

# CONCEPTION AND DESIGN OF AN INTERACTIVE WEB PLATFORM FOR LINGUISTIC EDUCATION IN SCUOLA SECONDARIA DI I GRADO

The Multimodal Linguistic Autobiography as a UdA in an  
Integrated Learning Ecosystem

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Dissertation in Usability and User Experience  
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# PRESENTATION OUTLINE

1. Design Problem and Theoretical Background
2. Objectives and Results
3. Evaluation and Further Developments

# Design Problem

Identify a Gap in the Existing...

- Scarcity of specific digital tools of Linguistic Education for Italian language teaching in school context
- Unexploited potential of Linguistics research results and verified field-specific tools;
- Broad space for experimentations in Designing for Education
- Growing need for active engagement of students in education



# Solution

...and Fill it in with an Optimal Solution

Design a didactic interactive web platform to enhance Italian language learning with the critical integrated use of ICT.

## Conceptual System

- Opening an ecosystemic discourse among research, education and technology
- and establishing reciprocity links through these fields

# PAROLE A COLORI



An **Interactive web application** that offers  
Unità di Apprendimento (**UdA**) for Italian  
language classes, targeted at students of  
**Scuola secondaria di I grado** - in the Italian  
school system it is the 3 years cycle from 11  
to 14 y/o

The platform stimulates **metalinguistic  
awareness and multiliteracy**

# Theoretical Background

## Linguistic Education in Italy

### The Italian Constitution

#### Art. 3

Tutti i cittadini hanno pari dignità e sono eguali davanti alla legge, senza distinzione di sesso, di razza, di lingua, di religione, di opinioni politiche, di condizioni personali e sociali.

comma 2 - rimuovere gli ostacoli che impediscono il pieno sviluppo della persona e la piena partecipazione alla vita sociale e politica del Paese.

#### Art. 6

La Repubblica tutela con apposite norme le minoranze linguistiche.

#### Art. 21

Tutti hanno il diritto di esprimere il proprio pensiero con la parola, lo scritto e ogni altro mezzo.

### 10 Tesi per l'Educazione Linguistica Democratica

#### Tesi II

"è ovvio (ma forse non inutile) affermare che lo sviluppo delle capacità linguistiche affonda le sue radici nello sviluppo di tutt'intero l'essere umano, dall'età infantile all'età adulta, e cioè nelle possibilità di crescita psicomotoria e di socializzazione, nell'equilibrio dei rapporti affettivi, nell'accendersi e maturarsi di interessi intellettuali e di partecipazione alla vita di una cultura e comunità."

### DigCompEdu Framework

#### 6 Facilitating Learners Digital Competence

##### 6.1 Information & Media Literacy

##### 6.2 Communication

##### 6.3 Content Creation

##### 6.4 Responsible Use

##### 6.5 Problem Solving

# Theoretical Background

## Linguistic Autobiography

### What

A tool for language teaching and metacognition

"L'autobiografia linguistica è la narrazione delle modalità con cui sono state acquisite le lingue che un soggetto conosce (parla, scrive, comprende, legge... a diversi livelli di competenza), del posto che queste occupano nella sua vita, dell'uso che ne fa"

(in Anfosso, Polimeri, and Salvadori 2016, 83)

### How

Self-narration in the construction of the self

- Transformative movement and logical advancement in reconstructing the past
- Activates a collective reflection on individual productions
- Developing the capacity of building links among data, interpreting and re-elaborate them.

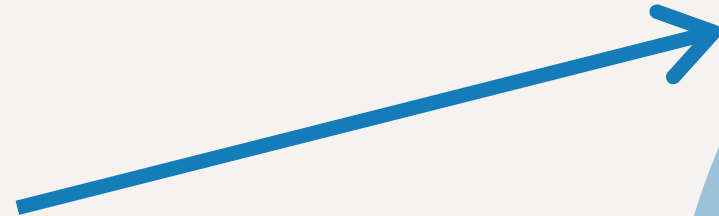
(Anfosso, Polimeri, and Salvadori 2016 and Petrucco and De Rossi 2009)

### Teaching Functions

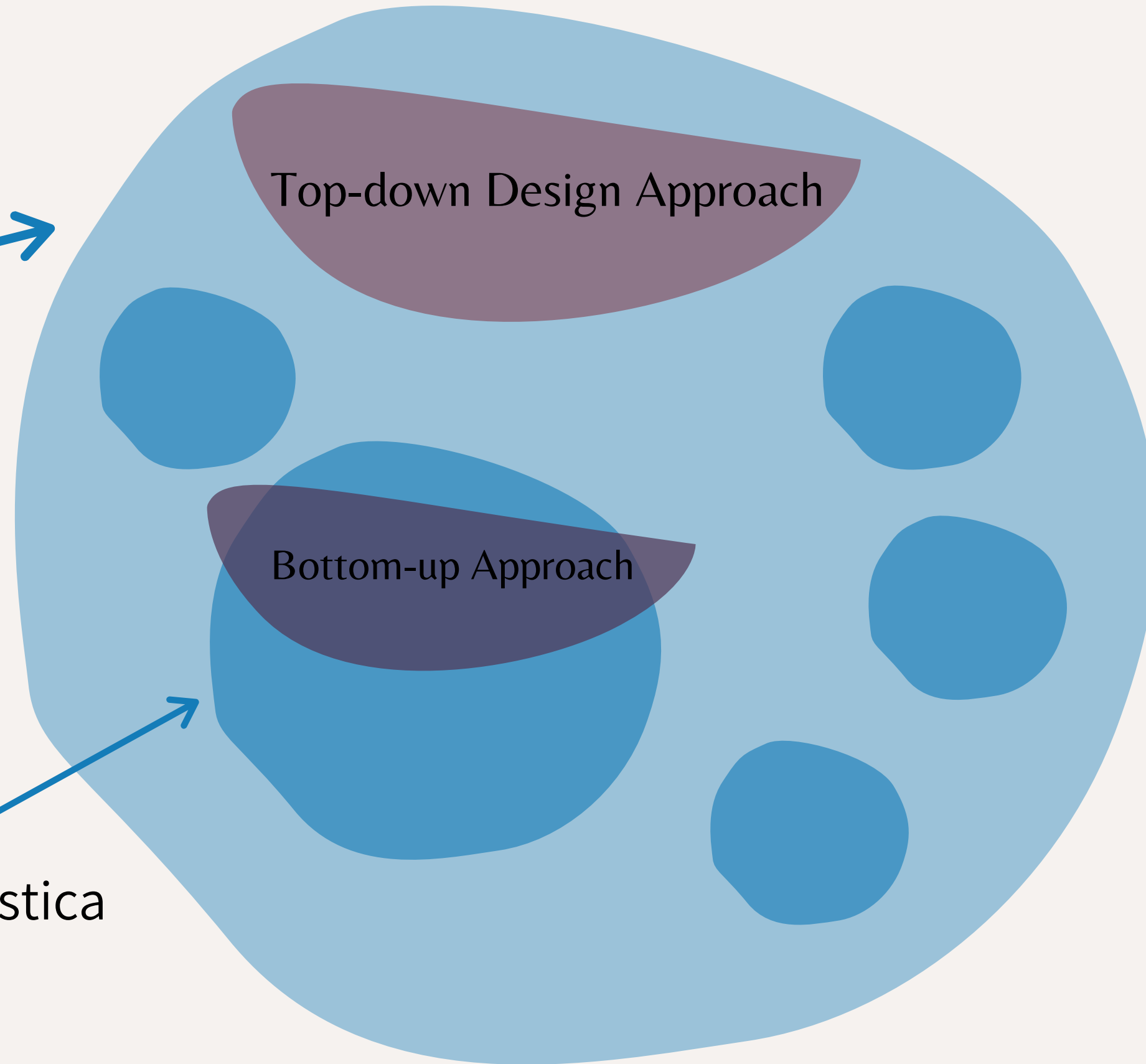
- Informative and formative power
- Brings out the **natural variability** of the **educational event**
- Authentic learning stimulus: to build a **bridge** between learned notions and personal experience

