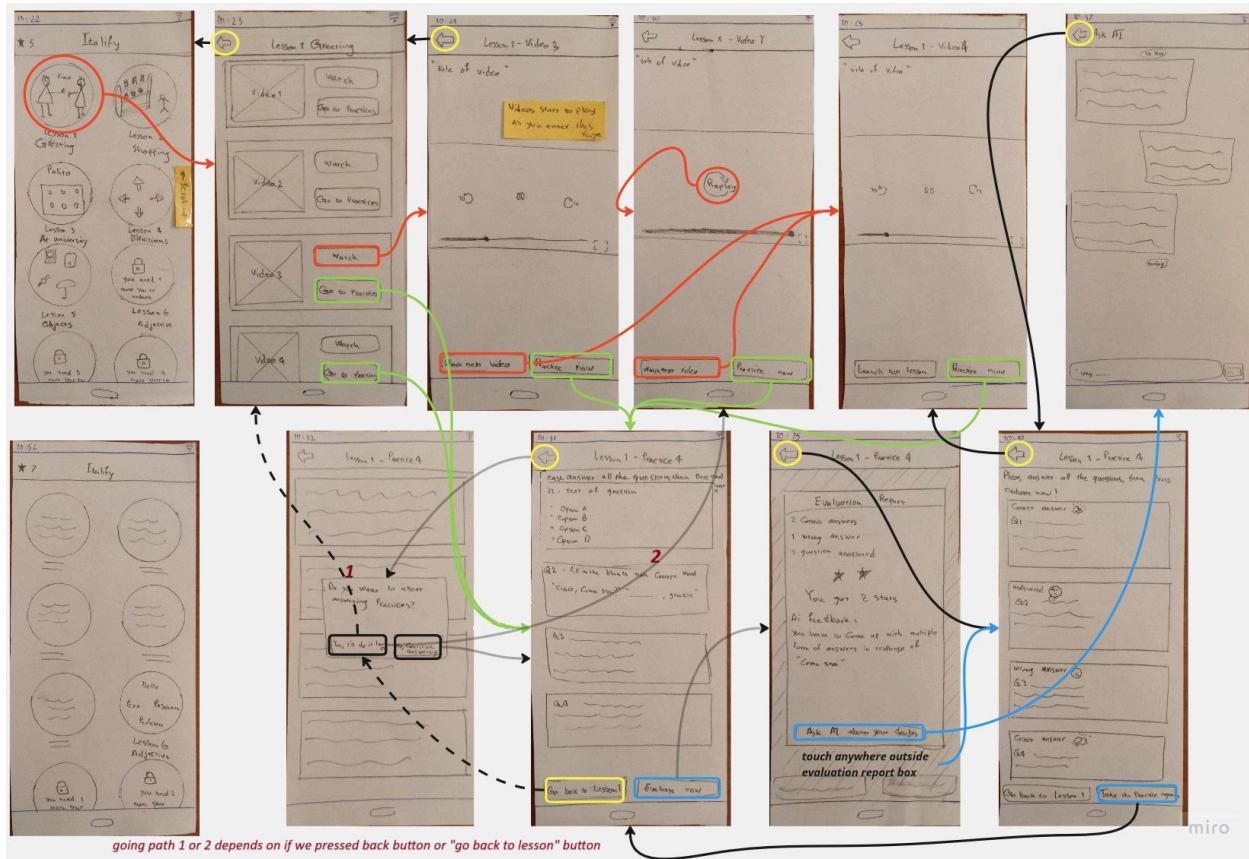
Storyboard:



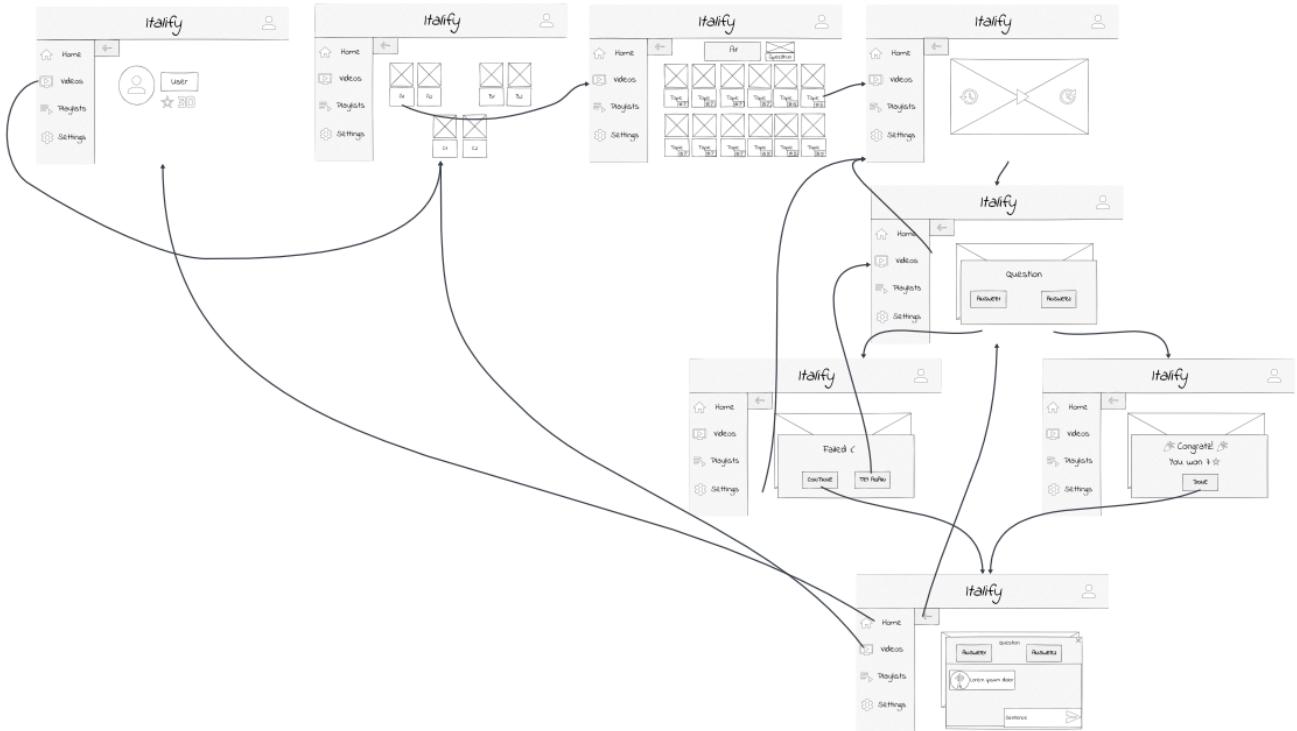
5. Low Fidelity Prototype

For the prototype, we decided to move on with a mobile and a web application.

Mobile Interface



Web Interface



Heuristic Evaluations

i. Heuristic Evaluation Received:

The heuristic evaluation highlighted concerns regarding consistency and the absence of a user guide. To address these issues, we implemented pop-up elements for first-time users and adopted a minimalist design approach to enhance user experience.

ii. List of Violations for Both Prototypes:

- Visibility of System Status and Consistency and Standards were common issues across both prototypes, with users expressing confusion over navigation and feedback mechanisms.
- User Control and Freedom violations were identified in the mobile prototype, particularly regarding menu accessibility and feedback access.
- Error Prevention and Help and Documentation concerns were raised, pointing to the need for clearer instructions and support within the app.

Selection

After reviewing the heuristic evaluations and considering the practicality and accessibility of our solution, we decided to proceed with the Mobile Application Prototype. This decision was influenced by the widespread ownership and use of smartphones among our target demographic, which ensures that our solution is as accessible as possible. Additionally, feedback from evaluators reinforced that a mobile application would more effectively meet the needs of our users, especially for engaging with the language learning process in various settings.

To enhance our final prototype, we will integrate the "Goals" interface from the web prototype, providing users with a clear overview of their progress and the areas they need to focus on. This decision aligns with our commitment to creating a user-centered, effective, and engaging Italian language learning platform.

6. Medium to High-Fidelity Prototype

a)we chose these two pages because it shows the practice of the user and how the app evaluates it and also shows how AI can help the user after the user has a problem in understanding the evaluation

b)Figma
<https://www.figma.com/proto/p5DRBozc1IQdVWSXpLfBPo/Untitled?type=design&node-id=1-17&t=8Lff3c6NJxYXlpXM-1&scaling=scale-down&page-id=0%3A1&starting-point-node-id=1%3A17&mode=design>

c)

List of Violations for Both Prototypes:

Web Prototype Violations:

1. Visibility of System Status
 - Location: After exercise scan pages
 - Issue: Confusion between levels of course, videos, and practices
 - Severity: 2
2. Consistency and Standards
 - Location: Main page
 - Issue: Profile button organization
 - Severity: 2
3. Flexibility and Efficiency of Use
 - Location: After watching the video
 - Issue: Points (Stars) not displayed on the main page
 - Severity: 3
4. Help Users Recognize, Diagnose, and Recover from Errors
 - Location: Before level page
 - Issue: Users are unable to recognize their level of determination
 - Severity: 3

Mobile Prototype Violations:

1. Match Between System and the Real World - Severity 4
 - Location: Various pages
 - Issue: Need for a translate icon for language learning assistance.
2. User Control and Freedom - Severity 4
 - Location: All pages
 - Issue: Lack of menu accessibility for user navigation.
3. User Control and Freedom - Severity 2
 - Location: Home page
 - Issue: Need for a feedback icon for AI assistance outside of the evaluation page.
4. User Control and Freedom - Severity 2
 - Location: Practice page
 - Issue: Difficulty in identifying the correct answer.
5. Consistency and Standards - Severity 4 - DUPLICATED violation
 - Location: All pages
 - Issue: Need for a home icon for better navigation, rather than multiple back icons.
6. Consistency and Standards - Severity 2

- Location: Final practices evaluation
 - Issue: Confusion regarding which icon leads to the final evaluation.
- 7. Consistency and Standards - Severity 1
 - Location: Final evaluation
 - Issue: The topic is still listed as 'practice,' causing confusion.
- 8. Consistency and Standards - Severity 3
 - Location: All pages
 - Issue: Need for a profile area for users to specify their name and mother tongue.
- 9. Error Prevention - Severity 3
 - Location: Practice page
 - Issue: Need for a keyboard to write answers.
- 10. Help and Documentation - Severity 4
 - Location: All pages
 - Issue: Absence of a Help Center for user assistance.
- 11. User control and freedom - Severity 3
 - Location: practice page
 - Issue: as a user, I need to save my progress in practice questions, so if my practice session is interrupted, I can resume from the state I was left.

We received 1 formal evaluation report for both prototypes and one informal suggestion from a classmate for the mobile prototype, so we merged it with other violations.

Plan for the hi-fi prototype

The list of violations that we believe are not valid:

#2 Menu shortcut: Since we have less than 3 direct functionalities, we decided to have no menu, and keep things aligned with best practices.

#3 Access AI ChatBot from the home page: Originally we came up with the complex task of asking AI if you had any doubts about the practice the user has done, so it's not much in favor of the complex task.

#4 Showing correct answer: We intentionally avoid doing so, to give the user the chance to take the test again. so he will be able to find his

mistakes by himself and learn deeper.

#6 Confusion with evaluation button: Their comment is not very clear, but there is only one possible way to get the practice's feedback, and that is with the specific button for that.

#7 No change in the practice page title when the report is shown up: When a user presses the Evaluate Now button, there is a pop-up box containing the report. And the background of this pop-up goes blurred, so the user probably will notice about changes, and doesn't get confused.

#8 Missing profile icon: Since we didn't intend to incorporate having an account and stuff, we didn't consider such a thing at first. But again after consulting among team members, we concluded that we don't need any task tied with having an account or there is no usage of it

#9 No keyboard presented: When a user enters the ChatBot page, a keyboard appears on the screen. If he/she dismisses the keyboard, he can retrieve it again by tapping inside the textbox, like other applications we use daily. So we hadn't shown the keyboard in the low-level prototype just for simplicity.

Violations with severity 4:

#1 Missing translate icon: We decided to provide the English translation of each Italian sentence when the user taps on that Italian sentence. We show the user the translation in a small pop-up for a limited time, then it disappears automatically.

#5 Missing home button: We thought maybe the best position to put it, is the top right corner.

#10 Missing help center: We believe the application is self-informative enough, so the users won't probably get confused. But we will wait until the usability test, and if then it becomes clear that we need such a thing, we can add a button to the top right corner of the home page, when pressed, shows some general info about how the application is structured.

Violations with severity 3:

#11 Save functionality: We will ask the user to save before leaving in the middle of answering practices. And if he wishes, we will store his partial answers. Just need to add another button to the UI.

