KidsHealth® re-design

Someone Else's Shoes

User Experience Design Project

Emmanuele Bollino
emmanuele.bollino@studio.unibo.it

Roberto Bonini
roberto.bonini2@studio.unibo.it

Tony Chahoud
tony.chahoud@studio.unibo.it

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Introduction

KidsHealth® stands as an esteemed and comprehensive online resource dedicated to promoting children's overall health and well-being. Spanning both physical and psychological aspects, the platform offers a rich repository of information, articles, and resources tailored to educate and empower parents, children, and teenagers on a diverse array of health-related topics. Encompassing physical health, mental well-being, nutrition, fitness, growth and development, common illnesses, safety guidelines, and more, KidsHealth® serves as an invaluable source of knowledge. The website's thoughtful organization into distinct sections caters to specific audiences - parents, kids, and teens. Each section ensures age-appropriate content delivery, engaging users with pertinent and captivating information. Interactive tools like quizzes and games elevate the learning experience, transforming health education into an engaging journey for young minds.

A distinctive feature is the educator section, offering materials and lesson plans for health education within schools. A hallmark of KidsHealth® is its unwavering commitment to accuracy and credibility. Every piece of content undergoes thorough review by a team of pediatric medicine professionals and experts, ensuring that the information provided is current and reliable.

The core of this endeavor revolves around refining the user experience of the ”kids” section, an exclusive space catering solely to children. Through extensive interviews and research, we have gained valuable insights into our young audience's needs, preferences, and behaviors. Developed personas mirror diverse interests, ages, and abilities, enabling us to craft an interface and content that truly resonates. Our primary objective is to transform the existing platform into a child-centric environment enriched with interactivity, vibrant visuals, and age-appropriate content. We are poised to inspire active exploration and learning by understanding children's motivations and fascinations. Safety remains paramount, with stringent measures meticulously integrated into the design. Continuous user testing involving children will validate and refine our concepts, ensuring usability, enjoyment, and meaningful engagement.

While KidsHealth® recently underwent a redesign under the auspices of its parent company, Nemours, we recognize the untapped potential to enhance the user experience further. Our exclusive focus on the child audience positions us to bridge the gap between aesthetics and functional excellence.

With an unwavering belief in the effectiveness of this renewed endeavor, we are confident that it will captivate, educate, and empower young users effectively. Our revamped website aims not only to enhance health literacy but also to establish a secure digital haven for children, fostering the development of healthy habits and comprehensive growth. The document aims to outline the process and strategy behind this redesign project, with user experience and usability at the forefront of our efforts. We are thrilled to embark on this collaborative journey with Nemours, aiming to establish new standards for health education platforms.

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Executive Summary

This document outlines a comprehensive proposal to enhance the usability and user experience of KidsHealth®. Our approach prioritizes user-centered design principles, aiming to create an immersive experience for kids aged 6 to 12, while ensuring inclusivity and informative dissemination.

Key Objectives

Our primary objective is to evolve KidsHealth® into a dynamic platform that combines informative content with engaging and educational experiences. The redesign's objectives include:

- **Structured Navigation**: Establishing logical navigation paths for simplified content discovery.
- **Interactive Engagement**: Creating interactive videos and activities that encourage active participation and learning.
- **Child-Centric Design**: Incorporating vibrant visuals, animations, and age-appropriate language for an engaging design.
- **Educational Experience**: Developing educational yet entertaining quizzes and activities to stimulate curiosity.

Target Audience and Motivations

The redesigned KidsHealth® website caters to diverse user categories:

- **Independent Explorers**: Curious children aged 6 to 12 navigate the website to learn about their bodies, self-directed learning, problem-solving, stress relief, and engagement with visual content.
- **Classroom Engagers**: Students aged 6 to 12 use the website for curriculum integration, assignment completion, interactive learning, visual and hands-on learning, and teacher-guided exploration.
- **Health-Seekers**: Children navigate the website for accurate health information, anxiety alleviation, learning about conditions, and empowerment.

Approach

Our strategy involves three phases: **Research and Analysis**, **Design and Prototyping**, and **Testing and Refinement**. This process ensures an impactful final product based on user insights.

Benefits and Conclusion

The redesigned KidsHealth® website promises enhanced usability, increased engagement, prolonged user interaction, and a stronger connection to the content. We contribute to young users' overall well-being and knowledge by nurturing curiosity and learning. We are enthusiastic about collaborating with Nemours to empower and inform young minds in a playful and meaningful manner.

Premises

The decision to embark on the redesign of KidsHealth® is anchored in a set of fundamental premises derived from a meticulous analysis of the current website's state and the evolving digital landscape in which it resides. These premises underscore our unwavering commitment to crafting an unparalleled user experience tailored to children aged 5 to 12, a demographic at the forefront of technological engagement and health education.

Shaping Evolving Expectations The digital landscape is constantly evolving, continuously raising the bar for user experience. In a world where children adeptly navigate online interfaces, the motivation for redesign stems from our aspiration to exceed expectations for interactive, engaging, and intuitive online experiences.

User-Centric Approach While the previous redesign by Nemours enhanced aesthetics, there is room for a deeper alignment of visual appeal with user functionality. Our dedication to user-centered design drives us to bridge this gap, creating an interface that captivates visually and operates effectively, tailored to the needs and preferences of young users.

Insights from the Audience Our design choices are grounded in extensive audience analysis, encompassing interviews, behavioral patterns, and persona development. These insights lay the foundation for understanding the unique characteristics of children aged 5 to 12, serving as cornerstones for the redesign's meticulous construction.

Elevating Engagement The present website's structure, while informative, poses challenges in sustaining children's engagement and promoting active exploration. The redesign premises include integrating interactive elements, age-appropriate content, and an aesthetically pleasing layout to captivate young minds.

Refined Information Architecture Feedback has revealed content organization deficiencies, leading to repetition and navigation complexities. The premises emphasize overhauling the information architecture to provide a seamless and intuitive navigation experience.

Security and Privacy Assurance Given the vulnerability of the target audience, paramount importance is placed on ensuring a secure online environment. The redesigned premises encompass stringent security measures and adherence to privacy guidelines, safeguarding children's well-being in the digital realm.

Amplifying Educational Impact The redesign aspirations extend beyond aesthetics and functionality. Our ultimate aim is to amplify the educational impact of KidsHealth® by transforming it into a platform that imparts information and sparks curiosity, empowering children to engage in health education that is engaging and memorable.

Guidelines and Heuristics As we evaluated existing resources, we extracted guidelines and heuristics [Section 2.1.1] from renowned usability experts, specifically from the ten heuristics of Nielsen and Molich [Molich and Nielsen, 1990, Nielsen and Molich, 1990, Nielsen, 1994a, Nielsen, 1994d], and the 20 heuristics of Weinshenk and Barker [Weinschenk and Barker, 2000]. These principles serve as cornerstones guiding the redesign process.

In synthesis, the premises for redesigning KidsHealth® are underpinned by the evolving digital landscape and resolute user-centric principles.

Chapter 1

Ethnographic Research

Our mission revolves around redesigning the KidsHealth® website, tailored to address the unique needs and interests of children aged 5 to 12. Our primary objective is to create an online environment that is both engaging and educational, effectively delivering health-related information to children interactively and enjoyably. By gaining profound insights into children's cognitive abilities and preferences, we seek to optimize the website's design, layout, and content presentation. This optimization ensures that the website is user-friendly, understandable, and easy to navigate for our young audience. To achieve this goal, we will employ visually appealing elements, interactive features, and appropriate language for children of different ages. Throughout the redesign process, our approach will be guided by guidelines and best practices that promote simplicity and intuitive usage for children. We are dedicated to crafting an interface that captivates children's attention, prioritizes readability, and incorporates accessibility features to make the website inclusive for children with diverse abilities. By focusing on enhancing the user experience for children on the KidsHealth® website, we are committed to creating a platform that empowers children to make informed decisions about their health and well-being.

In this section, we will delve into the exploration of users and the associated services.

1.1 Segmentation

We have employed a segmentation strategy to create a comprehensive understanding of the diverse user base of KidsHealth®. This strategy categorizes users into subgroups based on demographic, psychological, and sociological context characteristics. This approach allows us to gain a deeper understanding of each subgroup's nuanced needs and preferences, which in turn enhances our ability to tailor the redesign to meet their specific requirements. While KidsHealth® serves a variety of users, our primary focus will be on the kids' sub-site. Thus, the segmentation is centered on the initial target group of children of both genders, aged 5 to 12.

1.1.1 Demographic Segmentation

Age Range and Educational Background

- *Early Childhood Explorers (Age 5-7)*: This subgroup comprises children embarking on their educational journey. They possess high curiosity and a preference for visual and interactive content. Given their developing cognitive abilities, they benefit from simplified language and engaging visuals.
- *Middle Years Learners (Age 8-10)*: Children in this category have a firmer grasp of language and cognitive skills, enabling them to engage with slightly more complex content. They are inclined to explore topics related to their interests and are open to interactive activities that challenge their understanding.

- *Pre-Adolescent Investigators (Age 11-12)*: As children approach adolescence, they become more conscious of their identity and experience a growing sense of independence. They can comprehend advanced health concepts and show interest in exploring content aligned with their evolving interests and concerns. To address their specific needs regarding their bodies and development, this subgroup can be further divided based on gender.
  - *Pre-Adolescent Boys (Age 11-12)*: This segment addresses the challenges and questions pre-adolescent boys may encounter regarding their bodies and development.
  - *Pre-Adolescent Girls (Age 11-12)*: Similarly, this segment is designed to provide relevant information and support related to the bodies and development of pre-adolescent girls.

1.1.2 Psychological Segmentation

Early Childhood Explorers (Age 5-7)

- *Curious Discoverers*: Children in this group possess an innate curiosity about the world around them. They are eager to explore and learn through interactive experiences. The content should be designed to spark their imagination and encourage playful exploration.
- *Visual Learners*: Early Childhood Explorers tend to be visual learners, relying heavily on images and engaging visuals to understand concepts. Content should be visually appealing, utilizing vibrant colors and engaging illustrations to capture their attention.
- *Imaginative Thinkers*: These children have vivid imaginations and enjoy storytelling. Incorporating stories, animated characters, and imaginative scenarios can make the learning experience more engaging and relatable for them.

Middle Years Learners (Age 8-10)

- *Inquisitive Minds*: This group is characterized by its inquisitive nature. They ask questions and seek to understand the ”how” and ”why” of things. Content should encourage critical thinking and provide deeper insights into health-related topics.
- *Explorers of Interests*: Middle Years Learners are likelier to have specific interests they are passionate about. The content can be designed to align with their interests, encouraging them to explore health concepts through topics they are already enthusiastic about.
- *Hands-On Learners*: These children enjoy hands-on experiences and interactive activities. Incorporating quizzes, games, and activities that require active participation can enhance their engagement with the content.

Pre-Adolescent Investigators (Age 11-12)

- *Identity Seekers*: Pre-Adolescent Investigators are in the process of understanding their identities and seeking to comprehend themselves better. The content can address topics related to self-esteem, body image, and personal development to aid them in navigating this transitional phase.
- *Critical Thinkers*: This group is capable of more critical thinking and analytical reasoning. They appreciate content that challenges them to think deeper and consider multiple perspectives on health-related matters.
- *Empathy and Social Awareness*: As pre-adolescents become more attuned to the world around them, content that promotes empathy, inclusivity, and social awareness can resonate with their evolving values and attitudes.

By aligning the psychological segmentation with the specific developmental characteristics of each group, the redesign can cater to their unique psychological needs, preferences, and learning styles. This approach ensures the platform provides a personalized and engaging experience that resonates with each subgroup.

1.1.3 Sociological Context Segmentation - School and Home Environment

Recognizing the impact of a child's upbringing and educational environment, we aim to segment the kids' group based on the sociological aspects of their school and home environment. It's important to note that our focus is on understanding how these factors may influence user behavior without making assumptions about children's abilities or interests.

School-Dependent Engagement

- Structured Curriculum: This subgroup includes children who are part of education systems with a highly structured curriculum. They are accustomed to standardized learning materials and may prefer content that aligns with their school's teaching methods and curriculum.
- Montessori Learners: Children in this segment have experienced Montessori-style education, emphasizing self-directed learning and hands-on activities. They may gravitate towards content that encourages exploration and discovery, with a focus on interactive elements.

Home Environment Influence

- Parent-Guided Learners: This group comprises children whose home environments are characterized by active parental involvement in their education. They often receive support and guidance from parents or caregivers in their educational pursuits. Content that encourages parent-child interaction and involvement may be appealing to them.
- Self-Directed Explorers: Children in this segment come from homes where independent learning and exploration are encouraged. They have the freedom to explore topics on their own, fostering self-reliance and curiosity. Content that promotes self-directed learning and critical thinking may resonate with them.

This sociological segmentation is designed to help us understand how different aspects of a child's school and home environment, including distinct teaching systems like structured curricula and Montessori education, may influence their interaction with the website. We aim to create a platform accommodating various learning preferences and backgrounds, ensuring inclusivity for all children.

Internal Focus vs External Factors: Recognizing the multifaceted nature of children's learning experiences, we aim to segment the kids' group based on internal elements related to user behavior and learning style. It is essential to underscore that our approach prioritizes internal factors, but we also consider external factors, such as parents' education, during our fact-finding interviews.

However, it's crucial to acknowledge the complexity of sociological factors, including cultural backgrounds and diverse social environments. These factors can significantly influence a child's learning journey. Due to the inherent limitations of our research scope, which involves a specific sample group, we refrain from making broad assumptions about children's abilities or interests based solely on their parents' education.

Our primary goal is to gain insights into children's cognitive setups and learning behaviors. While we recognize the importance of sociological context, we must exercise caution when interpreting our findings, as the specific characteristics of our study participants may influence them. Our commitment remains centered on creating an inclusive website that caters to a wide range of children's needs, regardless of their backgrounds or regions.

Psychological Segmentation: Validating Hypothesis

While psychological segmentation provides an initial hypothesis, its accuracy will be validated through upcoming interviews and research. Insights gathered from these interviews will be pivotal in confirming or refining the psychological segmentation. This ensures that the final segmentation accurately represents the target audience's diverse psychological characteristics, learning styles, and preferences.

1.1.4 Fact-finding Interviews

Fact-finding involves conducting direct interviews with users within their natural environments to gain authentic insights into their behaviors and experiences. In this redesign project, we have interviewed children aged 5 to 12 to illuminate their viewpoints, needs, and preferences regarding online health education platforms. The outcome of these interviews aims to achieve several crucial objectives:

- *Alignment with Target Segments*: Assess whether the identified segments align effectively with our service's essence and represent the appropriate target audience.
- *Demographic Nuances*: Ascertain the presence of any pronounced demographic disparities that could potentially influence distinct needs and preferences related to our envisioned service or establish shared characteristics.
- *Primary User Expectations*: Uncover the fundamental expectations held by our prospective users towards a children's health website. These insights will lay the foundation for subsequent phases of the design process.

Methodology

- *Participant Selection*: Participants were chosen to represent the diverse age range within the target audience. The interviews were conducted with Early Childhood Explorers (5-7), Middle Years Learners (8-10), and Pre-Adolescent Investigators (11-12).
- *Question Design*: The interview questions were strategically designed to elicit information about participants' digital experiences, learning preferences, interactions with health-related content, and feedback on existing online platforms.
- *Interview Setting*: Interviews were conducted in comfortable and familiar environments for the participants, allowing them to feel at ease and express their thoughts openly.

These interviews lay the foundation for our user-centric design approach. They serve as the building blocks upon which subsequent stages of the design process will be meticulously constructed. By directly engaging with our target audience, we intend to uncover insights that transcend assumptions, propelling us toward creating a redesign that caters to the real-world needs of children aged 5 to 12.

