SAVE-TERRY : Design Report (HCI)

L3 Informatique (IHM = HCI)

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1. Introduction to HCI and the Save-Terry Project

Save-Terry is an educational and interactive web platform designed for children aged **5 to 10** to teach them ecological responsibility through games, reading, and social inspiration. The project is fundamentally based on the principles of **Human–Computer Interaction (HCI)**, a field that studies how digital interfaces can be designed to be ergonomic, intuitive, efficient, and psychologically safe for users.

Children at this age have high cognitive plasticity, strong curiosity, and a natural desire to explore digital environments. At the same time, research shows that excessive or unstructured screen time can negatively affect concentration, learning quality, and emotional regulation. Therefore, Save-Terry aims to transform screen time into **structured, educational, and meaningful screen time**, aligning entertainment with learning goals.

The mission of Save-Terry is simple:
Teach kids how to protect the planet through responsible digital interaction.

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2. HCI Research & Educational Philosophy

The design philosophy of Save-Terry rests on three pillars: **active learning**, **healthy screen-time habits**, and **learning through inspiration**.

2.1 Active Learning & Engagement

Studies in education show that children learn better when they are *actively* involved rather than passively watching content. (Prince, 2004)

Save-Terry applies active learning through:

• Interactive Games (Recycle Game & Clean Ocean Game)

Children drag, drop, solve, and make decisions.
This reinforces environmental knowledge rather than memorizing abstract rules.

• The Books Page

Encourages reading and calm concentration.
Based on research showing that reading improves cognitive development and empathy.

• The Heroes Page

Shows real-world ecological actions made by other kids, parents, and teachers.
Encourages children to replicate eco-friendly actions and document them.

Outcome:
Screen time becomes an opportunity for *action*, not passive entertainment.

2.2 Screen Time Awareness

Research recommends that children's digital experiences must be:
✔ Limited
✔ Structured
✔ Educational
✔ Non-addictive

Save-Terry protects children from harmful patterns by design:

- No infinite scroll
- Posts appear **latest → oldest**
- No persistent notifications
- No addictive loops

Children must **read** a post to like/dislike it, reducing impulsive interaction and promoting deeper learning.

2.3 Learning Through Social Inspiration

Based on Bandura's Social Learning Theory (1977), children learn by observing role models.

The Heroes Page leverages this by showing:

- Peers recycling
- Kids planting trees
- Teachers organizing eco-workshops
- Parents cleaning beaches

To react to a post, a child must open the **Detail Page**, which forces them to read the content (title + text + image).
This combats superficial behavior and enhances ecological understanding.

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3. Ecology Research & Adapting the Game to Real Life

To ensure Save-Terry reflects **real ecological practices** and aligns with the Algerian context, several research-driven decisions were made.

3.1 Real-Life Reflection in the Recycle Game

During research on recycling practices in Algerian schools:

- **Glass is almost never used** in primary schools.
  (Children rarely carry glass bottles or jars.)
- **Bread waste is extremely common.**
  Algeria produces large amounts of bread waste daily.

To ensure relevance and cultural authenticity:

✔ Glass was removed as a waste type.

✔ Bread was added as a recyclable/compostable organic waste.

This helps kids recognize ecological habits they can apply **in their real daily life**:

- FINISH YOUR BREAD → Prevent waste
- Put leftover bread in organic bins or give it to animals
- Understand that organic waste can be reused or composted

Kids learn **ecology through things they see every day**, making the learning process concrete and meaningful.

3.2 Real-Life Reflection in the Clean Ocean Game

The Clean Ocean Game teaches:

- Plastic pollution
- Sorting floating waste
- The importance of keeping beaches clean
- Marine life protection

Based on ecological studies, most Mediterranean pollution comes from **plastic bags, bottles, cans, and packaging**.
These are all included in the game to reflect real environmental issues children see in Algeria.

3.3 Ecological Research Used in Save-Terry

Key findings integrated into the design:

- Organic waste (like bread) can be composted or reused
- Plastic bags and bottles make up a large percentage of ocean pollution
- Teaching children ecological habits early increases long-term environmental responsibility
- Kids learn better when environmental lessons involve **action**, not just reading

Therefore:
Save-Terry transforms ecological theory into interactive child-friendly practice.