# Objectives

Parole a colori



Autobiografia Linguistica





# Objectives



1. the **System Structure** and the **User Experience** of PAROLE A COLORI
2. **build** an expandible, scalable and replicable **prototype** of PAROLE A COLORI
3. **evaluate the prototype**, including testing with real users

Top-down design model

# Objectives



## 4. The contents of Autobiografia Linguistica

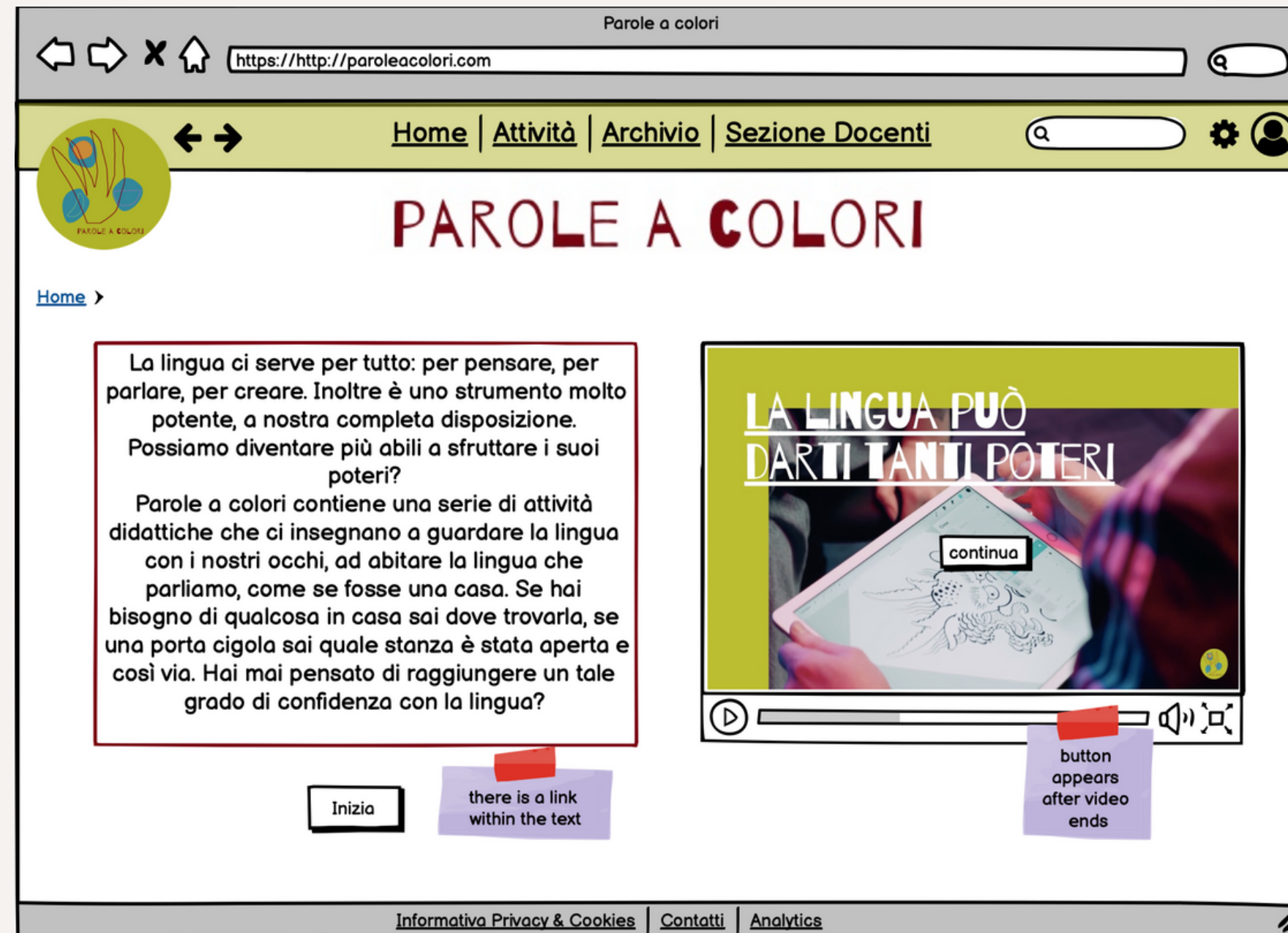
As an instantiation of educational stimulus, in the form of UdA, able to **link** the **techniques and tools of Linguistic Education** with the **functional aspects of digital interaction**

**Bottom-up design approach**

# Results

The objectives have been met thanks  
to a:

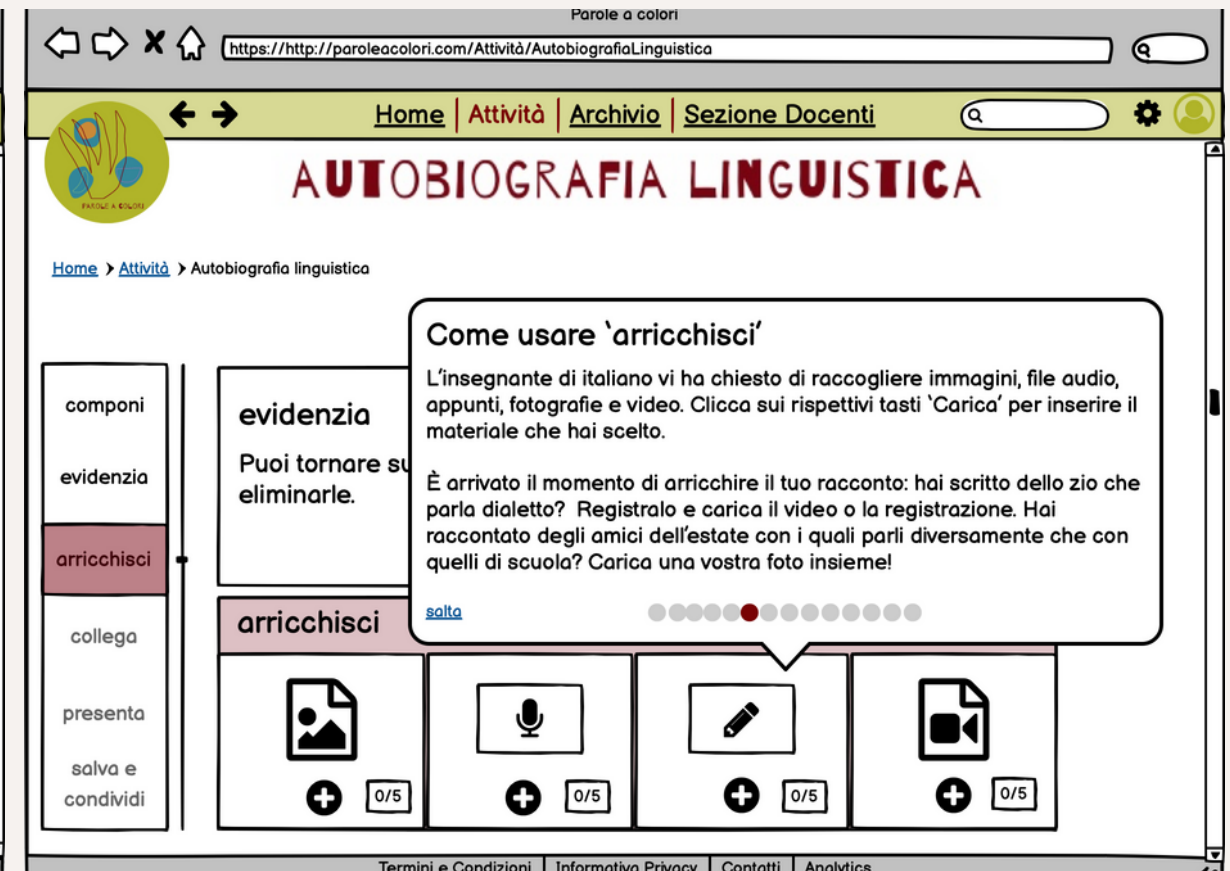
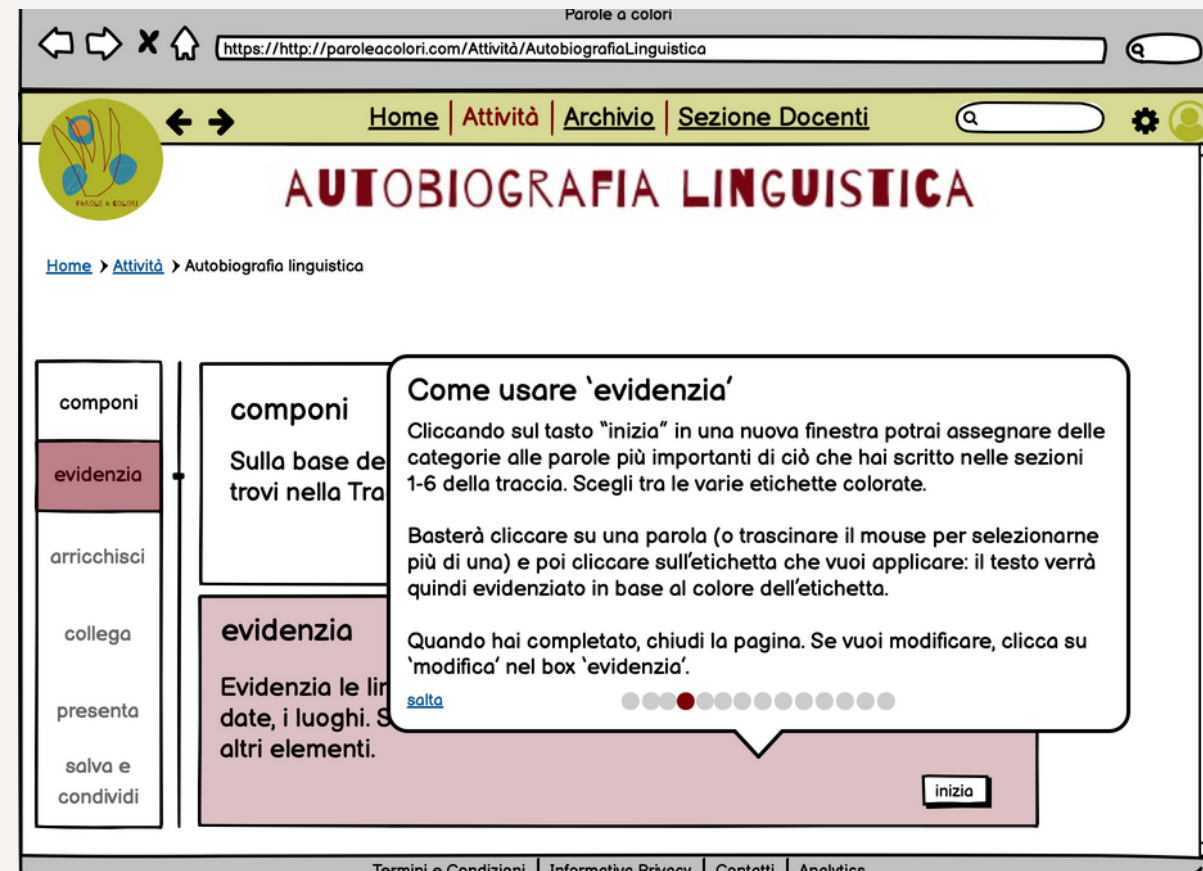
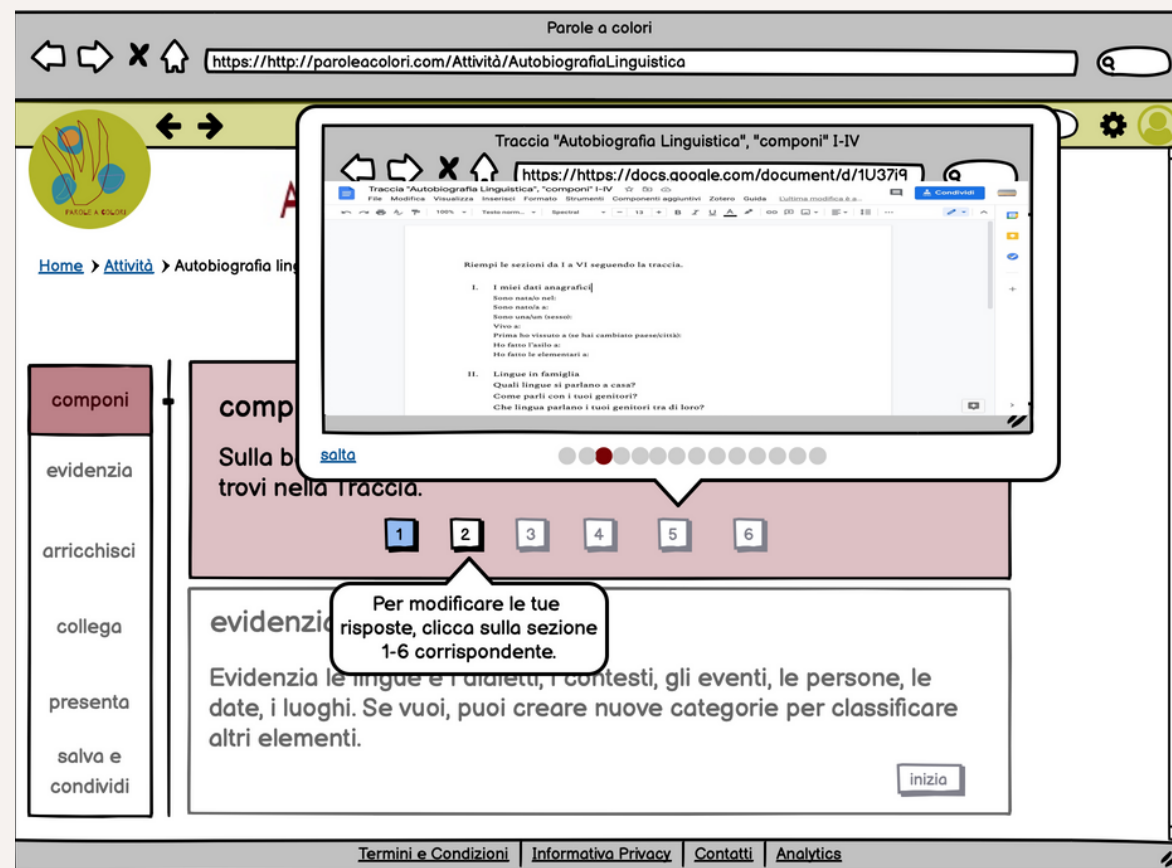
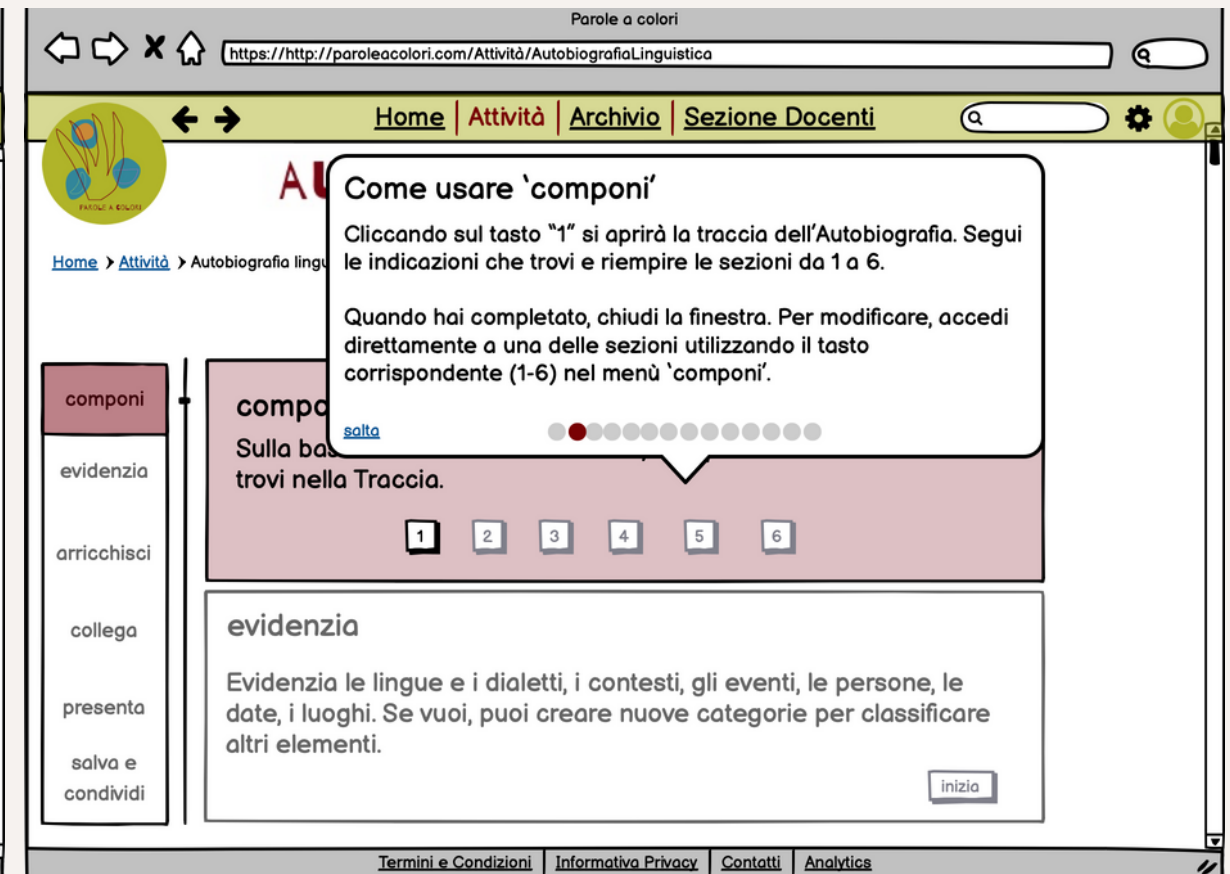
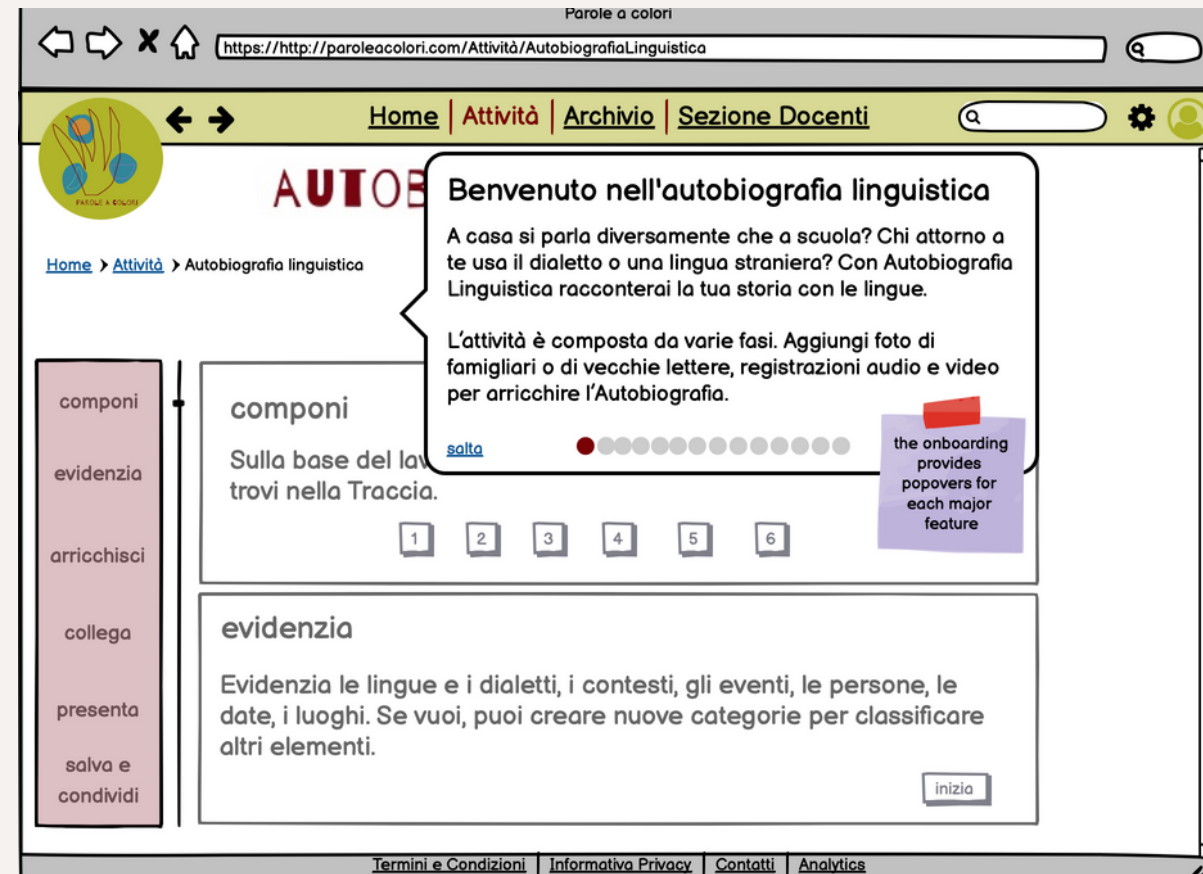
Medium-fidelity prototype that  
activates a virtuous cycle with a  
proposal of Italian language  
educational practice that transfers the  
analogical power of a well-established  
tool in Linguistics research, into a  
digital interaction enriched with  
multimodality