Interview Questions

A. General Questions

A1: How old are you?
A2: What grade are you in at school?
A3: Do you have a device like a computer, tablet, or phone? Can you use it, and are there any rules or limits?
A4: If you have more than one device, which one do you like to use most and why?
A5: What apps do you use and like? What do you like about them (how they look, what they do, or the content)?

B. Interests and Personality

B1: What do you like to learn about?
B2: Do you have any favorite TV shows, movies, or games you like?
B3: What do you like to do for fun when you're not at school?
B4: Would you say you're quieter or more outgoing?
B5: Are there any things that make you feel worried or scared? If so, would you like some help to deal with those things?

C. Learning Style

C1: Do you like to learn through videos, reading, or other ways?

C2: Have you ever watched a video that teaches you something new? Do you prefer videos with cartoon characters or videos with adult teachers?
C3: What's your favorite way to learn new things?
C4: What makes it easier for you to understand new information?
C5: Do you like to learn by yourself or with others?

D. Parental Education

D1: What's the highest level of school your parents finished (like high school, college, or beyond)?
D2: Do your parents care about education and want you to do well in school?
D3: Do your parents talk to you about how your body works and how to stay healthy?

E. Website's content

E1: Have you learned about the human body in school yet?
E2: Would you like to learn new things about how your body works through fun videos?
E3: Do you enjoy taking quizzes or playing games to test your knowledge after learning something new?
E4: Do you know what number to call in an emergency if you need help with a health problem? What about if you're in danger?
E5: Have you ever felt stressed because of things happening at home or school?
E6: Do you get nervous when you have to go to the doctor or take a medical test? Would it help to watch a video explaining what will happen so you're not as nervous?
E7: Do you think taking care of your feelings and mental health is important?

F. Pre-adolescent Questions

F1: Do you know what puberty is?
F2: Have you noticed any changes happening to your body?
F3: Do you have any questions about puberty that you'd like answered?
F4: How do you think growing up will affect your life?
F5: Do you feel like you have someone you can talk to about growing up and puberty? Who is it?

Overall Findings from Fact-finding Interviews

All the answers to these interviews can be found in appendix A. The interviews with children aged 6 to 12 have yielded valuable insights into their interests, behavior, and learning styles. These findings validate and refine the demographic and psychological segmentation, considering each age group's specific characteristics and preferences.

Conscious Interest and Independence

Upon analyzing the results of the interviews, a noteworthy insight emerged regarding the inclusion of children aged 5 in our target audience. It became evident that 5-year-old kids possess a range of interests, behaviors, and technological engagement patterns that distinguish them from slightly older children. They need more welfare and active consciousness on health topics. They have yet to reach a maturity level that motivates them to engage in these arguments actively. Moreover, their usage of electronic devices, although present, is often under the supervision and guidance of parents or caregivers. The level of independent engagement with online platforms, including educational ones, tends to be limited for this age group. Considering these factors, we have decided to exclude the age group of 5-year-old kids from our target audience. This decision is rooted in the observation that children aged six and above exhibit more substantial independence in accessing and interacting with digital content, aligning more closely with the objectives of the redesign. As a result, the refined target audience includes children aged 6 to 12.

Interests and Behavior

Analysis of responses from children aged 6 to 12 revealed various interests, hobbies, and activities that engage them outside school. The interests can be categorized into two distinct groups:

- **Explorers (Age 6-9)**: Children within this group displayed a strong inclination for imaginative play, cartoons, interactive activities, and the exploration of various subjects. Their curiosity and

desire for exploration were notable traits.

- **Investigators (Age 10-12)**: This group showed growing interest in self-expression, social issues, and more complex concepts. They were curious about their own bodies, development, and the broader world.

Learning Styles

The interviews also offered insights into the preferred learning styles of children within each age group:

- **Explorers (Age 6-9)**: These children favored interactive and visual learning experiences. They responded positively to playful interactions, enjoyed storytelling content, and engaged well with materials that sparked their curiosity.
- **Investigators (Age 10-12)**: Children in this category expressed an affinity for critical thinking and analysis. They responded well to content that challenged their understanding, encouraged exploration of different perspectives, and supported their burgeoning curiosity about their changing bodies and social dynamics.

While the initial psychological segmentation provided insights, the analysis of interviews led to a refinement in the number of sub-groups from three to two. What became evident is that children's characteristics tend to be more fluid. Therefore, we opted to create two broader groups encompassing the initial groups' characteristics while accommodating traits of slightly older or younger children. This acknowledges the natural development progression and the overlapping features within adjacent age ranges. While children of 7 may share characteristics with those aged 8 or 9, the distinction between children aged 11-12 and those aged 6-7 remains pronounced, particularly concerning self-awareness and engagement with social issues.

1.1.5 Segmentation, Engagement, and Redesign

The insights gained from the interviews have validated our segmentation strategy and refined it to better align with the evolving interests, behaviors, and learning styles of children aged 6 to 12. This approach acknowledges the fluidity of children's development and ensures that the redesign addresses their needs and preferences more accurately.

The segmentation now encompasses two distinct age groups: Explorers (6-9) and Investigators (10-12). The division into these groups considers the onset of puberty, resulting in a distinct curiosity about physical changes and body-related topics for the Investigators. The Explorers' inclination toward imaginative play and interactive learning harmonizes with their categorization. Similarly, the Investigators' growing interest in self-expression, social issues, and critical thinking aligns well with their segmentation.

Remarkably, the decision not to include parental education as a segmentation factor is grounded in the observed consistency of children's interests and behaviors, independent of their parents' educational background. This reflects the accessible nature of information to children through various means, encouraging independent engagement with educational content.

Collectively, these insights provide a solid foundation for the redesign process, ensuring that the revamped KidsHealth® website caters effectively to the unique needs, interests, and learning styles of the two distinct age groups. The revised segmentation serves as the guiding principle for the subsequent phases of the redesign journey, allowing us to craft a platform that resonates authentically with the target audience.

1.1.6 Designing for Engagement and Universality

The interviews have unearthed consistent engagement patterns and behavior spanning all age groups. Irrespective of their age, every child showed a keen interest in learning about the human body through engaging and entertaining content, such as fun and cartoon videos. While most children were inclined towards this visual and interactive medium, one 11-year-old girl preferred

videos featuring adult educators. The concept of participating in activities and quizzes was met with widespread enthusiasm, signifying a positive resonance with interactive learning experiences.

Notably, the implications of parental education level on children's interests were limited, as the interviews revealed consistent engagement patterns regardless of educational background. Moreover, most children demonstrated a need for knowledge on responding to potentially dangerous situations at home. Although they were familiar with specific emergency numbers, the purpose of these numbers remained unclear. The fact that some children would rely solely on their parents in times of need underscored the necessity for comprehensive guidance and information.

While most children recognized the importance of mental health, discussions around this topic were generally infrequent at home. Parental advice focused more on dietary habits and clothing choices than emotional well-being. Interestingly, younger children exhibited little concern about stressful situations, while older ones were inclined to seek information about coping with such challenges.

1.1.7 Crafting an Inclusive Redesign

Guided by the insights garnered from the interviews, our redesign strategy is rooted in creating a KidsHealth® website that seamlessly aligns with the preferences and behaviors of its young users. Although we have identified two primary user segments, our overarching goal is to develop a platform that remains universally accessible, inclusive, and secure for all children.

This holistic approach involves a range of design approaches that cater to the unique needs of each segment while maintaining a cohesive user experience. Our redesign ensures that the website design respects the distinct characteristics of both Explorers and Investigators, providing tailored elements that enhance engagement without alienating other users. A unified design across the platform guarantees consistency, while the content is structured to suit the preferences of each group.

One section of the website will be dedicated to interactive content such as videos, quizzes, and activities centered around the human body. Simultaneously, an article section will house topics of interest, organized to facilitate easy access while aligning with the learning styles of each group. Prom captivating catchphrases, visuals, and presentation styles will enhance engagement, making subjects relatable and exciting.

The design's cornerstone is simplicity and intuitive navigation, ensuring that children of diverse ages and backgrounds can independently access information. This commitment to inclusivity extends to features that make the website accessible to children with varying abilities, ensuring educational content is available to all.

Moving forward, these insights will be leveraged to create prototypes and content tailored to the distinct needs of each segment. Continuously referencing the findings from the contextual inquiry, we aim to ensure that the redesigned KidsHealth® website effectively addresses the preferences and behaviors of its young users. We aspire to foster health literacy and positive well-being among children aged 6 to 12 through an interactive, educational, and empowering platform.

1.2 User Research

1.2.1 Gathering Information

1.2.1.1 Contextual Inquiry

Premises: The Contextual Inquiry phase was meticulously carried out using a semi-structured interview approach, featuring open-ended questions that delved into user goals, tasks, challenges, and overall experiences with the KidsHealth® website. Participants were selected from those previously engaged in structured interviews during the segmentation process, ensuring a comprehensive representation of our target audience.

Visits were meticulously scheduled under parents' consent, in the comfort of the kids' homes where they could use their devices. Interviews were recorded, always with parental approval, and the

analyst diligently took detailed notes.

An introduction was optional since the kids were already familiar with the analyst from participating in the segmentation interview process. However, a brief description of their role and the context for their interactions was shared with them.

The analyst maintained a keen observational stance throughout the interaction, closely noting participants' actions, hesitations, and non-verbal cues as they interacted with the website. The kids were encouraged to navigate the website freely and were also guided to execute specific tasks that were designed to uncover particular insights.

After each active session, a probing phase ensued, during which the kids were engaged with open-ended questions. This served to extract additional insights, validate the observations made by the analyst, and ensure a holistic understanding of the user experience.

By meticulously following this approach, we gained in-depth insights into users' interactions, challenges, and emotions while engaging with the KidsHealth® website. These findings have paved the way for user-centric enhancements aligned with our valued users' needs and preferences.

Objectives: The contextual inquiry aimed to assess the user's ability to perform tasks based on their interests and the website's ease of use. The study aimed to understand the user's task completion process, steps taken to achieve goals, and their emotional responses during interactions with the website.

Alessandro's (9 years old) Findings: Interaction with the Website

Free-Active Interaction 1: Alessandro's primary goal was to watch a video and complete a related quiz. He initiated the interaction on the KidsHealth® homepage, quickly locating the "For Kids" button. Upon viewing the list of available topics, he paused to determine which section to explore. He eventually reached the kids' homepage by clicking "Kids Home." Alessandro interacted with the carousel, stopping its animation to read the text and decide where to click. He selected the "How the Body Works" image from the carousel and clicked "Get Started." He only explored part of the page and skipped other sections. The user was redirected to the "How the Body Works: Movies" page, where a list of videos was displayed. Alessandro enjoyed the animations and characters in the video "How Bones Work." After watching the video, he clicked the "How the Body Works: Quizzes" link and chose the first link, a Bone-related quiz. Despite clicking the quiz link with little thought, he answered questions. He accidentally clicked "back" but quickly returned to the correct question. Alessandro did not attempt to scroll within the quiz window. He occasionally scrolled the page rather than the quiz windows during quiz result viewing. After completing the quiz, he clicked the "Activity" button, realizing it was non-interactive, and used the tablet's OS back button to return to the previous page.

Probing Session and Considerations 1: In the follow-up session, the analyst engaged Alessandro further to understand his navigation, behavior, and overall feelings. Open-ended questions were used to delve into his experience.

Open-ended Questions:

- Describe how you reached the "How the Body Works: Movies" page and share your impressions of the video. Did you encounter difficulties completing tasks like getting the kids' homepage, finding the movies page, or playing a video?
- Narrate your overall experience while working on the quiz/activity.

Alessandro's navigation experience was smooth, primarily in landscape mode, but he faced challenges when accidentally switching to portrait mode. He sought assistance to open the navigation burger menu on the homepage. He mentioned his approach to using the carousel, pausing the animation to click on a relevant link. He acknowledged that the carousel design might not be optimal as it delayed access to the desired content. Alessandro understood that he needed to wait for the right image before clicking on the carousel link, even if he missed the timing on the second attempt. He expressed enthusiasm for the video content, appreciating the animation and characters. During the

quiz, he adapted to not knowing the total question count. He suggested larger selection areas for quiz answers and proposed including additional hints about answers. Alessandro's experience with the activity page highlighted the need for an explicit "back" option, as he used the tablet's OS back button.

Free-Active Interaction 2

Premise: Following the initial free-active interaction, Alessandro found himself on the "Quiz: Bones" page, from which he navigated back to the kids' homepage using the browser's "back" button.

Interaction: Alessandro's goal was to explore and read an article during this interaction. He encountered challenges and frustrations during this session. He began by attempting to interact with an image above the "Body questions and answers" title, but no feedback was provided as the picture was non-interactive. He then scrolled down the page and clicked on the "What's a booger" link, which led him to the associated article. While reading the article, he was drawn to the "more on this topic" list, prompting him to click "What's spit." After reading the article about spit, Alessandro expressed interest in taking a quiz related to the article. However, he discovered that the website did not offer such a quiz. Also, he asked about a video about saliva, but unfortunately, no related video was available. Frustrated with the navigation, he used the browser's back button twice to return to the kids' homepage. He watched a miniature video about "How to clean your hands" and clicked on the same tile, but no feedback was provided. To access the related article, he realized he needed to click on "Find out more." Overall, Alessandro needed help to locate the specific sections he was interested in, leading to frustration.

Probing Session and Considerations 2: In the following probing session, Alessandro was asked open-ended questions to explore his experience and emotions during this interaction.

Open-ended Questions:

- Describe your actions during this session, highlighting your challenges.
- Would you please share your feelings about the article you read?

Alessandro's approach to reading an article appeared random as he explored different links and ended up reading the article about spit. Navigational difficulties were more pronounced compared to the first free-active session. He encountered issues when attempting to interact with an image and a title that needed to provide feedback or lead to the expected pages. Despite the navigation challenges, Alessandro demonstrated a keen interest in the content and read the entire article about spit. He expressed disappointment over the absence of a quiz related to the theme and the need for a corresponding video. This insight could guide the redesign by suggesting the addition of more quizzes and videos on topics that would engage young users.

Driven-Active Interaction 1

Premise: After analyzing the initial free-active interactions, the analyst aimed to explore Alessandro's navigation patterns in-depth and understand his frustrations. For this purpose, two specific tasks were assigned: Finding the page with body-related information (videos, articles, quizzes, and activities divided by body parts). These tasks aimed to uncover insights into navigation challenges and user experiences.

Interaction: For the first task, Alessandro began by reaching the kids' homepage then clicking on the carousel link as he did in the initial free-active interaction. However, he landed on a page that didn't match the desired description. Despite the option to click on the left side link, he clicked on the navigation bar's "For Kids" button and "How the body works," leading him to the correct page. On this page, he explored options to access quizzes and activities through the carousel or by selecting specific body parts to watch related videos and perform quizzes or activities. He engaged with the carousel, eventually realizing that each image represented different content types.

After completing the first task, Alessandro was instructed to perform the second task of reading an article about stress relaxation. He initially struggled to locate the article but eventually found it after returning to the kids' homepage and navigating via the navigation bar. He expressed interest in

the article's content, particularly about homework-related stress. He clicked on the "homework" link within the article but did not finish reading it, instead clicking on the "Organize, Focus, Get it Done Quiz" link. During the quiz, he accidentally clicked on "continue" but had no "back" button to navigate back.