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4. HCI Design Principles Applied in Save-Terry

Save-Terry follows essential ergonomic design principles:

4.1 Constraints

- Game items fit only in correct bins → prevents errors
- Children must open detailed posts before reacting
- Fields and actions blocked unless conditions are met

4.2 Visibility

- Icons are large, colorful, and always visible
- Each page communicates its purpose clearly
    - H1 in the home page
    - H2 centered header in the rest of the pages
- Navigation is simple and consistent
    - Navigation Bar in all the pages
    - Breadcrumb Trail (file d'ariane) in the Games subpages
    - Sub Navigation Menu in the Heros page and its subpages

4.3 Feedback & Affordance

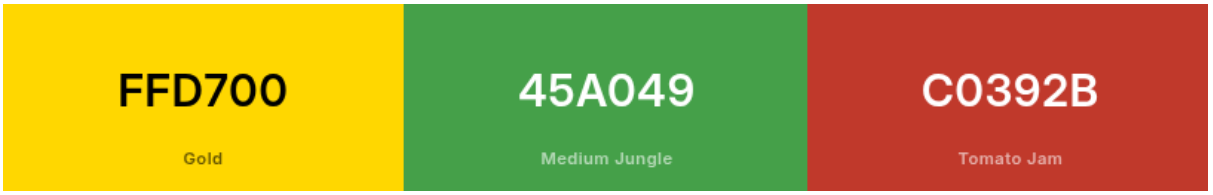
- Glows, animations, and color changes when interacting
    - Hover effects on the Nav-Bar icons
    - Page active -> correspondant icon grows
    - Screen vibrates when item is wrong sorted (Recycle Game)
- Audio cues in games
    - Success "yay" sound in Recycle game

- Ergonomic Buttons
    - Hover effect on the buttons (scaling and color changement)

4.4 Consistency

- Same color palette
    - Background

    - Buttons



- Same icons style
    - Nav Bar Cartoon/Drawings icons (kids friendly)

- Balanced Typography
    - Octosale: for the logo and buttons that navigate between pages
    - Fredoka: for the command buttons and the text overall
    - GamePaused: Fort the buttons in the games
    - In each page there's max of only 2 fonts of the ones mentioned above

- Standardized card layout for posts and books

Children recognize patterns and learn the interface quickly.

4.5 Reduced Cognitive Load

- Only one main task per page

    - Games gathered in one page only
    - Each post has it’s dedicated posts page

- Clean layout
- No unnecessary choices
- Short texts for kids
- Predictable navigation (Nav bar and Menus)

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5. Adaptive Design & Cross-Device Ergonomics

Children may access Save-Terry on:

- home laptops
- school computers
- tablets
- mobile phones

The website uses a fully responsive design with:

✔ Adapted grids

1 column on mobile, 2–3 on tablets, 3+ on desktop

✔ Touch-friendly buttons

Bigger buttons on mobile for children’s motor skills

✔ Scalable text & images

Readable typography on all screen sizes

✔ Adaptive navigation

Top bar → Desktop
Burger Menu → Mobile (thumb-friendly)

✔ Optimized games

Drag-and-drop zones scale and reposition
No frustration on small screens

Responsiveness ensures comfort, accessibility, and learning continuity.

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6. Robustness & Error Messages

Friendly, simple, non-technical messages designed for children:

Information

Toast message when clicking on games (mobile version) -> ‘Please use a laptop to Play’

Toast message when updating pfp -> ‘Profile picture updated successfully’

Errors

In Create Post -> ‘Error finding profile’ , ‘Error creating post’, ‘You must be logged in to vote’

Messages are visual, colorful, and reassuring.

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7. Graphic Charter (Charte Graphique)

Color Palette (mentioned above)

Typography (mentioned above)

Mascot: Terry the Earth

Creates emotional connection and motivation.

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8. Technologies

Frontend

HTML, CSS, React, React Router, LottieFiles
Photopia -> Games Sprite sheets

Figma -> Home’s page background

Backend (Supabase)

Authentication (email + password + email activation)
Database: posts, profiles, users, books
Storage: profile pictures, book PDFs, post images

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9. Save-Terry Main Features (Summary)

✔ Home Page
✔ Games (Recycle Game + Clean Ocean Game)
✔ Books Page (Read/Download)
✔ Heroes Page (view posts)
✔ Post Details (like/dislike only inside details → encourages reading)
✔ Register / Login
✔ Profile page (update PFP, default PFP provided)

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10. HCI Evaluation (Research Study)

// We learned about this in the last lecture before the deadline

Empirical Approach

Think Aloud

- Bring a kid and watch them how they use the platform while thinking loudly

Quantitative Questions

- How easy are the games?
- Do you enjoy the reading materials?
- How often do you visit the Heroes Page?

Qualitative Questions

- What confused you?
- What did you learn about recycling?
- Which colors or icons do you like?

This evaluation ensures the platform serves real educational value.

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11. Conclusion

Save-Terry isn't just a school project; it's a small ecosystem made to help kids learn real environmental values in a safe and fun way. Everything in the design, from the games to the Heroes page, follows HCI ideas and real ecology research. The platform mixes games, reading, and real actions to turn screen time into real learning. In the end, Save-Terry makes kids feel involved, needed, and capable of helping the planet.

12. References

Reference	Link / Access
Does Active Learning Work? A Review of the Research — by Michael J. Prince	https://hopkins-stile.med.jhmi.edu/media/Prince-2004-Journal_of_Engineering_Education.pdf?utm
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Rich Lectures and Lecture Notes By Professor Kenniche (main)

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