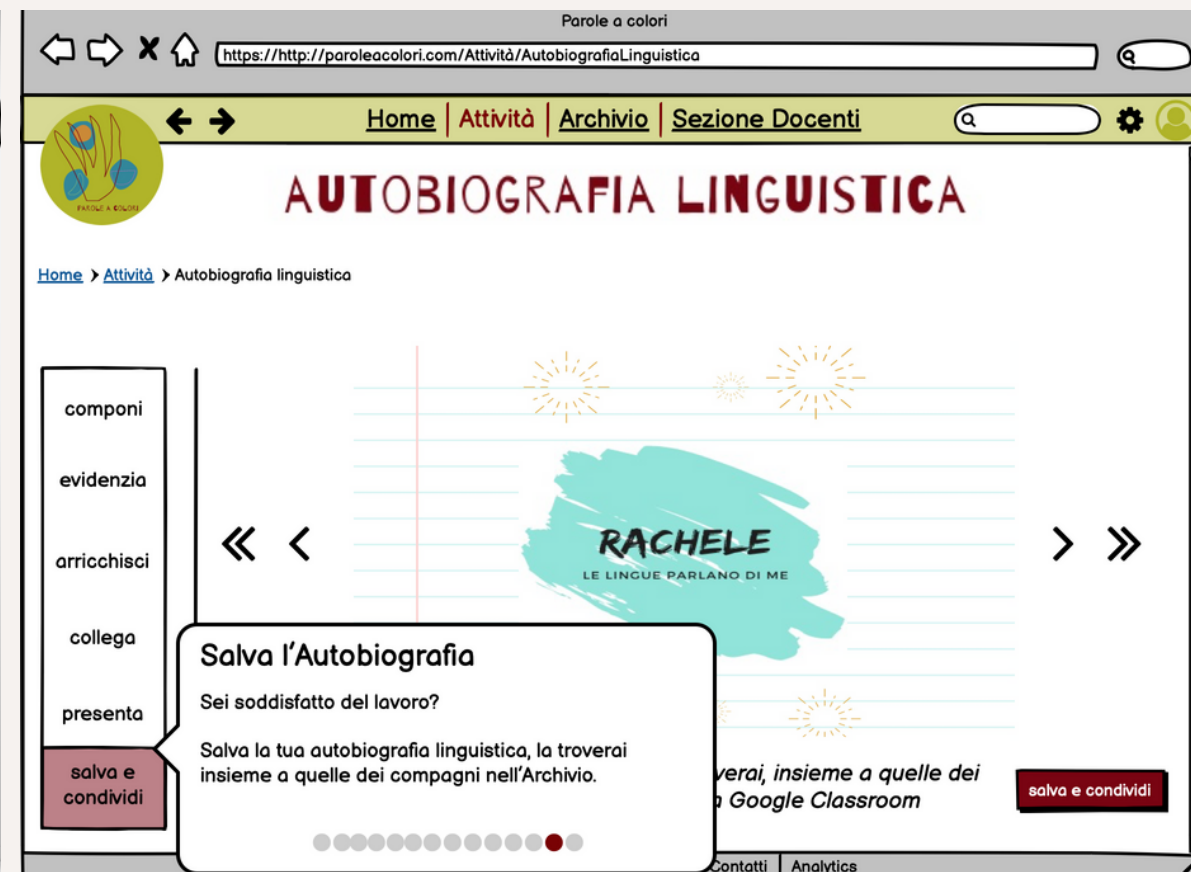
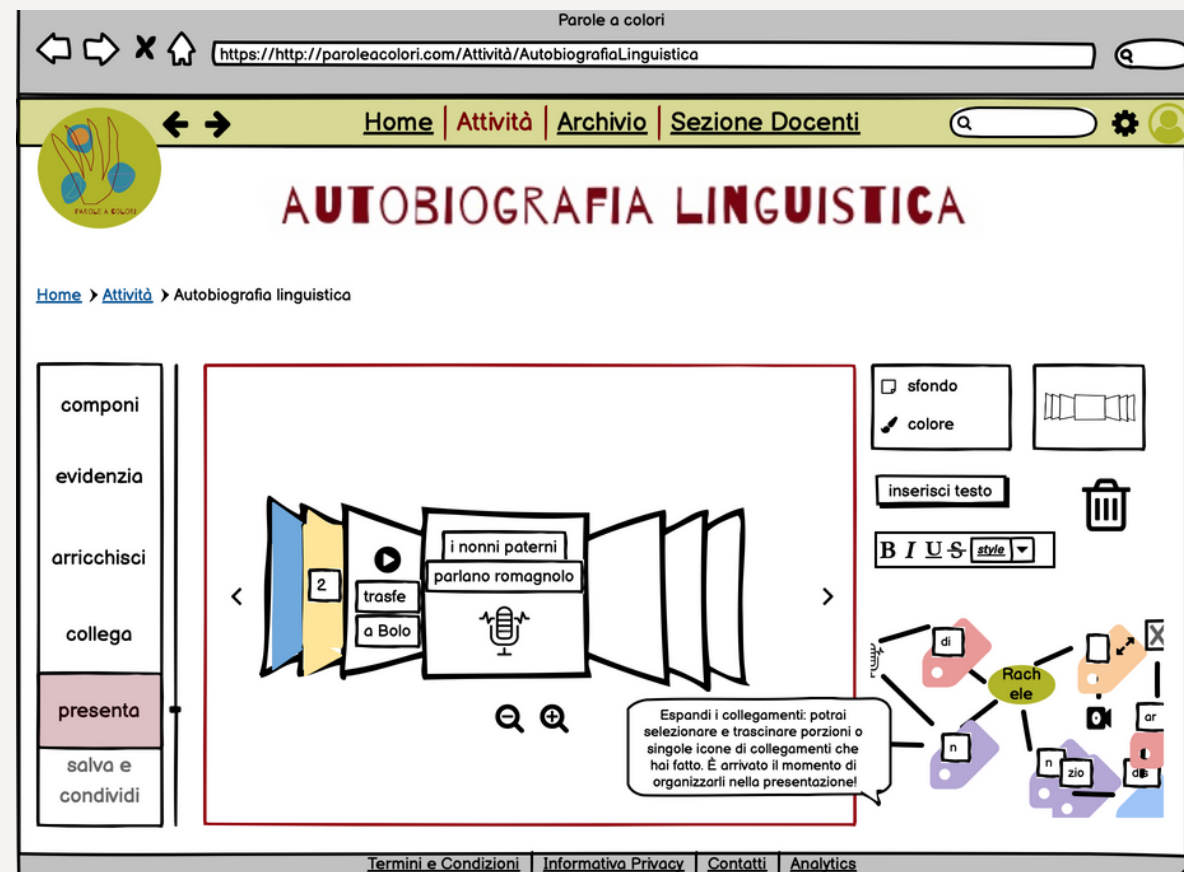