Probing Session and Considerations 3: A probing session was not conducted after this interaction, as the analyst drove the tasks, and Alessandro's actions and thoughts were observed without further questions. Alessandro appeared visibly tired or disinterested in additional duties. The findings from the driven-active interaction highlighted several insights: Alessandro encountered challenges in navigation and finding requested pages, leading to frustration. He had expectations about reaching specific pages based on prior interactions but was disappointed when the pages differed. The carousel on the "How the Body Works" page did not provide clear guidance on accessing videos, articles, quizzes, and activities. Task 2 revealed that Alessandro needed a more precise mental model of the website, as he returned to the homepage before locating the desired section. The content of the "Relax and Unwind" section interested him, particularly regarding stress related to homework. His performance during the quiz emphasized the need for adjustments, such as adding a "back" button. Inconsistencies in quiz design (back button vs. continue button) highlighted the importance of maintaining design consistency.

Karol's (11 years old) Findings: Interaction with the Website

Free-Active Interaction 1: The participant was interested in reading articles rather than watching videos about the human body while interacting with the KidsHealth® website. Her session unfolded as follows: Karol started on the website homepage, where she explored various sections by clicking on the carousel and inspecting the different offerings. After this initial exploration, she clicked on the "For Kids" link, leading her to the kids' homepage. On the kids' homepage, Karol reviewed the entire page and decided to watch the video about dwarfism featured on the homepage. She watched the whole video. Following the video, she scrolled up and clicked on the image about "Organize, Focus, Get It Done" without receiving any feedback. She then clicked the "How it works" link to read the corresponding article. Although she read the entire article, it appeared to be done quickly, with some sections skipped. The length and organization of the page may have contributed to her pace or lack of interest in certain parts. Karol returned to the homepage and opened the link titled "What causes hiccups." Notably, this article was shorter, and she appeared to read it more consistently, indicating a more profound interest in the topic. She then navigated back to the homepage and, at the bottom in the "Icky Q&A" section, expanded the "Why do feet stink" list and clicked on the "why" link. She read the rather lengthy article, yet again, her approach seemed selective, focusing on bold words and list-like sections.

Probing Session and Considerations 1: Similar to the first participant, Karol underwent a semi-structured interview with open-ended questions to delve deeper into her experience and validate the analyst's observations. The open-ended questions mirrored those posed to the first participant, including:

- Would you please describe what you did, recalling what you struggled with the most?
- Describe your feelings about the article(s) you read.

During the probing session, Karol provided insights into her navigation choices and experiences: She explained her steps to reach the kids' homepage, which aligned with the website's structure. Karol clarified her motive for watching the video on dwarfism, expressing curiosity about the lives of people with dwarfism and their challenges. Her interaction with the first article revealed that she initially clicked on the image, mistaking it for a video. However, she soon recognized video play buttons and adjusted her expectations. Her decision not to read the entire article stemmed from a lack of relevance to her environment. Karol indicated that she skipped parts of the article she deemed unimportant and gravitated toward specific sentences that caught her attention, like "keeping away your devices," which contrasted with her habits. She noted that the article's organization could be improved, suggesting including images near the text to aid comprehension. She expressed no discomfort with article length but desired more interactive features, although she couldn't specify them during the session. She urged the analyst to incorporate such elements.

Karol's interaction with the website revealed her preference for explorative and less structured navigation. She engaged with content that piqued her interest, particularly on the homepage. While she read extensively, she also noticed the absence of interactive elements, indicating her willingness to embrace more engaging features on the website.

Semi-Driven-Active Interaction 1

Premise: Following the first free-active interaction and observing the participant's homepage-focused approach, the analyst tasked the participant with finding an article about puberty and growing up. Although initially intended to be a driven-active interaction, the participant's inquisitive nature led to additional actions during the session, making it a semi-driven interaction.

Interaction: The participant began the interaction on the website homepage, then navigated to the kids' homepage as she had done previously. Notably, she was using the tablet in portrait mode. She meticulously explored the entire kids' homepage but found no content related to the requested topic. Her confusion was evident as she appeared unsure about where to click. She attempted to open a link on the homepage, "How do casts work," and although it wasn't part of the requested task, she read the entire article. Returning to the kids' homepage, the participant interacted with the carousel play button, assuming it would play a video. However, she encountered difficulties and could not proceed with the assigned task. The analyst intervened by rotating the tablet into landscape mode, which immediately clarified the navigation for the participant. In landscape mode, she clicked the "For kids" button in the navigation bar, reviewed all the topics, and selected "Puberty and Growing Up." She then opened the second expandable list and chose to read the "All About Puberty" article, once again reading it in its entirety.

Probing Session and Considerations 2: In the probing session following this second active session, the analyst sought to gain insights into the participant's steps and overall experience. Key takeaways from the session included: The participant expressed that while using the tablet in portrait mode, she had not noticed the burger menu button and acknowledged the analyst's assistance in continuing the interaction and completing the task. She found the inappropriate use of the play button in the carousel, which didn't align with the functionality of other play buttons meant for video playback. The participant voiced dissatisfaction with the repetitive nature of content in the "Puberty and Growing Up" section, where similar articles were featured in multiple lists, such as "Body Stuff," "Body Hair," and "Breasts & Bras." She mentioned that the "All about Puberty" article felt too long, causing potential fatigue. She expressed a lack of interest in reading about the puberty changes boys experience, indicating a preference for content tailored to her interests. The participant suggested that her overall experience could have been enhanced by offering content more aligned with her interests or gender. She found the extensive lists of available topics in the "Puberty and Growing Up" section, with repeated topics, distracting and time-consuming.

This semi-driven-active interaction highlighted the participant's need for tailored content and more intuitive navigation. It also emphasized the importance of providing relevant and concise information for users of different age groups and interests.

1.2.2 Task Analysis

Task analysis is a fundamental method employed in human-computer interaction (HCI) and user experience (UX) design to dissect and understand users' intricate processes to accomplish specific goals or tasks within a system. Its primary purpose is to provide valuable insights into users' actions, behaviors, and cognitive functions, enabling the creation of user-friendly and efficient systems.

In our UX design process, we employed Hierarchical Task Analysis (HTA) as a critical technique for task analysis. HTA is a widely recognized method for categorizing complex tasks into more manageable hierarchical structures. It allows us to explore the detailed steps and interactions in completing a task. HTA is particularly useful when dissecting tasks with various subtasks or alternative paths.

KidsHealth® offers diverse content, including educational videos, quizzes, activities related to the human body, and articles on various topics. Following an initial contextual inquiry and considering

the limited available activities on the website, we focused our attention on two main goals:

- Watching an educational video about the human body and performing a related quiz or activity or reading the full article.
- Reading an article on a topic unrelated to the human body.

To gain a comprehensive understanding of these tasks and highlight the website's complexities, we chose to create HTAs with high granularity. This approach allowed us to illustrate the intricate steps users must navigate to accomplish seemingly straightforward objectives. Through these HTAs, we uncovered critical insights and observed potential usability issues, paving the way for informed design decisions to enhance the user experience.

Goal 1: Watching a Video and Performing a Quiz/Activity

The first Hierarchical Task Analysis (HTA) diagram [Figure 1.1] focuses on the user's goal of watching an educational video about the human body and subsequently performing a related quiz or activity. The scenario considers a user who desires to acquire knowledge about the human body through video content, followed by an interactive quiz or activity to assess their understanding or reading the full article.

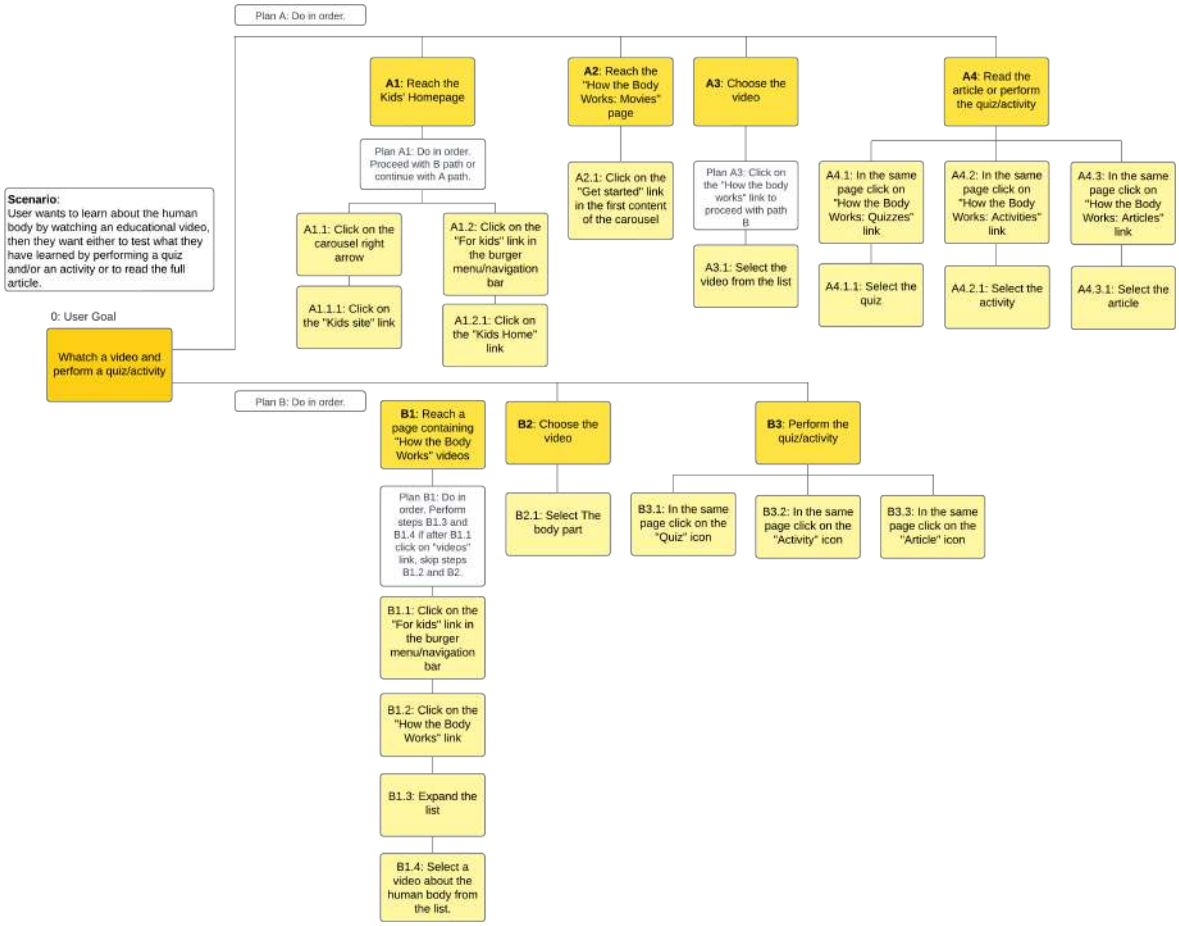


Figure 1.1: Goal 1 diagram.

Initially, we contemplated creating separate HTAs for watching an educational video, performing a quiz or activity, or reading the full article. However, due to the website's organizational structure, both goals share the same initial steps and diverge only in the final actions (labeled A4/B3 in the diagram). Consequently, we opted for a single HTA to capture the entire process comprehensively.

This HTA meticulously delineates every step the user must undertake to fulfill this specific task,

elucidating the intricate nature of seemingly straightforward actions. Through this granularity, we have identified two primary paths users might follow:

- **Path A:** This path encompasses four tasks involving six steps. Path A may be followed by users, particularly those less familiar with the website's structure, as we have seen during the contextual inquiries.
- **Path B:** In contrast, Path B entails three tasks and four steps. It represents a more direct route to the intended goal.

Our analysis also highlighted potential usability issues. Notably, users following Path A may need more time to perform necessary steps before reaching their goal, indicating possible user experience challenges for those less acquainted with the website. Furthermore, we considered the user's post-video intent to engage in a related quiz/activity or article. Path A, however, redirects users to a list of all available quizzes and activities potentially needing clarification. In contrast, path B redirects the user to the quiz/activity/article related to the same video.

These insights provide valuable input for optimizing the user experience, simplifying task completion, and ensuring users can seamlessly progress from educational content to interactive engagement.

Goal 2: Reading an Article

The second Hierarchical Task Analysis (HTA) diagram [Figure 1.2] centers around the user's objective of reading an article unrelated to the educational content on the human body. In this scenario, a user seeks to access an article of interest. The HTA meticulously elucidates the comprehensive process, revealing the considerable number of steps required to achieve this simple goal.

This diagram underscores the excessive complexity of accessing an article and highlights the inherent issues in the website's content organization. Notably, the number of steps varies depending on the specific topic the user wishes to explore. Most sections follow a consistent structure, presenting a list of expandable topics. However, one section, "Relax and Unwind," deviates from this pattern, introducing an additional layer of complexity.

Our analysis, combined with insights from the second contextual inquiry, brings to light potential usability challenges. Users may need help locating their desired topic due to the website's organization. Users might inadvertently fixate on the kids' sub-site homepage, where not all available topics are visible. Access to these topics is exclusively facilitated through the navigation bar or the burger menu button, which might take time to become evident to users.

In summary, this HTA underscores the convoluted nature of accessing articles on the website, highlighting the pressing need for content reorganization. Simplifying the steps required for users to access articles, ensuring consistency in content presentation, and enhancing topic discoverability are essential considerations for optimizing the user experience.

Task Analysis Conclusions

While the Hierarchical Task Analysis (HTA) diagrams provide a detailed breakdown of user tasks, some critical insights emerged from the analysis process that are not explicitly depicted in the diagrams. These insights shed light on significant usability issues and content organization challenges:

- *Repetition and Overload of Information:* Although not visually represented in the diagrams, users encounter repeated links and information overload when navigating pages with expandable topics. This redundancy can confuse users and lead to wasted time, negatively impacting the user experience.
- *Content Discrepancies:* Our analysis revealed that certain content is exclusively available on specific pages, missing from sections where it logically should be present. For example, "Steven's Story," a video found in the "Videos" section, is not accessible elsewhere on the site, making its discovery challenging. Additionally, on the "Steven's Story" page, a "More About This Topic" section highlights two featured articles, "Kids with Special Needs" and "Wheelchairs."