Violations with severity 2:

Nothing here

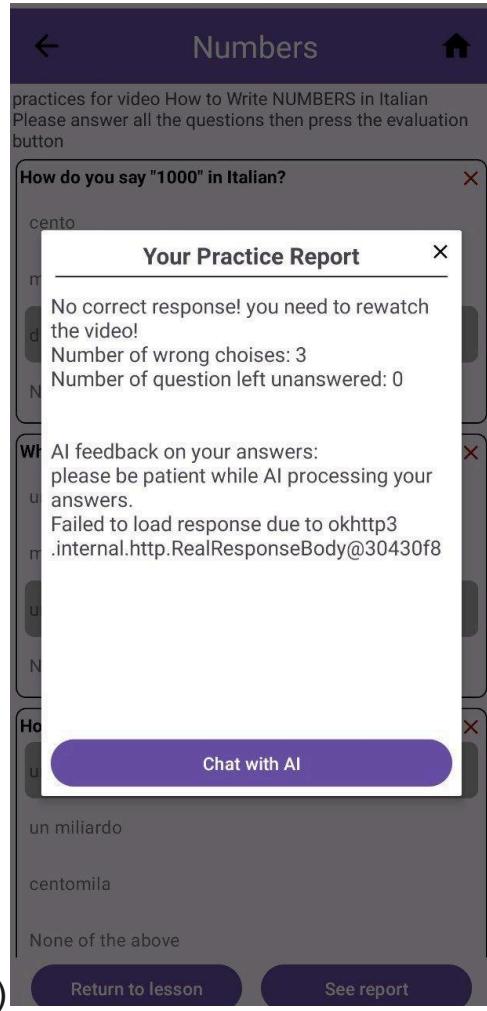
Violations with severity 1:

Nothing here

7. High-fidelity Prototype

a) We used solely the Android studio along with Android SDK because we had prior experience with it and it's a complete toolkit for developing Android apps, providing everything we need for building and optimizing applications for Android devices. It offers essential development tools, access to device features through APIs, and ongoing support from Google. We rely on the libraries within the SDK to streamline development by using pre-existing solutions for common tasks, ensuring compatibility and efficiency in our app development process.

b) <https://github.com/polito-hci-2023/Italify>



c)

It shows how the app evaluates the answers and also shows how AI can help the user after the user has a problem understanding the evaluation

d)there is no specific hard-coded part in the app and the pre-stored data are the texts of questions and answers and the video's link from short videos on YouTube. And there is no particular limitation since we can add any extra lessons, videos, or questions.

8. Usability Testing

a) Sajad and Setayesh took the initiative to set up the café environment for the interviews, ensuring everything was ready for the process. They meticulously reviewed and finalized all questions and tasks to be addressed during the interviews. Their first participant, Soheil, a 26-year-old student at Polito, was invited to sign the consent form, with reassurance that any concerns he might have would be addressed promptly. Soheil then proceeded with the tasks and questions, providing valuable insights that proved to be effective and beneficial.

Following Soheil's interview, Mohammad Reza, a 28-year-old student at UnitO, was asked to participate. Similarly, he was given the consent form to sign and was encouraged to express any feedback or concerns comfortably. He completed the assigned tasks and questions as well.

Throughout both interviews, Setayesh took on the role of a facilitator, guiding the conversation, while Sajad observed and took note of key points.

For the third interview, Tugce, a 24-year-old mathematics student living in a different city, was invited to participate remotely. Initially, Ugur and Setayesh practiced their roles together before connecting with Tugce online. After obtaining her consent using a digital consent form, the testing commenced. Setayesh assumed the role of an observer, carefully noting Tugce's responses and interactions, while Ugur facilitated the process, ensuring smooth communication and task completion.

The tasks

Task 1: Find your interesting topic

Use Italify to learn some Italian vocabulary in a topic of your interest.

Task 2: How to get stars

Imagine you want to study materials on a topic that is currently locked. Try to understand what you should do to unlock it and do them.

Task 3: Leave the app while you are answering questions

Imagine you're in the middle of answering questions, and due to some emergency, you have to stop answering questions, but you don't want to lose your progress and want to continue from where you left next time you use the app. Find out the way to do so

Task 4: Evaluations

After completing your practice, you want to know which questions you answered wrong, read the provided feedback, and think again about other options to that question.

Task 5: Interactive Feedback with AI

Imagine after reading AI feedback and rethinking other options, you still have doubts or any issues and you don't understand correct answers or you come up with new questions, try to get help from the bot.