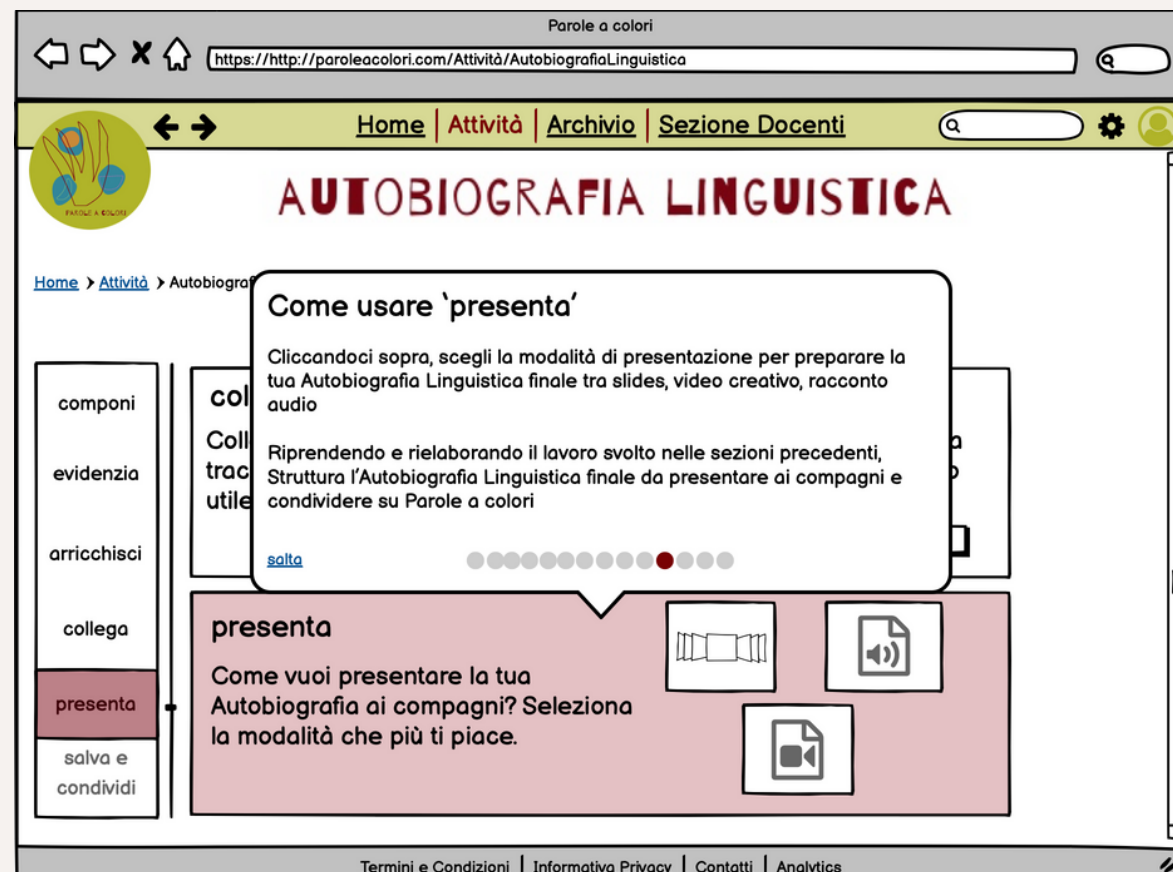
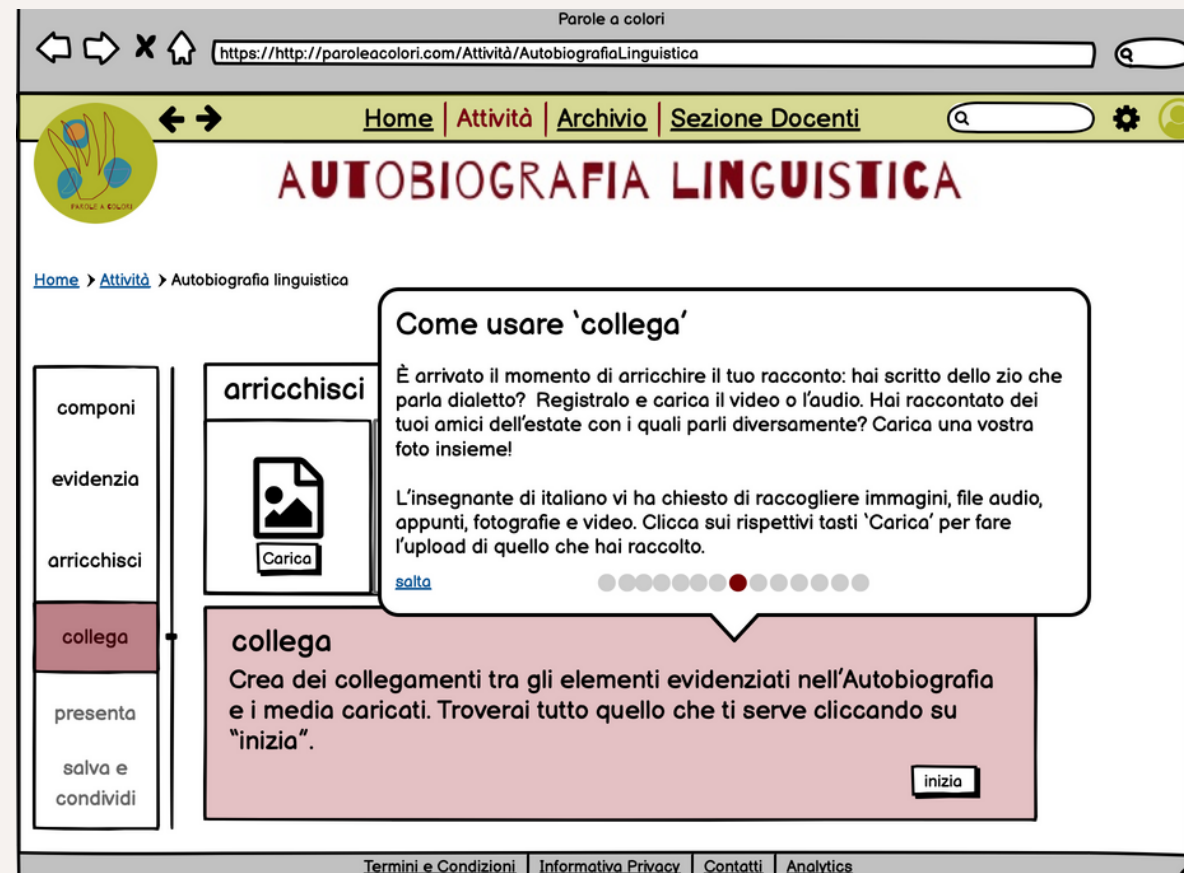
# Results