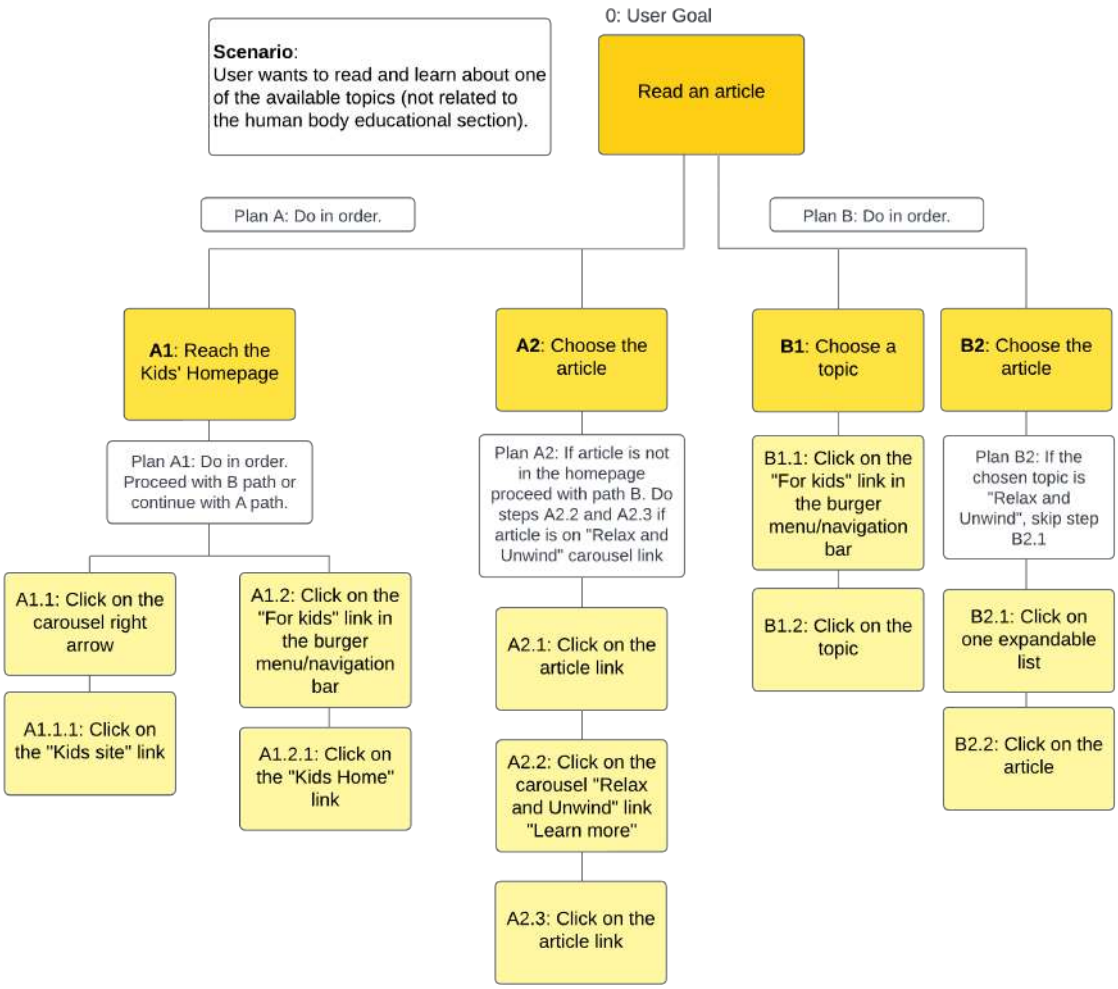


Figure 1.2: Goal 2 diagram.

Surprisingly, these articles cannot be found in other sections related to the same topics, and the ”Wheelchairs” article is notably absent from the Dictionary page.

- *Fragmented Navigation Patterns:* Both HTA diagrams emphasize the fragmentation in navigation patterns, revealing the need for a more coherent and simplified content organization. This fragmentation hinders users' ability to engage with available content seamlessly and obscures clear distinctions between various topics.

These insights underscore the importance of enhancing content discoverability, reducing redundancy, and streamlining the user journey. A website redesign should prioritize simplifying navigation patterns, making content more accessible, and ensuring a cohesive user experience.

Chapter 2

Assessment of Existing Resources

In this chapter, we will focus on the assessment and analysis of the current KidsHealth® website, meticulously examining its strengths, weaknesses, and opportunities for improvement. By evaluating the existing website, we aim to gain a profound understanding of its functionalities, content organization, navigational structure, visual elements, and interactive features. This understanding will provide valuable insights to guide the subsequent phases of the redesign.

2.1 Expert Usability Review

In this section, we will analyze the system without the help of users. We will perform it relying on the chosen guidelines [Section 2.1.1].

2.1.1 Guidelines

Based on the insights gleaned from the ethnographic research [Chapter 1], it becomes evident that a system tailored for children must avoid overwhelming complexity. Instead, it should encompass engagement, dynamism, and visual allure qualities. To effectively guide the design process in this direction, we have curated a set of guidelines that prioritize simplicity, intuitive interaction, robust user support, and the spirit of exploration. The foundation of these guidelines is derived from renowned sources, including the Nielsen and Molich [Molich and Nielsen, 1990, Nielsen and Molich, 1990, Nielsen, 1994a, Nielsen, 1994d] principles, as well as the Weinschenk and Barker heuristics [Weinschenk and Barker, 2000].

1 **Visibility of system status** The system should always keep the user informed about what happens through appropriate feedback provided within a reasonable time (during activities or quizzes, during videos).

2 **Match between the system and the real world** The system should speak the user's language, with words, phrases, and concepts familiar to the user rather than system terms. It must follow the conventions of the real world and make information appear in a natural and logical order.

3 **User control and freedom** Since the user often chooses system functions by mistake, he needs clearly marked ”emergency exits” to leave the unwanted state without having to go through a complex dialogue. Support undo and redo.

4 **Consistency and standards** Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5 **Error prevention** Even better than good error messages is a careful design that prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

6 **Recognition rather than recall** Minimize the user's memory load by making visible objects, actions, and options. The user should not have to remember information from one part of the dialogue to another. Instructions for using the system should be visible or easily retrievable whenever appropriate.

7 **Aesthetics and minimalist design** Dialogues should not contain irrelevant or rarely needed information. Every extra unit of information in a dialogue competes with the relevant information units and diminishes their relative visibility.

8 **Help users recognize, diagnose, and recover from errors** Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

9 **Modal integrity** The interface uses the most suitable modality for each task: auditory, visual, or motor/kinesthetic.

10 **Accommodation** The design is adequate to fulfill the needs and behavior of each targeted user group.

11 **Linguistic clarity** The communication language is efficient, transparent, and adequate to the audience.

12 **Aesthetic integrity** The design is visually attractive and tailored to appeal to the target population.

13 **Flexibility** The design can be adjusted to the needs and behavior of each particular user.

14 **Fulfillment** The user experience is adequate, and the user feels good about the experience.

15 **Cultural property** The user's cultural and social expectations are met.

2.1.2 First Inspection of the System

In this part, we'll take a closer look at the KidsHealth® website and examine a few key aspects: the services it offers, its target users, and any issues that have come up during our initial assessment. This step is crucial to understanding the website's current state and sets the stage for a more in-depth analysis.

2.1.2.1 Offered Services

The KidsHealth® website is a comprehensive online platform catering to a diverse audience, primarily focusing on children's well-being and health education. The services and features provided by the website play a pivotal role in delivering vital health information to children, parents, educators, and related stakeholders.

As elucidated in previous discussions, the primary objective of this project centers on enhancing the usability and user experience of the Kids section within the KidsHealth® website. Within this specific segment, the services offered are multifaceted and encompass a range of educational, informative, and interactive components. These services include, but are not limited to:

1 **Educational Content** The website features a wealth of educational materials tailored to children's understanding. These resources span topics such as how the body works, health-related concepts, common health issues, and emotional well-being.

2 **Interactive Elements** Kids are engaged through interactive tools such as quizzes, games, and videos that make learning about health engaging and enjoyable.

3 **Expert-Reviewed Information** The content provided is meticulously reviewed by medical professionals, ensuring its accuracy and reliability. This ensures that children, parents, and educators can access credible health information.

4 **Support for Parents and Educators** The Kids section extends its services beyond children to parents and educators, providing resources and guidance on effectively communicating health-related information to children.

By comprehensively examining the services provided by the KidsHealth® website and understanding their nuances, we can gauge how well these offerings cater to the intended users and contribute to the website's overall usability and effectiveness in conveying health-related information to children.

2.1.2.2 Target Users

The target users for the Kids section of the KidsHealth® website can be broadly categorized into the following main groups, as explicitly declared in the navbar of the main page [Figure 2.1]:

1 **Parents** While the website primarily caters to children, it also addresses parents who play a vital role in guiding children's online interactions and facilitating their learning experiences. Parents often seek reliable resources to educate their children about health in an accessible and engaging manner.

2 **Kids (Ages 5-12)** The primary audience comprises children within the age bracket of 5 to 12 years. These young users are inquisitive and open to learning through interactive and visually appealing content. They require age-appropriate, engaging materials that facilitate their understanding of health-related concepts.

3 **Teens (Ages 12-18)** This audience needs to be educated about things that can be considered taboo in families. They start to have a high self-consciousness and want to know more about the changes in their bodies and social interactions. They are about to begin real adult life, so they need to be prepared and seeking for more complex material.

4 **Educators** Teachers and educators are another essential group that benefits from the KidsHealth® website. The platform offers them valuable tools to supplement health education in schools and classrooms. Educators can leverage the website's content to foster health literacy among students in an engaging manner.

Our analysis and recommendations are centered around the KidsHealth® Kids section subsite. It has been strategically designed to cater to a specific audience, namely children between the ages of 5 and 12, commonly called the "Gradeschooler" age group. This demographic is characterized by their early stages of cognitive development, curiosity, and receptiveness to engaging educational content. Our project's primary focus is to enhance this segment's usability and user experience within the website.

2.1.2.3 Emerging Issues

At first sight, there are several emerging issues in the Kids subsite of KidsHealth® that we will further explore and address in the following sections. The main problems are related to confusing navigation, parts of the website that are hard to use, or problems with the content. By addressing these issues early on, we can make sure the user experience is better. We claim that the website needs to be more appealing to the target users (kids), and there are evident problems with navigation, content discovery, and engagement. The way that the website is structured is like a tiny encyclopedia about health-related topics for kids. There are too few activities, and the existing content must be more engaging. There are primarily videos and long-text articles.

By examining the services, understanding the users, and addressing any issues that pop up, we're building a solid foundation for assessing the KidsHealth® website's usability and overall user experience. It is possible to address all the issues radically by changing the concept of education on the website or by providing better content but following the same educational philosophy.

2.1.3 Direct Analysis

In this section, we will explore the KidsHealth® website concerning the chosen guidelines [Section 2.1.1]. The evaluation will be based on the functions available within the system, independent of the expected audience and their tasks. We will highlight which guidelines are violated for each relevant screen, how often, and the severity rating (low, medium, high).

Main page

The website's main page [Figure 2.1] adheres to minimalist design principles [Guideline 7]. Notably, the page aptly addresses guideline 1, ensuring timely and informative feedback to users following their actions, thereby enhancing their understanding of progress and anticipated outcomes. Consequently, this fosters user engagement and seamless navigation.

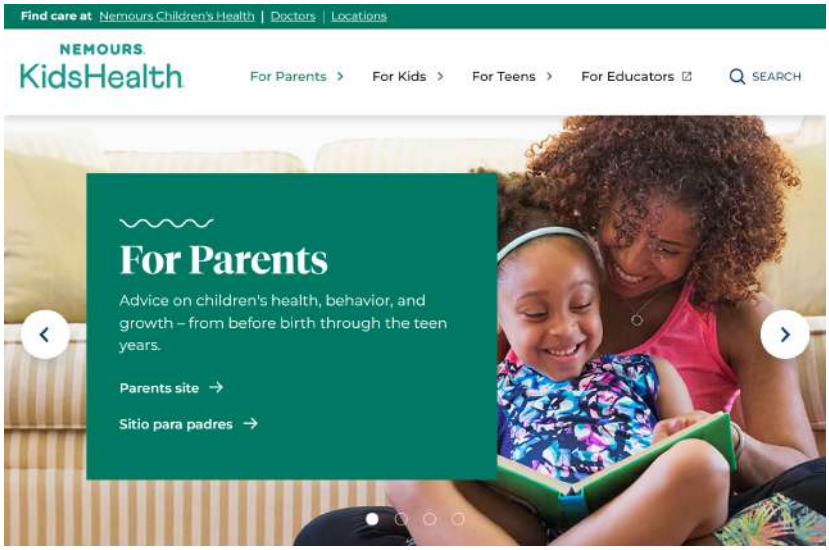


Figure 2.1: KidsHealth® Main Page

Carousel It is the page's main and almost unique element. It is a carousel featuring images for each subsection: parents, kids, and teens, linked to its corresponding subsection.

Navigation Bar In the upper part, there is a navigation bar with buttons for each top section (parents, kids, teens), providing targeted users with access to a comprehensive list of subsections within their intended area, along with an additional link to the subsection homepage. The navbar also incorporates links for the educator's subsite and a search button. Clicking on the "For Kids" section from the navbar, a navigator titled "Featured Topics" [Figure 2.2] appears, providing access to a variety of topics. The highlighted "Kids Home" link also leads to the primary kids' page.

Header Supplementing these elements are header tags housing links for locating care, doctors, and locations.

Footer The footer is common to all the pages across the website. Conventional elements such as "About Us" and "Contacts" are at the page's bottom.

Guidelines Violations:

Guideline 13 Flexibility - Medium Severity Accommodating Spanish-speaking users is inadequately addressed, as no initial option for site-wide translation is provided.

Guideline 4 Consistency and standards - Low Severity The "For Parents" button in the navigation bar is erroneously highlighted in green, implying the current presence in the parents' subsite.

Guideline 10 Accommodation - Low Severity Given our focus on the Kids segment (ages 5 to 12), a potential infringement of this guideline arises because children would likely prefer streamlined

access to relevant information. This discrepancy is exacerbated by the limited pathways to the Kids' subsite, necessitating either carousel scrolling or navigation bar browsing.

Guideline 12 Aesthetic integrity - Low Severity This guideline is somewhat overlooked due to the diverse nature of the targeted audience; it is not of significant concern.

Featured Topics

The KidsHealth® website's expanded navigator bar [Figure 2.2] prominently features a collection of engaging and informative topics designed to address various aspects of children's well-being. Each topic is a gateway to a dedicated subpage, delving into a specific area of concern and providing in-depth insights, expert advice, and actionable information. These featured topics offer a comprehensive resource for kids and their caregivers, covering everything from safety and health to emotional well-being and medical queries.

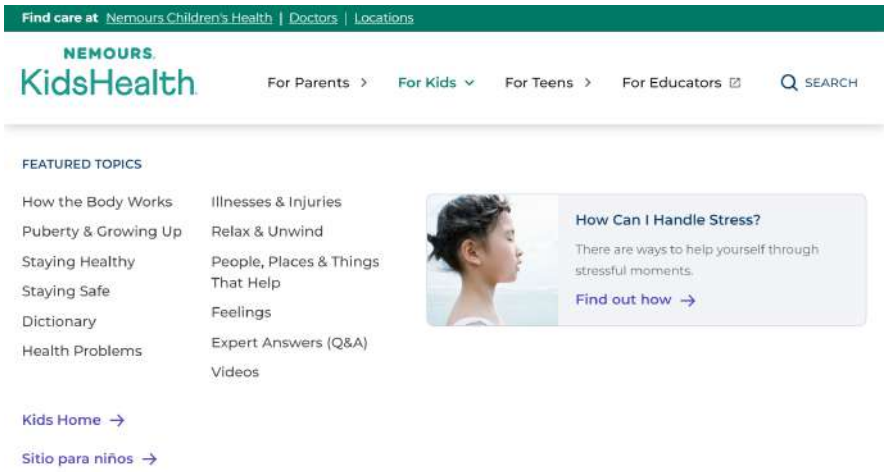


Figure 2.2: Kids Featured Topics

Guidelines Violations:

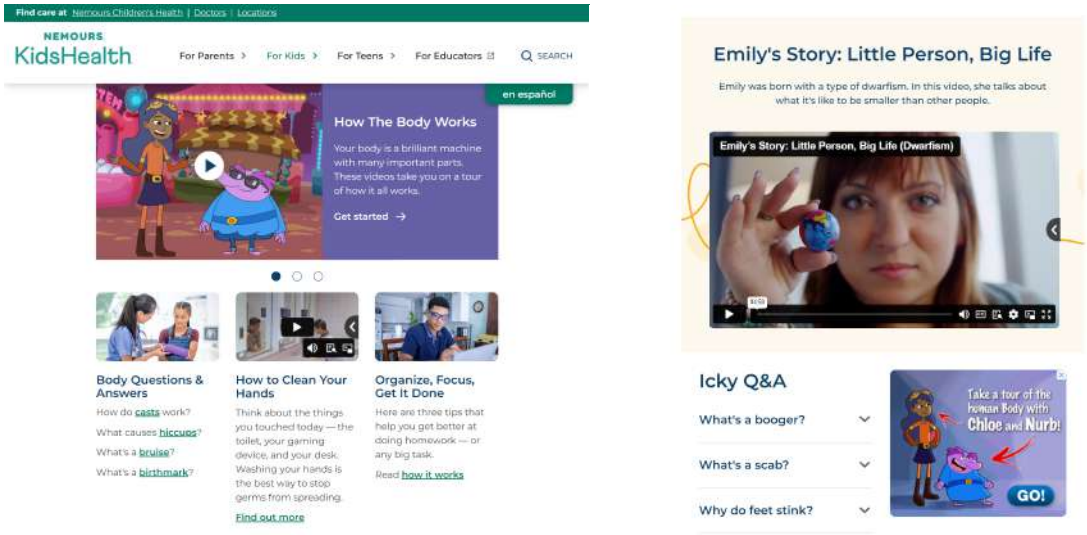
Guideline 4 Consistency and standards, Guideline 10 Accommodation, Guideline 13 Flexibility - Medium Severity Because KidsHealth® is intended for both English and Spanish speaking users, there is a "Sitio para niños" link alternative to the "Kids Home" one. The first grants access to the kids' section but in Spanish. English users might be confused by that link, but Spanish users should expand the navigation bar to know the existence and access the Spanish section.