Task 6:

On any page you are currently at, directly go to the homepage, and select a topic in which you previously did some of its practice. This time try to watch or do the practices of a video that you haven't previously done

Link related to test 1:

https://drive.google.com/drive/folders/1Z06WvSYkjiOKsKGr_AwT3PnvnYBMUPVA

Link related to test 2:

https://drive.google.com/drive/folders/1x-m_IpTBWBmM17wnJre962Hthbul7EcJ

Link related to test 3:

<https://drive.google.com/drive/folders/1ntcmeGIUkmwt8RER7P1KxPJF2S5ADlzb>

b)

Name	Time for each task	Success rate	SUS	SEQ	# of Critical Error
Soheil	t1 = 3 min t2 = 5 min 3 = 2 min t4 = 3 min t5 = 1 min t6 = 2 min	t1 = 100% t2 = 90% t3 = 85% t4 = 80% t5 = 100% t6 = 85%	85	42	0
Mohamadr eza	t1 = 2 min t2 = 4 min 3 = 2 min t4 = 4 min t5 = 1 min t6 = 2 min	t1 = 95% t2 = 95% t3 = 90% t4 = 90% t5 = 95% t6 = 85%	80	42	0
Tugce	t1 = 4 min t2 = 6 min 3 = 3 min t4 = 2 min t5 = 2 min t6 = 1 min	t1 = 95% t2 = 90% t3 = 80% t4 = 85% t5 = 100% t6 = 80%	95	42	0

in our usability testing sessions, we delved deep into understanding the strengths and weaknesses of our prototype. Through observing how users interacted with our product, we gained valuable insights into its usability and effectiveness. We identified specific areas where users encountered

challenges or confusion, such as navigation issues, unclear instructions, or difficulty completing tasks. Additionally, we discovered aspects of the prototype that resonated positively with users, such as intuitive features, clear layout, or helpful prompts. These findings allowed us to pinpoint what aspects of our design were successful and what needed refinement.

Overall, usability testing served as a crucial tool for uncovering user preferences, behaviors, and pain points. It provided us with actionable feedback to enhance the overall user experience of our prototype, ensuring that it meets the needs and expectations of our target audience.



This picture it taken from test 1 with Soheil at cafe place



This picture it taken from test 2 with mohamadreza at cafe place



This pictures it take from test 3 with Tugce at googlemeet

We captured three main issues during test session, each of them by one our participant. first one the user was confused when doing task 6, he couldn't understand what is the appeared icon stand for, is it for watched video or completed practice, and we can put another icon to clearly differentiate between these two situations. the other issue was that when she was doing task 2, when for the first time she selected an answer and soon she found out she selected wrong answer, she tapped it again to deselect it, but there is no current functionalities in this version. we should

improve the interaction by providing deselection opportunity. and the last one when he was doing task 5, he pressed the only button in the screen, probably without noticing it's text and he got confused with new page opened. he later on explained to us he thought it's a button to go back to lesson page. for this we can add new button to directly go to lesson page

9.conclusion

a)As a culmination of our collaborative discussions, we arrived at the realization that this course holds immense value for the advancement of our personal startup ventures. Through our deliberations, we discerned that the success of a startup hinges not solely on the novelty of its idea, but rather on its capacity to address challenges effectively, whether through a website or application. We acknowledged the paramount importance of considering HCI principles in the design and development process. Understanding how users interact with technology and ensuring seamless usability and accessibility are essential components in creating impactful solutions.

Moreover, we grasped the significance of a methodical approach to implementation, recognizing that progress occurs through iterative stages. Each phase of the website or application development demands thoughtful consideration, and soliciting feedback from stakeholders, particularly clients, emerged as a crucial step. By incorporating HCI methodologies such as user testing and iterative design, we aim to refine our offerings to better align with user needs and preferences, thereby enhancing user satisfaction and adoption rates. This course has underscored the importance of user-centric design and iterative refinement, equipping us with the tools to create products that resonate deeply with our target audience.

b)In the beginning, our team consisted of four members, with Hamayoon leading our initial presentation efforts.

However, later on, he opted out of this course. Despite this change, the three of us approached all aspects of the project cohesively. It is worth noting that Sajad's previous experience greatly contributed to our group, particularly in the coding aspect of the project, providing invaluable assistance and guidance based on his prior expertise.

A1: four of us did the interview and with each other in the university did all of the tasks.

A2: Setayesh does the storyboard, Sajad does the mobile app prototype and flow and Ugur does we prototype and flow.

A3: we had to do this part individually.

A4: Sajad pertise in creating the app, and Setayesh and Ugur helped him in creating icons or videos and practices parts

A5: Setayesh and Sajad do the two usability test And ugur and Setayesh do the usability test and after that ugur uploads his document and Setayesh uploads the document and also Sajad drives all the points that the testers mention

Final report: Setayesh and Ugur do most part of the final report and Sajad do the revision on it