## Instance of Task Completion

Starting from the homepage, enter "Autobiografia Linguistica", and find the information that tells you what to do







# Evaluation

Aims at uncovering issues and suggestings for improvements to proceed further iterating on the design

## Usability Inspection

Three methods have been used:

1. Cognitive Walkthrough
2. Action Analysis
3. Heuristic Analysis

Version 2.0 → 4.0

## Usability Testing

"to uncover problems, to discover opportunities and to learn about users" (Moran 2019)

12 Tests made of 6 Tasks each,  
administered in Italian to recruited  
target users

Version 4.0 → 5.0

# Evaluation

## Testing Set up

Methodology	Discount Usability Testing based on Thinking Aloud Method
Testers	12 Users tested 6 males, 6 females students of Scuola secondaria di I grado 6 I grade, 3 II grade, 3 III grade
Setting and Devices	Silent room in the students' school premises Macbook Air macOS Mojave, Iphone 7 iOS 14.4 Balsamiq Wireframes 4.1.8 in testing mode
Materials	Informative sheet, pre-test form, tasks form, post-test Satisfaction questionnaire
Metrics	Formative Tests Effectiveness and Satisfaction

# Evaluation

## Metrics

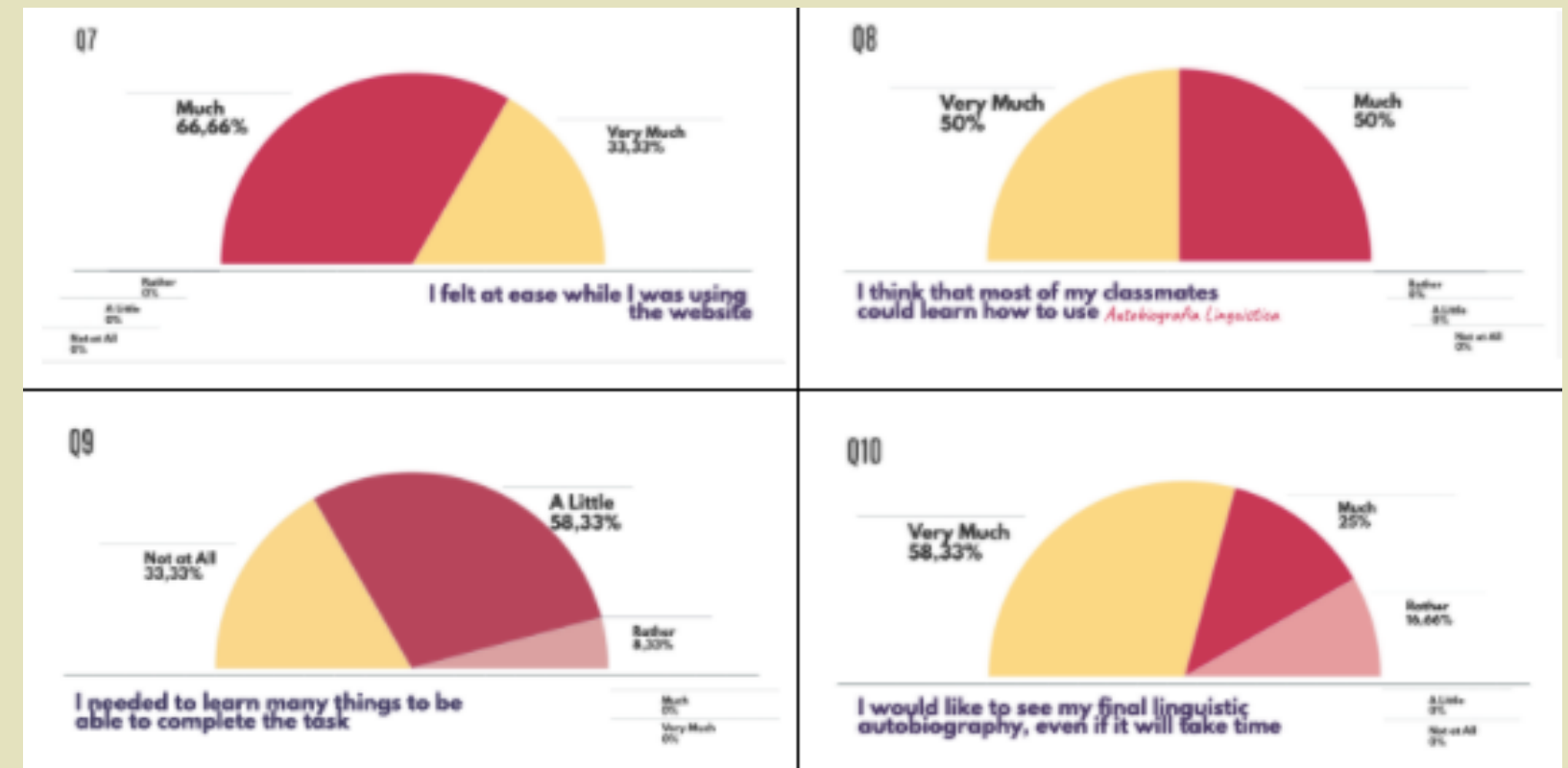
### Effectiveness

Completion of the task  
in terms of success  
(most tasks completed, with help)  
and learnability of the system

spot:  
useless steps and inconsistencies,  
backtracking and orientation

### Satisfaction

customised SUS-based questionnaire,  
10 questions, 5 levels Likert-scale

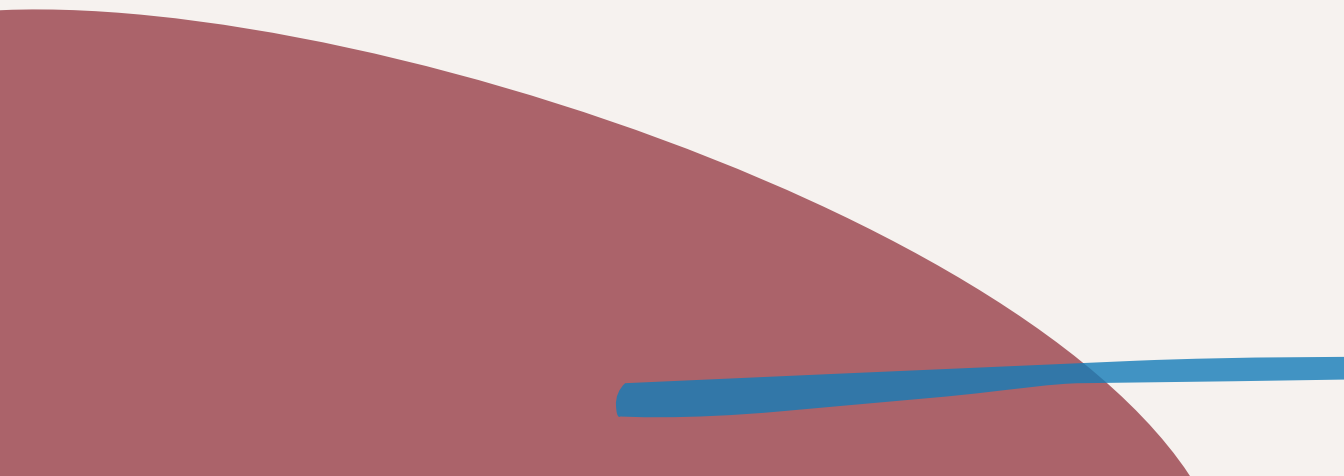




# Further Developments

Parole a Colori passed its **proof of concept** and was evaluated as a **mature design**.