Kids Home

The Kids' sub-site homepage [Figure 2.3] is structured to ensure user engagement and ease of navigation.

Header and Navigation The main page's familiar header tags and navigation bar are consistently maintained. Guideline 4 is successfully adhered to, as the "For Kids" button is appropriately highlighted in green, facilitating accurate page identification.

Carousel with Image Navigation The carousel on the page features three distinct images, each with its purpose. The first image links directly to the dedicated "How the Body Works" section, an essential featured topic. The second image showcases an article from the "Talking About Feelings" section. Lastly, the third image directs users to the "Relax and Unwind" section.



(a) (b)

Figure 2.3: Kids Home

Highlighted Contents Just below the carousel, there are three highlighted contents: the ”Body Questions & Answers” card provides some links to four topics from various sections; the video element ”How to Clean Your Hands” is accompanied by a succinct description and a link for more profound exploration; the ”Organize, Focus, Get It Done” article e from the ”Relax and Unwind” section with a short description of it. All these elements are a bait to foster content exploration.

Highlighted Video Then, there is a big isolated highlighted video about Dwarfism. It lacks a corresponding link to a related topic page, potentially disrupting user navigation.

Q&A Finally, a collapsible list group about ”Icky Q&A” topics is included. It is a joyful list containing three topics under this category. Each element consists of a button for expansion, revealing a concise description and a link to the respective page.

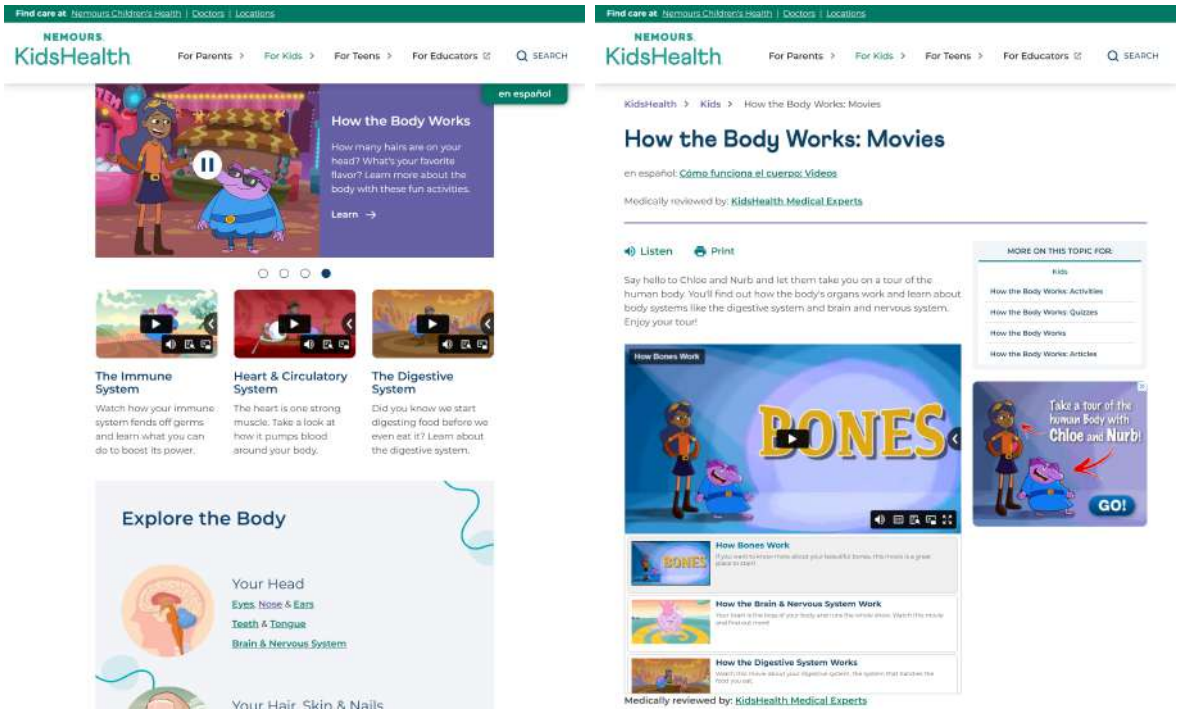
Guidelines Violations:

Guideline 11 Linguistic Clarity - High Severity The presence of technical or complex terms in the labels or headings might hinder younger users' understanding. Consider simplifying the language and ensuring that labels and headings are clear and easily understood by the target age group.

Guideline 4 Consistency and standards - High Severity The first image of the carousel, as mentioned, related to the ”How the Body Works” section, encourages users to ”Get Started,” leading to a page featuring a range of available videos [Figure 2.4b]. An inconsistency arises when clicking on ”How the Body Works” from the expanded navigation bar [Figure 2.2], redirecting users to the actual ”How the Body Works” section [Figure 2.4a]. This inconsistency, coupled with the absence of clear anticipatory cues, violates logical navigation principles.

Guideline 6 Recognition Rather Than Recall - ??? TO REVIEW The lack of clear labels or hints for the carousel images might require users to recall their meanings if they don't recognize the pictures. Providing brief titles or captions for each carousel image could help users understand the content and navigate effectively.

Guideline 8 Help Users Recognize, Diagnose, and Recover from Errors - Medium Severity The absence of visual feedback or error messages when clicking the carousel's images can confuse users, leading to navigation errors. Notably, including a play/pause button for carousel scrolling might need to be more user-friendly and practical for children, as they might mistakenly interpret it as a video playback.



(a) How The Body Works Home

(b) How The Body Works Movies

Figure 2.4: How The Body Works Scenarios

To counter this, a proposal has been made to align the carousel design with that of the home page. This involves integrating two arrow buttons on opposing sides of the carousel images – a left arrow indicating the previous content and a right arrow signifying the forthcoming content. Adopting this approach, particularly suitable for young users, makes the navigation process more intuitive.

Guideline 9 Modal Integrity - Medium Severity While the section includes videos and articles, some content appears to lack audio descriptions. Providing audio descriptions for videos and alternative text for images would enhance accessibility for visually impaired users and ensure a more inclusive experience.

Guideline 10 Accommodation - Medium Severity The absence of a direct link from the isolated video about Dwarfism to a related topic page could pose a challenge to users seeking more information. Clear links or a pathway to relevant content would accommodate users' expectations for consistent and intuitive navigation.

Guideline 5 Error prevention - Medium Severity Kids are the target group of this page, so it would be worth discouraging access to unappropriated content, which is available in the Parents and Teens subsite. For this reason, to prevent this kind of error, we believe that the buttons should be hidden.

Guideline 2 Match between the system and the real world - Low Severity The navigation labels, such as "How the Body Works", "Feelings", and "Relax and Unwind", though informative, might not be immediately intuitive to younger users. Consider using more straightforward and child-friendly labels that align with their language and understanding.

Guideline 7 Aesthetics and minimalist design - Low Severity The information itself is relevant, but the design of the page makes it difficult for a kid to look for interesting topics to watch/read-/engage with (quiz, activities).

Expandable Lists Sections

In [Figure 2.5], it's evident that multiple sections within the kids' subsite adopt a consistent format – they are essentially lists of links that direct users to articles. These sections include Videos, Q&A for Kids, Feelings, People, Places & Things That Help, Illnesses & Injuries, Health Problems, Kids' Medical Dictionary, Staying Safe, Staying Healthy, and Puberty & Growing Up. A primary list of macro topics serves as the starting point for each section, and this list can be expanded to reveal a one-level list of links, leading users to relevant articles. Additionally, these sections incorporate a list of titles, initially displayed in a simple format. However, when a user hovers their cursor over any of these titles, a line appears underneath, serving as a visual cue that the title is clickable.

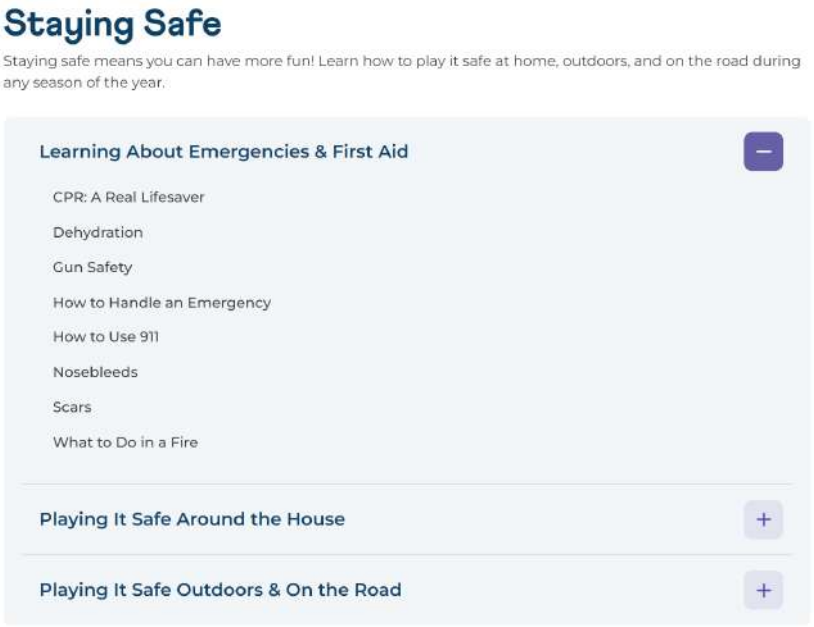


Figure 2.5: Kids Staying Safe Section

This section's considerations also apply to all the areas with the same pattern.

Guidelines Violations:

Guideline 1 Visibility of system status - Low Severity The current list format of video titles lacks immediate feedback. The affordance of the links in the list is not to click them; their affordance is the one of read-only content. To rectify this, implementing a grid layout for the videos is recommended to ensure that users receive clear visual cues indicating the clickability of the video titles.

Articles

An article is a page with the title in the upper part [Figure 2.6]. It provides an option to translate the article into Spanish. The main part is constituted by the article content which can include text, videos, some links, and links to the eventually possible activities. On the right part, there is a Google advertisement banner and there might be also other resources, usually links to related content.

Video articles

A video article [Figure 2.6] furnishes a succinct three-line video description and the video player. Articles can provide audio descriptions for their text.

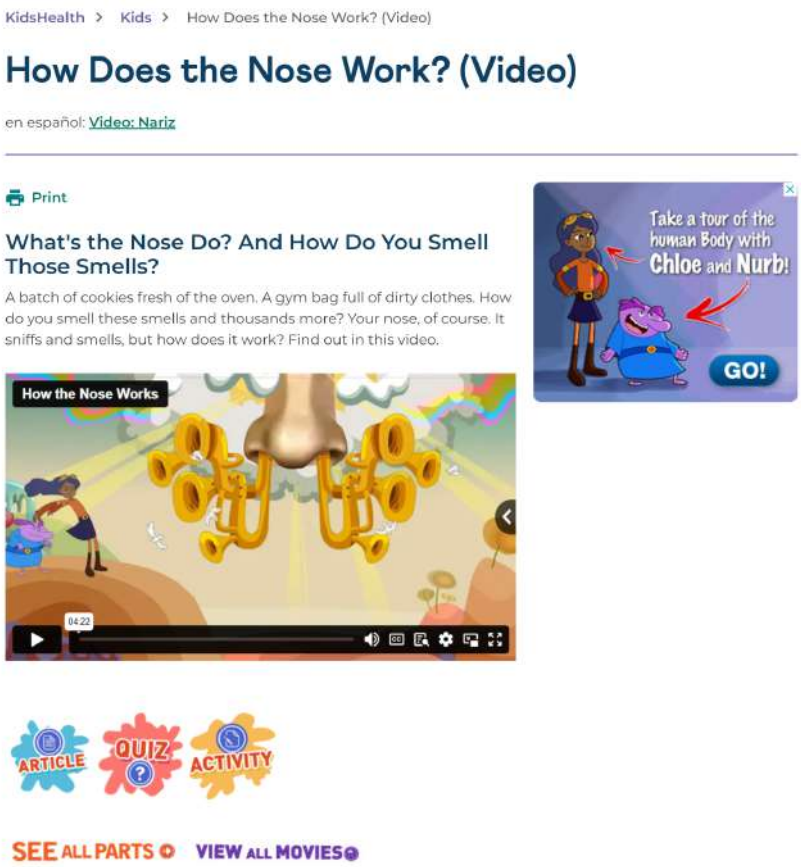


Figure 2.6: Video Article

Dictionary

In the ”Dictionary” section, clicking on a letter reveals a sub-list of words. Clicking on a word opens an article with the definition of the selected word. However, there is no audio description available for the dictionary section.

Staying Safe, Staying Healthy, Health Problems, Illnesses & Injuries articles

Each article provides indexed questions, verified medical information, and expert endorsements on child safety. There can also be related topic links on the right side of the page to achieve more in-depth knowledge. There can also be audio descriptions and the possibility to print the document easily.

Feelings articles

The content provides insights, strategies, and expert opinions to help kids and parents navigate emotional challenges.

People, Places & Things That Help

This section includes subtopics that highlight different sources of assistance, such as doctors, hospitals, and community resources. Each subtopic provides detailed information, helping kids and parents find the right help when needed.

Expert Answers

The ”Expert Answers” section offers reliable responses to frequently asked questions by kids and parents. Clicking on this topic opens a page with categorized questions and answers. Users can easily find information on various health-related inquiries, ensuring accurate and trustworthy guidance. Including audio descriptions ensures that the content is accessible to all users.

How the Body Works

This is one of the sections with its proper structure [Figure 2.4a]. It is very similar to the the Kids Home page [Section 2.1.3]. Indeed, on the top, there is a carousel with three highlighted videos just below it. Then, there's a list with links to the main body parts in the form of video articles [Section 2.1.3] (this is the only difference with the Kids Home page). Just below there is a big highlighted video about healthy weight. Finally, there's a little Q&A section with three elements in an expandable list, with a short description and a ”Learn more” link to the related article.

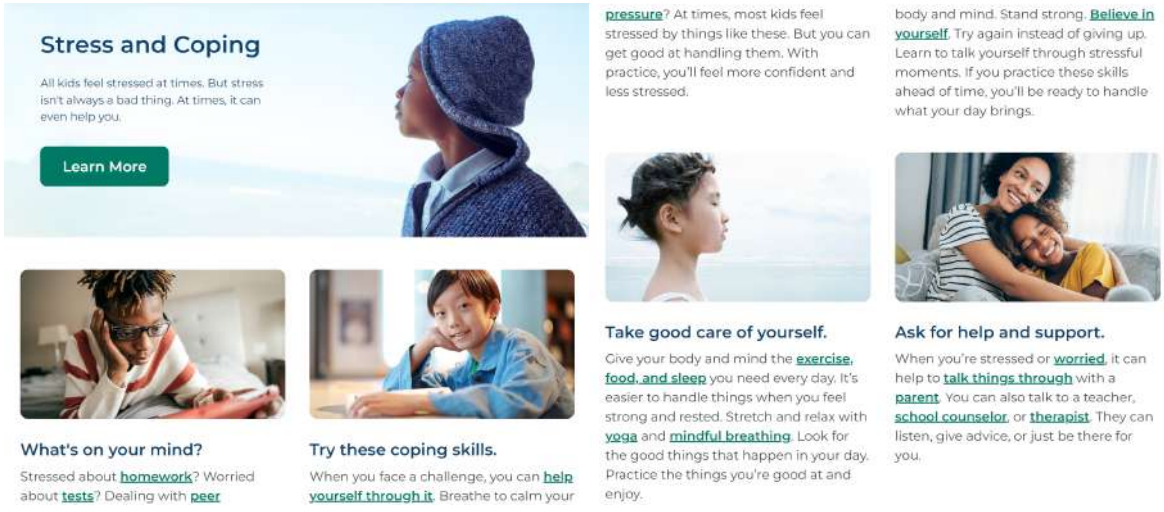
Guidelines Violations:

The main violations are the same as the Kids Home section [Section 2.1.3] because of the structure similarity. The following are additional violations.

Guideline 4 Consistency and standards - Medium Severity There are two play buttons. One refers to the animation of the carousel, while the other will play the video. At first sight, it is difficult to understand that the carousel images are not videos.

Stress and Coping

This is one of the sections with its proper structure [Figure 2.7]. Its design is quite different from all the others. A large banner on the top with an image and a ”Learn More” button redirects the user to a long textual article about stress. Then, there are four cards, each with an image, a title, and a textual description with some links. These links redirect mainly to textual articles about that topic. The photos and the titles are not links.



(a) (b)

Figure 2.7: Kids Stress and Coping Section

Guidelines Violations:

Guideline 14 Fulfillment - Medium Severity The short descriptions of the images suggest further readings, but they only provide links of some words among them. There are no straight paths. Navigation is not easy.

Guideline 4 Consistency and standards - Low Severity The page layout is unique across the website, and the prominent relevant elements are not as interactive as usual in the other sections.

Quizzes

The ”How the Body Works” subsection comprehensively explores the human body’s various systems and organs. Within each organ-specific page (video article [Section 2.1.3]), there is a dedicated quiz section [Figure 2.8] designed to test the user’s knowledge about that particular organ’s functions and related concepts. They are multiple choice answer tests with about ten questions each. On a mobile device, the interface is the same.

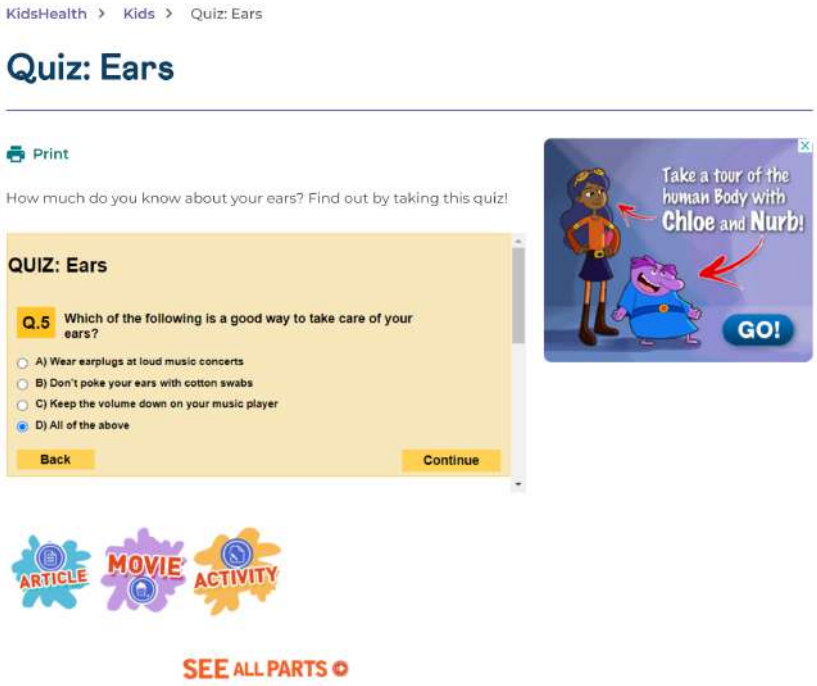


Figure 2.8: Quiz Ears

Guidelines Violations:

Guideline 1 Visibility of system status - Medium Severity The quiz section effectively provides feedback after users submit their answers, indicating whether each answer is correct or incorrect. However, the absence of an overall progress indicator or a clear indication of the user’s advancement through the quiz can make it difficult to track their progress and give a sense of bewilderment.

Guideline 8 - Help Users Recognize, Diagnose, and Recover from Errors - Medium Severity The feedback provided for correct and incorrect answers is clear and informative. However, in cases of wrong answers, the feedback could be enhanced by explaining why the selected answer is incorrect and offering guidance on the correct concept.

Guideline 12 Aesthetic integrity - Low Severity The visual design of the quiz section is too severe and does not align with the minimalist, playful design of the rest of the website.

Activities

As quizzes are related to the different body parts, usually, when the examination is possible, it is also possible to do an activity. They are supposed to be interactive and engaging. These activities

are designed to provide hands-on learning experiences for children, allowing them to explore various concepts in a practical and fun manner.

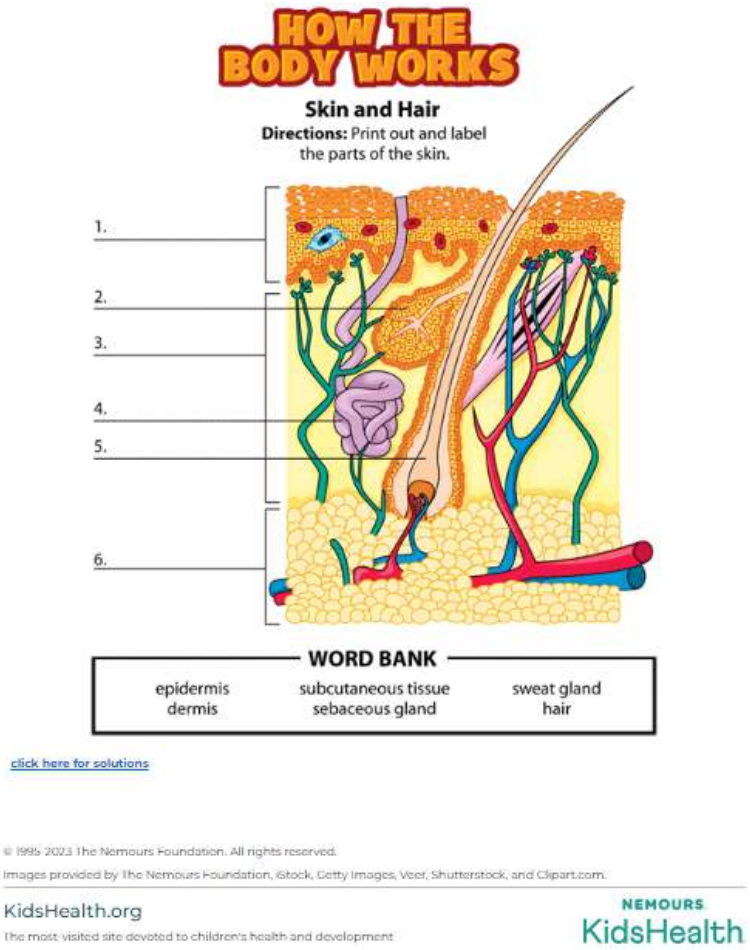


Figure 2.9: Skin and Hair Activity

An activity consists of a printable image that is not digitally interactive [Figure 2.9]. They are mostly word bank exercises, but sometimes they vary slightly, e.g., terms matching. The page is fully static except for a link to discover the solution. The solution consists of the same image but with the correct words in the gaps. To adhere to usability and accessibility principles, the activities should provide engaging experiences directly within the online interface, eliminating the requirement to print materials. This approach would enhance the user experience and ensure the activities are inclusive and aligned with modern online learning expectations.

Guidelines Violations:

Guideline 1 Visibility of system status - High Severity Upon completing an activity, the system should offer clear and immediate feedback within the activity interface. This feedback should inform users about the correctness of their actions and the learning outcomes achieved. The requirement to print the activity might lead to ambiguity about the feedback's availability and immediacy. At first sight, it is not so clear that it is only a printable image. One should read the small directions.

Guideline 2 Match between the system and the real world, Guideline 9 Modal integrity - High Severity To align with real-world experiences, activities should be designed to directly engage users within the online interface rather than necessitating an external print-and-solve approach. This approach ensures that users' interactions are consistent with their expectations of online

learning environments.

Guideline 4 Consistency and standards - Medium Severity Ensuring consistent interaction patterns between activities is essential for usability. If certain activities require external resources (such as printing) while others are self-contained within the interface (e.g., quizzes), it could create confusion and disrupt the overall user experience.

Guideline 5 Error prevention - Medium Severity Activities should ideally be structured to guide users to perform correct actions and avoid errors without relying on external instructions. Requiring users to print and solve activities might lead to misunderstandings or missed steps, violating the principle of error prevention.

Guideline 10 Accommodation - Medium Severity Activities should accommodate different learning styles and preferences by providing multiple ways to engage without resorting to external resources. This includes catering to users who prefer not to print materials or cannot do so.

2.1.4 Reverse Analysis

In this section, we perform a reverse analysis of the system oppositely to the direct analysis [Section 2.1.3]. Indeed, we look for violations for each guideline throughout the whole KidsHealth® portal. In this way, we found other violations not discovered in the previous analysis.

Guidelines Violations:

Guideline 10 Accommodation - High Severity Paths are complex and redundant. Also, some contents that should be closely related are not in terms of steps to access them. It is not straightforward to navigate the website. Moreover, the website has no adaptiveness to the already watched content.

Guideline 2 Match between the system and the real world, Guideline 4 Consistency and standards - High Severity The website is intended for both English-speaking and Spanish-speaking users. However, English is the primary language, and accessing Spanish content is difficult. There is a specific way to translate each content into Spanish, which is not even immediately perceivable.

Guideline 9 Modal Integrity - High Severity Not all the articles provide an audio description. Absence of an audio description in the dictionary articles. The lack of an audio description prevents users with visual impairments or those who rely on auditory information from fully accessing and understanding the content. This violation can be addressed by incorporating an audio description feature in all the articles. This solution enhances accessibility for a diverse range of users.

Guideline 10 Accommodation, Guideline 4 Consistency and standards - Medium Severity In the articles, inconsistent provision of Spanish translations becomes apparent. It is provided in most articles, but not everyone. Users, especially those who rely on translated content, may face difficulties understanding and engaging with the information. To address this, consistent Spanish translations should be provided across all pages.

Guideline 4 Consistency and standards - Low Severity In the list sections [Section 2.1.3], when choosing a link, it is possible to land on article pages in the majority of cases but also on more structured pages [Section 2.1.3] like the so-called ”Cancer Center” that redirect users to a new home page about the topic instead of providing an article. It is possible that these kinds of pages are not highlighted elsewhere.
Addressing this inconsistency and ensuring that all topics within the ”Featured Topics” section lead to articles or follow a uniform interaction pattern would contribute to a more coherent and user-friendly browsing experience.

2.1.5 Focus Heatmaps

The primary aim of using focus heatmaps is to gain insights into the areas where users are directing their attention. This enables us to assess whether users are focusing too much on less critical elements or perhaps not enough on more crucial areas. Because of the lack of resources, we decided to use an AI-based focus predictor tool[1].

Home Page

In the analysis of the Home Page [Figure 2.10], we notice that the focus on the navbar is insufficient, despite its role as the main gateway for content discovery. The search button garners slightly more attention, which could be an area to investigate for optimization. Additionally, there seems to be a disproportionate amount of focus on less essential elements like the play/pause button of the carousel. While it's encouraging that article titles receive a high level of focus, it's worth noting that these are static elements. The interactive elements that actually facilitate access to articles are not capturing enough user attention, and this could be a potential area for improvement.

Figure 2.10: Home Page Focus Heatmap

[1] The focus predictor is provided by Uizard

Featured Topics

In examining the focus distribution across various sections, it is expected to see that it's fairly homogeneous. However, the amount of attention on the top bar appears to be higher than what its actual usage would warrant, which could be a point for reevaluation. While it's positive that areas related to teens, parents, and educators are not drawing excessive focus. There is a concern that multiple categories are receiving the same level of focus without sufficient explanatory descriptions. This could potentially create confusion and may warrant adjustments in the design to guide user attention more effectively. Elements for the translation and to go to the home page take the same relevance as the categories even if the translation is not intended to be used frequently (more times in a session).

Figure 2.11: Featured Topics Focus Heatmap

2.1.6 Accessibility Assessment

Web Content Accessibility Guidelines (WCAG) [W3C, 2008] Level A establishes a fundamental level of accessibility, ensuring that web content is perceivable, operable, understandable, and robust for diverse users. These guidelines address essential website design and functionality to create an inclusive digital environment.

In our assessment of the KidsHealth® website, we have rigorously evaluated its adherence to these Level A guidelines to determine its accessibility performance:

Guideline 1.1 - Text Alternatives ✓

These guidelines ensure that non-text content is accessible through appropriate alternative text. Throughout the evaluation, the KidsHealth® website effectively adhered to these guidelines by providing meaningful and descriptive text alternatives for images, videos, and other non-text elements.

For instance, in articles concerning body functions, images portraying organs and processes are accompanied by detailed descriptions. This enables users who cannot view the images to grasp the visual content effectively.

Furthermore, interactive elements such as buttons and icons labeled ”listen” or ”print” are thoughtfully implemented. Similarly, within video content, hovering the mouse over labels like ”play,” ”subtitles,” ”full screen,” ”settings,” and ”picture-in-picture” provides clear definitions for each function. This meticulous approach contributes to an accessible browsing experience, catering to users who rely on screen readers or other assistive technologies.

As a result, users can comprehend the content comprehensively, even with visual elements.

Guideline 1.2 - Time-based Media ✓

The KidsHealth® website effectively utilizes multimedia content, particularly videos, to educate its users. These videos were accessible, providing clear audible narration and including captions (1.2.2). Captions were essential to ensure that users who are deaf or hard of hearing could fully understand the video content. Similarly, audio descriptions (1.2.3) were appropriately incorporated, significantly

enhancing the experience for users who are blind or visually impaired. Notably, the website featured a prominent clickable ”Speaker” symbol on most pages, which provided prerecorded audio versions of the content, further reinforcing the adherence to these accessibility guidelines.
Also, it's important to emphasize that the website doesn't have image descriptions. To address this issue, implementing audio descriptions for images, particularly in activities and tests, would significantly benefit visually impaired users who prefer audio-based content. For example, in an educational activity about the human body, images representing various organs lack descriptive text. Incorporating audio descriptions would significantly enhance their learning experience by providing comprehensive narrations of the visual elements.

Guideline 1.3 - Adaptable ✓

The KidsHealth® website successfully caters to the principle of adaptability, preserving its content's informative structure on any platform. This is achieved through semantic HTML marking, which enables clear links between different components. The headings provide a system of the content hierarchy, and the lists simplify the interpretation of the sequence and the relationship. The website accurately labels form controls, and HTML attributes are employed to define the relationship between them.
It's worth noting that while having duplicate content, like videos accessible from multiple pages, can enhance adaptability, this might pose a challenge for young users in making connections. To address this, providing precise navigation and signposts could improve inclusivity and user-friendliness, aligning with the website's commitment to adaptability.