However:

- further design iteration would be needed to **improve comprehension** and **increase learnability** of the system
  - working with educational contents creators and school teachers would help to refine the contents
- 

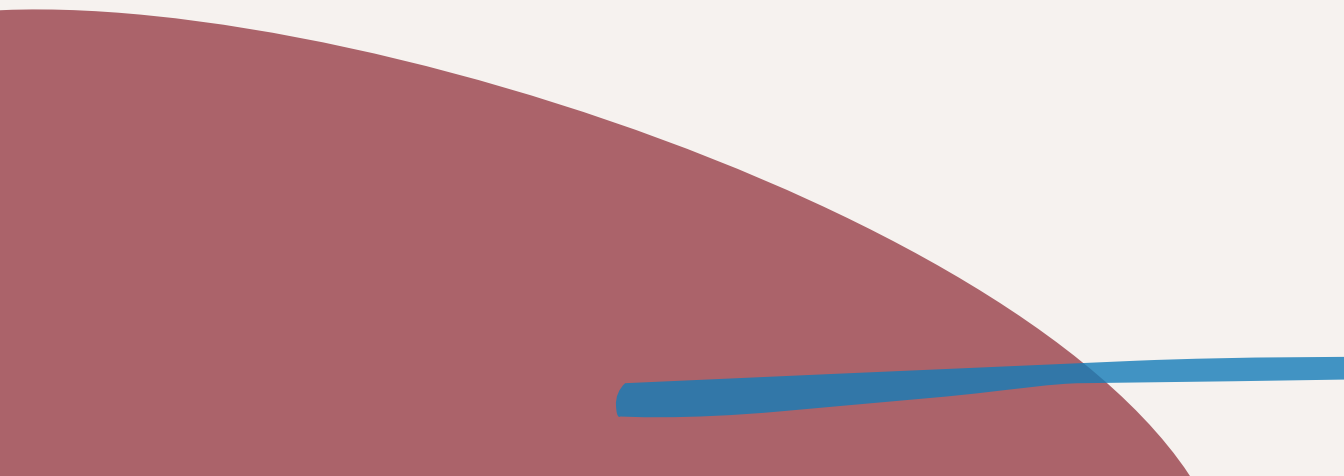
# Further Developments

and finally:

exploit this fertile ground for **co-design** and **continuous prototyping** with the users

so to:

feed the way of educational processes as **activators of collective intelligence**, where  
**problem-solving** and **sense-making** collaborate in a **solutionist perspective**



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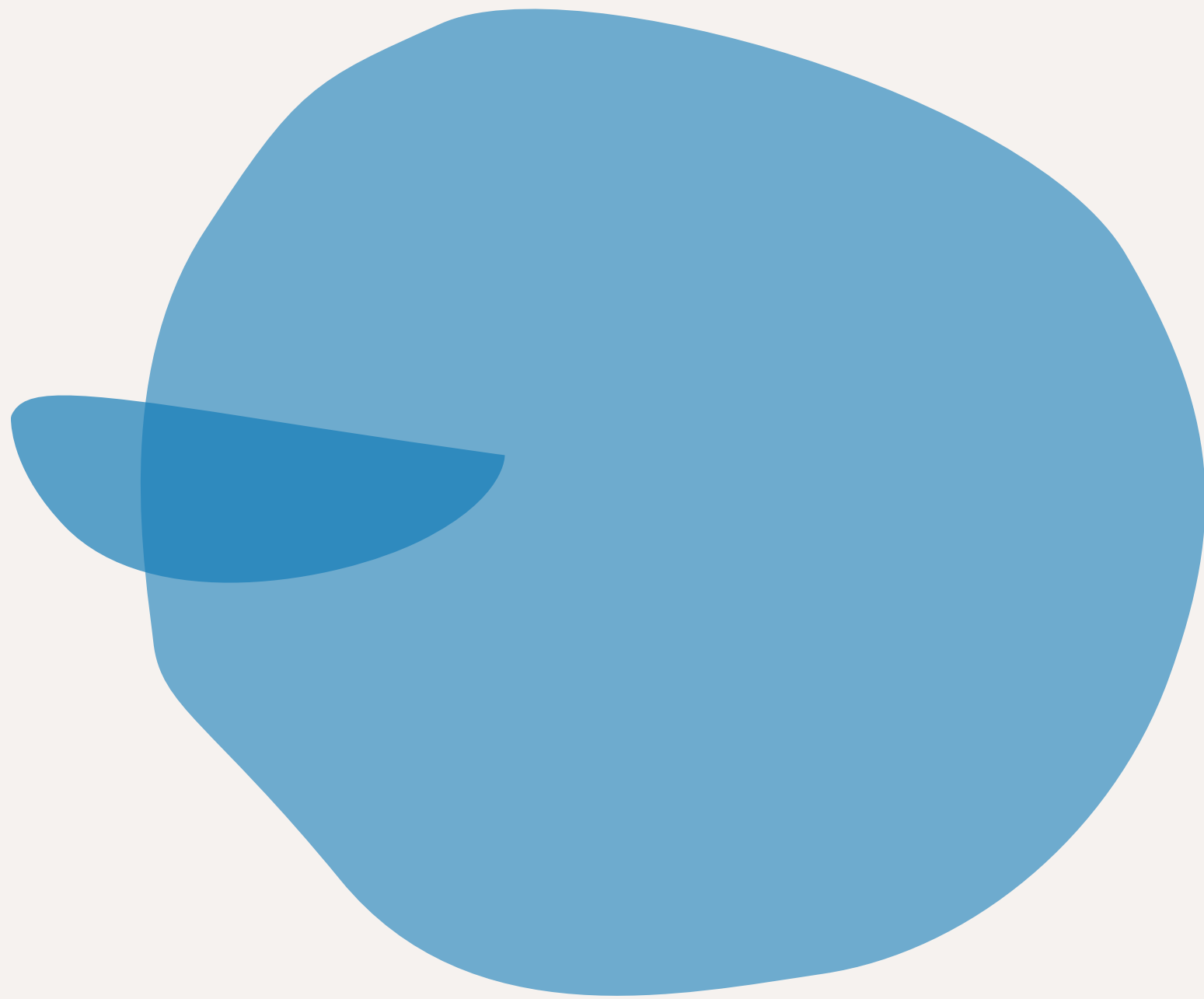
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# THANK YOU !

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