Guideline 1.4 - Distinguishable ✓

Within the Distinguishable guidelines, there are no apparent violations on the KidsHealth® website. This guideline focuses on presenting content in easily perceivable and distinguishable ways, particularly for users with visual impairments or color blindness. The site's color contrasts adhere to the standards (1.4.1). For example, most videos, including cartoon characters, feature well-balanced color schemes that are gentle on the eyes. Even lighter colors like white have been carefully adjusted to avoid causing excessive strain. However, it's important to note that the website's reliance on printed images for activities could compromise color accuracy, which impacts this guideline's accessibility.
Additionally, the implementation of audio controls (1.4.2) has yielded positive outcomes. Accessibility measures were effectively employed when audio content was triggered in response to user requests. This approach empowers users to initiate audio elements at their discretion, enhancing their overall browsing experience.

Guideline 2.1 - Keyboard Accessible ✓

While assessing the keyboard accessibility of the KidsHealth® website, it is apparent that the website offers support for keyboard-based navigation, enabling users to traverse and interact without reliance on a mouse. This keyboard navigation is facilitated by pressing the ”Tab” key, which generates a distinctive dotted square around clickable elements and moves sequentially to adjacent elements when triggered through the keyboard. However, a more advantageous approach might involve an enhancement that replaces the current dotted square with a visually highlighted indication, similar to when a mouse hovers over it. This alteration would amplify the ease of accessibility and the visual identification of interactive elements for users with visual impairments, promoting a more intuitive browsing experience.

Guideline 2.2 – Enough Time ✓

The accessibility assessment of the Timing Adjustable(2.2.1) and Pause, Stop, Hide(2.2.2) guidelines reflect commendable implementation on the KidsHealth® website. Notably, the necessity for time adjustments does not arise as the content does not impose time limits. Moreover, in the context of audio descriptions, users are provided with a stop-click option, ensuring they have control over the content's duration. Similarly, videos offer a pause feature, enhancing the user experience for those who need more time to comprehend information. Implementing these features aligns well with the principles of accessibility, catering to a diverse range of users and their distinct needs.

Guideline 2.3 – Seizures and Physical Reactions ✓

The website demonstrates adherence to the success criterion 2.3.1 (Three Flashes or Below Threshold) by refraining from including any content with flashing elements that exceed the permissible limit. This vigilant approach significantly reduces the potential risks of inducing seizures or adverse physical reactions, prioritizing the safety and comfort of kids, particularly those with visual impairments or sensitivities.

Guideline 2.4 - Navigable ✓

While the website's navigation is generally intuitive, our evaluation indicated that several success criteria were properly implemented within the HTML structure, including Page Titles (2.4.2) and Link Purpose (2.4.4) – where an example link for Spanish translation is also well accessible. However, we identified challenges related to Bypass Blocks (2.4.1) and Focus Order (2.4.3) criteria, particularly in locating specific content such as videos and articles. For example, the "Steven's Story" video is only accessible within a specific section, unlike "Emily's Story," with dedicated sections in the 'For Kids' list. This situation raises concerns about a potential violation of navigational guidelines, which may frustrate users and hinder their ability to access information seamlessly.

To further improve the organization of connections and enhance accessibility for kids more intuitively, we recommend incorporating interactive images featuring clickable areas. For instance, consider a page dedicated to the human body; an interactive image could enable users to click on distinct body parts, granting access to comprehensive information about the role and significance of each component. Integrating such interactive elements effectively addresses navigational challenges, especially on pages where conventional text-based headings may prove inadequate in guiding users.

Guideline 2.5 – Input Modalities ✓

Input Modalities focus on enhancing accessibility by accommodating diverse input methods. In evaluating the KidsHealth® website, it's evident that it largely adheres to these principles. Including options to cancel actions (2.5.2), particularly in quizzes where participants can alter choices before submission, is crucial for users who may inadvertently trigger actions due to their specific needs. The emphasis on accurate labeling (2.5.3) ensures that users relying on screen readers receive comprehensive information. Although the website doesn't heavily rely on motion interactions (2.5.4), avoiding unintended activations is vital for individuals with involuntary muscle movements.

Guideline 3.1 - Readable ✓

We have thoroughly examined all pages of the KidsHealth® website to ensure compliance with the "Language of Page" success criterion (3.1.1) under the "Readable" guideline. This criterion guarantees that the default language for each web page is programmatically established, benefiting both assistive technologies and traditional user agents. To fulfill this requirement, we meticulously examined the HTML structure of every page to verify the presence of the lang attribute on the html element. This attribute defines the default language, enhancing accessibility for users relying on screen reader tools or media captions. Our comprehensive review ensured that the lang attribute with "en" (English) was consistently present across all pages, further enhancing the inclusivity and accessibility of this website.

Guideline 3.2 – Predictable ✓

Our assessment of the KidsHealth® website highlighted successful implementations of predictability, evident in the uniform layout, logical navigation menus, and consistent behavior of interactive elements. These elements contribute significantly to a user-friendly experience.

However, it's important to note that deviations from this consistency, such as the inconsistent placement and availability of content like videos and related articles, can lead to confusion and a lack of predictability for users. For instance, some videos are in subpages and are not easily accessible from the main videos section. Additionally, the appearance of windows with related topics on certain pages can be challenging to relate to accessible content. Users typically anticipate content to be consistently accessible across the website, and any variations in content presentation and availability may be regarded as violations of this crucial guideline.

Guideline 3.3 – Input Assistance ✗

Input Assistance is a crucial aspect of user interaction, mainly when dealing with website input fields, controls, and forms. In the KidsHealth® website, it's important to note that the design reduces the need for user input, as it is not required to enter personal information for registration or similar actions.
However, it's apparent that there is currently a lack of error assistance in the search bar. This absence of error guidance could pose difficulties, especially for young users, as they engage with these interactive components. By introducing error assistance like clear error messages and input correction suggestions, the website can offer a more inclusive and user-friendly experience, aligning with accessibility principles.

Guideline 4.1 – Compatible ✓

The website's content is implemented using HTML language with proper structuring, ensuring complete start and end tags, correct nesting of elements, and avoidance of duplicate attributes. This guarantees compatibility with various user agents and assistive technologies, enhancing accessibility.

Considerations

In summary, our analysis of the KidsHealth® website's accessibility based on Level A guidelines revealed both areas of compliance and violations. These insights offer a comprehensive understanding of the website's current accessibility state, guiding us toward implementing necessary improvements for a more inclusive digital experience.

2.2 User Testing

This section evaluates user interactions with the existing KidsHealth® platform. By closely observing user behaviors, gathering feedback, and identifying pain points, we can have realistic considerations on the system. This is where the theory of the experts meets the real world. In this phase, we will perform formative tests. We aim to gather more qualitative data rather than quantitative.

2.2.1 Testing Protocol

We aim to gather tests from our target group, kids. To do so, we must deal with issues such as using clear and suitable language, coping with a lack of prolonged attention, and providing motivation to carry out the tasks. Notably, we are assessing an existing resource over which we don't have control. Therefore, we won't resolve errors at each iteration.

We assume that the users involved in testing have no familiarity at all with the system. We start the interaction with kids by presenting this as an educational game and talking to them to elicit interest in health themes. We explained that their result was unimportant and wanted to see "if this game works". They were asked to tell what they were thinking, their intentions on what they were trying to do, how they intended to proceed, and their doubts.

2.2.1.1 Discount Usability Testing - Thinking-aloud

Method We perform guerrilla discount usability testing [Nielsen, 1994b] because of resource limitations. Because of our requirements, we claim that an informal thinking-aloud methodology is the most suitable choice.

Subjects The subjects are some selected kids who are among the ones interviewed during the segmentation process [Section 1.1.4]. The tests are conducted by a single team member with the passive presence of the kids' parents.

Setting The setting is the kids' home with their devices (smartphone, tablet, or PC) to ensure a relaxed and familiar environment.

Expected Results We expect the system to be at least quite effective in terms of contents, efficient enough in terms of navigation (but not so much), and in terms of emotions, it could give a sense of bewilderment or it is quite cumbersome with no engagement.

Tasks Tasks are designed following the Nielsen-Norman Group directives [McCloskey, 2014] to make them engaging. We ask the users to perform the following tasks (in order):

1 Choose a body part of your interest among eyes, nose, ears, muscles, bones, brain, and heart. Use KidsHealth® to discover as much as possible about the ⟨ chosen body part ⟩ and challenge your knowledge.

2 Choose another interesting body part from the previous list. Use KidsHealth® to perform an activity about the ⟨ second chosen body part ⟩

3 Use KidsHealth® to discover what is stress.

In Task 1, we selected those parts because they provide at least a video, an article, a quiz, and an activity. We reassure the user that the quiz is not intended to evaluate them but the website quality. For the testing results, we split Task 1 into 1. a and 1. b for the searching/studying part and the testing part, respectively.

In Task 2, the list of body parts is the same as in Task 1 but without the one chosen there.

Testing results parameters are related to the success of task completion, efficiency, learnability, and enjoyment.

2.2.1.2 SUS (System Usability Scale)

We conducted the System Usability Scale (SUS) assessment with users immediately following testing the KidsHealth® website. We employed a SUS adaptation [Putnam et al., 2020] that is specifically tailored to our target audience. In line with recommendations, we presented the Likert 5-point scale responses alongside corresponding representative images [Figure 2.12]. The provided questions were categorized based on age groups: 7-8 and 9-11.

To ensure the questions were appropriately adapted for our sample group, we administered the SUS exclusively to users within these age brackets. This decision was made despite the presence of children aged 6 and 12. Specifically, we aimed to maintain consistency with our segmentation process and concentrated on children at the boundaries of these groups, i.e., 7-8 for the first group and 10-11 for the second. Below are the original questions, along with their respective adaptations:

Statement 1 I think that I would like to use this system frequently.
- **7-8** I would like to use KidsHealth® a lot more.
- **10-11** If I had this KidsHealth® on my iPad, I would like to use it a lot.

Statement 2 I found the system unnecessarily complex.
- **7-8** KidsHealth® was hard to use.
- **10-11** I was confused many times when I was using with KidsHealth®.

Statement 3 I thought the system was easy to use.
- **7-8**/**10-11** I thought KidsHealth® was easy to use.

Statement 4 I think that I would need the support of a technical person to be able to use this system.
- **7-8** I would need help to use KidsHealth®.
- **10-11** I would need help from an adult to continue to use KidsHealth®.

Statement 5 I found the various functions in this system were well-integrated.
- **7-8** I knew what to do next when I used KidsHealth®.
- **10-11** I always felt like I knew what to do next when I used KidsHealth®.

Statement 6 I thought there was too much inconsistency in the system.
- **7-8** Some things in KidsHealth® made no sense.
- **10-11** Some of the things I had to do when using KidsHealth® did not make sense.

Statement 7 I would imagine that most people would learn to use this system very quickly.
- **7-8** KidsHealth® would be easy for my friends to learn.
- **10-11** I think most of my friends could learn to use KidsHealth® very quickly.

Statement 8 I felt the system was cumbersome to use.
7-8 To use KidsHealth® I had to do some weird things.
10-11 Some of the things I had to do to use KidsHealth® were kind of weird.
Statement 9 I felt very confident using the system.
7-8 I was proud of how I used KidsHealth®.
10-11 I was confident when I was using KidsHealth®.
Statement 10 I needed to learn a lot of things before I could get going with this system.
7-8 There was a lot to learn to use KidsHealth®.
10-11 I had to learn a lot of things before using KidsHealth® well.
Statement 11 (Added with respect to the original version)
7-8 Using KidsHealth® was fun.
10-11 I really enjoyed using KidsHealth®.
Statement 12 (Added with respect to the original version)
7-8/10-11 I would keep using KidsHealth® if we had more time.
Statement 13 (Added with respect to the original version)
7-8/10-11 I plan on telling my friends about KidsHealth®.

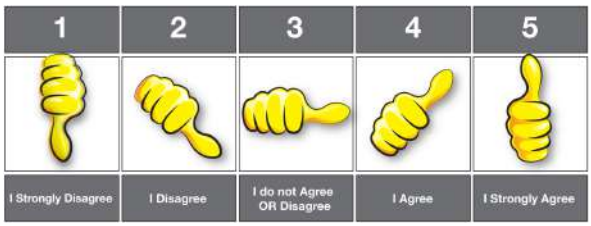


Figure 2.12: Likert Scale Answers

SUS totals are computed by summing positive questions subtracted by one and negative questions removed from 5, then multiplying by 100 and dividing by 52[2].

2.2.2 Testing Results

We tested our protocol with a total of four children. Three of them, Carlotta [Table 2.1], Simone [Table 2.2], and Ginevra [Table 2.3], were not familiar with KidsHealth®, and this was their first interaction with the website. They are respectively 7, 8, and 10 years old. The fourth child is the same as in the second contextual inquiry, Karol [Table 2.4], who is 11 years old. The decision to include one candidate who had previously interacted with the website was made to assess the website's memorability.

Task	Success	Efficiency	Learnability	Enjoyment
1.a	Success with assistance	Medium: minor hesitation	-	High
1.b	Success: 70% score	Medium: mistakes	Medium: minor hesitation	Very High
2	Success with assistance	Medium	Medium: user later understood the navigation function	High
3	Success with assistance	Low: hesitation, mistakes	Low: user forgot task 1.a navigation path	Low

Table 2.1: Test Results for Carlotta: first interaction

Answers to SUS and relative results can be found in table 2.5, with an average total score of 66.8.

[2] 52 is the maximum possible total to the sum of the answers.

Task	Success	Efficiency	Learnability	Enjoyment
1.a	Success with assistance	Low: major hesitation, mistakes	-	Very High
1.b	Success: 90% score	Medium: hesitation	Low: needed assistance	Very High
2	Success	Medium	Medium	High
3	Success with assistance	Low: mistakes	Low	Medium

Table 2.2: Test Results for Simone: first interaction

Task	Success	Efficiency	Learnability	Enjoyment
1.a	Success with assistance	Low: major hesitation, mistakes	-	Medium
1.b	Success: 50% score	Medium: minor hesitation	Medium: minor hesitation	High
2	Success with assistance	Medium	Medium	Medium
3	Failure	Low: user ended up using search function	Low	Low

Table 2.3: Test Results for Ginevra: first interaction

Task	Success	Efficiency	Learnability	Enjoyment
1.a	Success	Very High	High	High
1.b	Success: 90% score	High	High	Very High
2	Success	Medium: hesitation	High	High
3	Success with assistance	Medium: hesitation, mistakes	Medium: user later recalled her previous interaction	Medium

Table 2.4: Test Results for Karol: second interaction

Statements	Carlotta	Ginevra	Simone	Karol
Statement 1	5	3	4	4
Statement 2	3	3	4	2
Statement 3	4	3	2	5
Statement 4	3	2	4	3
Statement 5	4	1	3	5
Statement 6	1	3	1	1
Statement 7	4	4	3	3
Statement 8	2	2	1	2
Statement 9	4	3	5	4
Statement 10	4	5	5	1
Statement 11	5	4	4	4
Statement 12	5	3	4	3
Statement 13	4	4	5	5
SUS Totals	75.0	51.9	61.5	78.8
Partial Averages[3]	62.8			78.8
Average	66.8			

Table 2.5: SUS Results for KidsHealth® testing

2.2.3 Testing Analysis

In our testing procedure, we first focused on three children who interacted with the website for the first time. Two out of three of these newcomers struggled to locate the appropriate website section, ”How the Body Works.” With minor assistance from the analyst, they eventually completed the task. Ginevra, one of the newcomers, faced more significant challenges. She exhibited hesitancy and difficulty navigating the website, making several mistakes.

Despite the initial difficulties, the children chose different body parts to explore and expressed genuine interest in learning about them. This suggests that the information provided on the website is engaging and well-written for children. Simone, however, told some tiredness towards the end of the article, but he finished reading it.

Task 1. a, which involved reading an article about a chosen body part, was completed by all children with minor assistance and overall satisfaction. Moving on to task 1. b, all the children encountered difficulties finding the related quiz for the article. Their navigation was inefficient, and they showed minor errors and hesitations. Simone was the only one who required assistance in this task. However, once they found the quiz, the children found the questions appropriate, and the experience was delightful. Even though the second task was not explicitly designed to assess the children’s knowledge, their scores of 70%, 90%, and 50% could indicate their ability to comprehend and retain the information they had just read.

While task 2 was manageable for all three newcomers, their navigation efficiency was moderate. They struggled to locate the activity immediately but showed increased learnability as they performed actions similar to tasks 1. a and 1. b. Task 3 proved to be the most challenging for these children by changing the section where they needed to find information, which was not ”How the Body Works,” their performance suffered in terms of efficiency and learnability. For example, Carlotta completed task 1. using the navigation bar but did not immediately use it for task 3. She required some assistance due to a lack of attention to the other sections during task 1.a. Ginevra failed task 3, as she resorted to using the navigation function, which yielded unsatisfactory results. Additionally, the level of assistance she required to ”complete” the task was too high to consider it successful.

In contrast, Karol, the child with prior experience with the website, achieved the best results across all tasks. She completed task 1 without assistance, hesitation, or errors and enjoyed the article and quiz, scoring 90%. She experienced minor uncertainty during task 2 but finished it efficiently using a navigation pattern similar to her previous interaction. For task 3, Karol faced challenges, exhibiting hesitancy and making errors. However, she eventually recalled her previous interaction and completed the task.

The analysis of the results has alleviated some of our initial concerns regarding the article length, which we worried might lead to kids becoming tired or losing interest. However, to our delight, all the children enjoyed the readings and performed remarkably well in the quizzes. These scores indicate the effectiveness of the content and the language used in the articles. Moreover, our concerns about younger children’s ability to navigate the website have been largely dispelled. Their proficiency in using electronic devices, coupled with the frequency of their usage, positively influences their ability to navigate the site efficiently.

Nonetheless, our testing procedure did reveal some issues. To better define these issues for later assessment on the urgency curve, we meticulously documented the errors made by the children during each task and subtask. These errors included hesitation and mistakes while navigating the website and during the quiz and activity sections.

E1: Difficulty locating the appropriate section ”How the Body Works.”

E2: Erroneous clicking on an element, expecting a different result.

E3: Misunderstanding of the carousel play button.

E4: Challenges in returning to the previous page and accessing the quiz related to the body part selected in Task 1. a.

E5: Accidental clicking on quiz answers, especially clicking ”continue” on the final question, preventing users from revising their answer if they believe they made an error or accidentally clicked on ”Continue”.

E6: Difficulty accessing the ”How the Body Works” page again to assess another body part’s activity.

E7: Difficulty in using the navigation bar and expandable list.

E8: Backtracking after using the Search function.

2.2.4 Urgency Curve

Figure 2.13 illustrates the urgency curve for the eight errors. This chart depicts the impact versus the frequency of the identified errors. We defined frequency as the number of children who encountered a particular mistake. In terms of impact, it has been estimated as inversely proportional to the efficiency and learnability parameters of the testing results. In other words, an error discovered within a task will have a very high or high impact if that task or subtask was completed with very low or low efficiency and learnability.

The chart also visually represents the persistence of an error, which refers to the extent to which a problem or issue continues to affect users over time. This is denoted by the thickness of the circle around each error point.The red line constitutes a fixed threshold: errors above the threshold ought to be corrected as soon as possible.

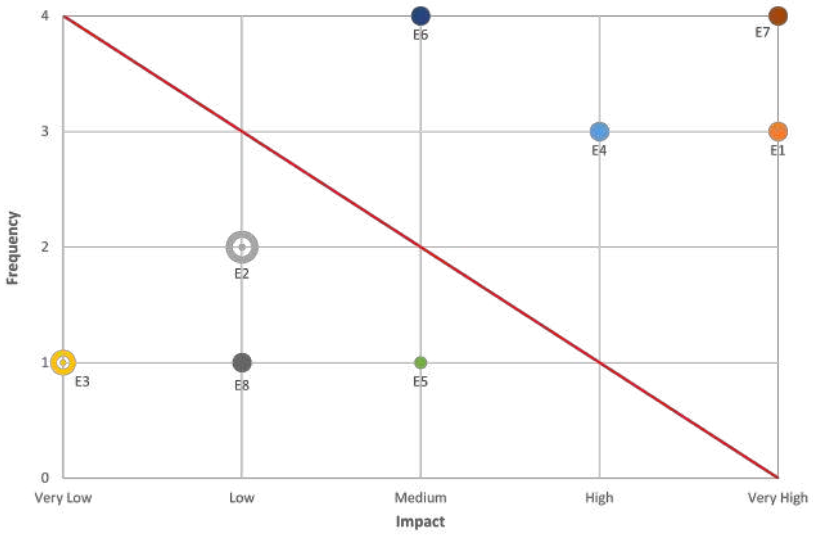


Figure 2.13: Urgency curve

2.3 Overall Considerations

We have established the following 0 to 4 rating scale to assess the severity of usability problems [Nielsen, 1994c]:

0 : I disagree that this is a usability problem.

1 : Cosmetic problem only: need not be fixed unless extra time is available on the project. Errors **E2**, **E3**, **E8**, **E5**.

2 : Minor usability problem: fixing this should be given low priority. Errors **E4**, **E6**.

3 : Major usability problem: important to fix, so should be given high priority. Errors **E1**, **E7**.

4 : Usability catastrophe: It is imperative to fix this before releasing the product.

The first aspect to consider during the redesign process is the information architecture. The most severe problems are navigation, content organization, and website structure. As discussed earlier, our primary focus should be enhancing our target users' ease of use. This entails assisting them in making the correct navigational decisions, allowing them to perform their intended actions by aligning with their expectations and mental models. For instance, users click elements expecting to be redirected to a particular page or accidentally engage with buttons that perform actions different from their expectations. This applies to internal website inconsistency and bridging the gap between the website and the kids' expectations.

Additionally, attention should be directed toward the safety of children. While we trust that the content on the kids' sub-site suits our target users, we cannot guarantee the same for content on the parents' and teenagers' sub-sites. To address this, we will make it challenging for a child accessing the kids' sub-site to interact with content from other sub-sites. This will involve redesigning the navigation bar and the search function to display results tailored exclusively for children.

In conclusion, while KidsHealth® provides valuable health information and educational content, several usability issues pertain to navigation, organization, presentation, language options, accessibility features, and visual engagement. Implementing the suggested improvements can enhance the user experience and ensure compliance with guidelines for website accessibility and usability.

Additional Observations:

On a positive note, despite our initial low expectations, we discovered that kids enjoy video content and find reading articles engaging. They exhibit a surprising level of concentration, even with lengthy articles. While there were instances where kids displayed signs of tiredness or boredom, their interactions provided valuable insights into addressing these issues.

In particular, children desired more visual content, such as images and simple graphs to accompany articles. They also sought more interactive features, including activities related to the human body that are printable and playable within the website itself. Additionally, they expressed a need for alternative forms of knowledge assessment.

Chapter 3

Feasibility Study

3.1 Context of Use

Informed by our target audience and insights gleaned from ethnographic research [Section 1], we delineate user profiles, tasks, and critical considerations for our design framework.

3.1.1 Intended Users

Our primary users are children aged 6 to 12 who visit the kids' section of KidsHealth®. We categorize them into two distinct age groups: Explorers (6-9) and Investigators (10-12).

Explorers are characterized by boundless curiosity and a thirst for exploration. They are primarily visual learners, stimulated by vibrant images and imaginative scenarios. Their budding critical thinking skills drive them to understand the ”how” and ”why” of various concepts. Explorers enthusiastically pursue their specific interests and prefer hands-on, interactive learning experiences.

Investigators are in the process of self-discovery. They excel in analytical thinking and have a growing sense of empathy and social awareness. Their journey includes understanding their rapidly changing bodies. They value in-depth explanations and engage more critically with health-related concepts.

Both age groups may have diverse educational backgrounds, experiencing structured curriculum or Montessori-style education. Users of the kids' subsite of KidsHealth® encompass a broad spectrum, from those driven by curiosity and personal interests to students exploring health topics for educational purposes or simply seeking a playful knowledge challenge.

3.1.2 Intended Tasks

The tasks designed for users of the kids' subsite of KidsHealth® are crafted to engage and educate children aged 6 to 12. These tasks adapt to their developmental stages and learning styles:

For Explorers (Ages 6-9):

- Discover Interactive Content: Engage with interactive quizzes, games, and videos to introduce health concepts entertainingly and educationally.
- Visual Learning: Explore captivating animations and illustrations to grasp the intricacies of body functions, nutrition, and hygiene through engaging visuals.
- Participate in Quizzes: Test your knowledge and curiosity about health topics through interactive quizzes and activities that encourage learning through play.
- Hands-on Experiments: Dive into online experiments that offer hands-on learning experiences, fostering better understanding and knowledge retention.

For Investigators (Ages 10-12):

- Research Health Topics: Delve into comprehensive articles, videos, and expert resources to thoroughly explore specific health subjects.
- Puberty and Body Changes: Seek information regarding the transformations during puberty and discover ways to stay healthy during this phase.
- Physical Well-being: Explore content centered around physical health, empowering you with knowledge about maintaining a healthy lifestyle.
- In-depth Learning: Satisfy your curiosity and analytical thinking by immersing yourself in detailed explanations of health concepts.

These tasks accommodate our young users' diverse interests, motivations, and learning preferences, providing an engaging and educational experience.

3.1.3 Technical and Environmental Constraints

As we embark on the design process, it is imperative to address the technical and environmental factors that shape the use of the KidsHealth® website. Considering our primary audience of children aged 6 to 12, the technical constraints reveal a significant digital fluency among these young users. Given the proliferation of technology, we anticipate that most users have access to personal computers, laptops, or tablets. These devices support web applications and multimedia content effectively, thus ensuring a seamless browsing experience. However, recognizing the diversity of devices, we remain aware that constraints may arise, particularly concerning mobile devices, older tablets, and computer mice. While modern devices offer optimal compatibility, we acknowledge the potential variations that could impact the user experience based on the type of device.
Furthermore, our understanding of the environmental context parallels our users' engagement's exploratory and leisurely nature. Similar to the feasibility study's insights, our users are likely to interact with the KidsHealth® website during their free time, primarily in home environments conducive to relaxation and exploration. The absence of rigid time constraints aligns with our holistic educational approach, encouraging those kids to delve into health-related topics without predefined goals.
While the cultural inclusivity of our user base remains intact, the feasibility study's focus on Western, first-world countries like Italy and Spain provides valuable insights into the probable demographic distribution. These valuable insights serve as the foundation on which our design framework is constructed, guaranteeing that this website's technical and environmental dimensions align seamlessly with the needs and preferences of diverse kids.

3.2 Personas

We designed five personas, kids with their own life physical and psychological traits. Each has unique motivations, core needs, and pain points. They are associated with one of the following categories: independent explorers, health-seekers, and classroom-engagers. Their psychological traits are defined in the segmentation phase [Section 1.1].

In this section, we emphasize the life descriptions of the personas. While in the attachments, there is a persona card for each of them.

Mable - Independent Explorer - *Protagonist*

Mable, the spirited 7-year-old adventurer, possesses an endless curiosity that's been kindled since her earliest days. Her mother, a devoted botanist, recognized Mable's spark and fanned the flames of her wonder for the natural world. These early experiences planted the seeds of a deep passion for exploration that continues to shape Mable's remarkable journey.
In her quests, Mable finds a trusted companion in Vicky, her dedicated babysitter. Vicky takes on the role of a guide in Mable's quest for knowledge, often joining her on exciting journeys through the wonders of nature. Mable's curiosity drives her to reach out and engage with the world around her, a quality Vicky nurtures through hands-on experiments and interactive learning. Their bond is a

treasure trove of shared laughter, cherished moments, and endless enjoyment.
Mable's days are a whirlwind of vibrant energy and boundless enthusiasm, always on the verge of the next thrilling adventure. Whether chasing butterflies in sunlit gardens or orchestrating her miniature science experiments, Mable's spirit for discovery knows no limits. She craves experiences that invite her to dive headfirst into the unknown, experiments that spark her wonder, and lessons that bridge the gap between the theoretical and the tangible.
In contrast to her spirited exploration, Mable's school environment leans heavily towards theory, sometimes leaving her yearning for more hands-on engagement. Nonetheless, she excels in subjects like Science and Geography, where her fascination for the world finds a nurturing home.
Beyond her physical explorations, Mable's curiosity extends into the digital realm with equal enthusiasm. However, her parents, acutely aware of the potential risks of the online world, are vigilant in ensuring her digital experiences remain secure and educational. She owns a tablet primarily for watching YouTube content, favoring YouTubers like "Me Contro Te" and "Dinsieme," who create engaging and entertaining content.
With a love for exploration, both in the physical and digital worlds, Mable's journey of discovery knows no bounds. Her insatiable curiosity propels her forward, guided by her parents' watchful eyes and her thirst for knowledge.

Lewis - Classroom Engager - *Secondary*

Lewis, a 9-year-old knowledge seeker, is like a sponge thirsty for learning. His insatiable curiosity and commitment to education are truly extraordinary. Among his school passions, Math and History hold a special place in his heart.
Lewis's talent for constructing intricate Geomag creations reflects his intellectual creativity, often inspired by his father's architectural projects. However, his fascination with the cosmos truly ignites his academic drive. To him, space represents the ultimate frontier.
For Lewis, complex problems aren't hurdles but opportunities to shine. He's motivated by the desire to surpass academic expectations and seeks the recognition that comes with exceptional achievements. Tracking his progress, earning achievements, and receiving acknowledgment for his academic triumphs fuel his determination to reach new heights.
Lewis's parents regularly supply him with books and educational games like Clementoni's. He also has access to a PC, tablet, and smartphone. He mainly uses the PC to search for exciting content and watch documentaries. The smartphone comes in handy when he's away from home and needs to find information on the go.
However, Lewis's engagement isn't unconditional. If a subject lacks depth or challenge, his interest can quickly wane. He might disengage from the learning process if his mind isn't stimulated. He may feel frustrated if he encounters obstacles to accessing educational materials.
Currently attending a Montessori school, Lewis's educational environment perfectly complements his love for exploration and self-driven learning. This approach nurtures his inquisitiveness, providing opportunities to delve deeply into subjects and pursue intellectual passions.
Regarding social life, Lewis has only a few friends, and he often declines their invitations to go out and participate in activities. He prefers staying at home alone to study and delve into school topics. He approaches issues with pragmatism and realism, rarely showing his emotions.
Despite his parents' efforts to encourage him to stay active and make friends through sports, Lewis isn't a fan of physical activities. He reluctantly attends swimming lessons twice a week for a couple of hours but often gets bored and doesn't excel in competitions.

Riley - Health Seeker/Independent Explorer - *Secondary*

Riley, a 12-year-old girl with a strong passion for athletics, leads an active life. Her days are typically divided between attending school in the morning and engaging in training sessions three times a week during the afternoons. Residing in Italy, she is a secondary school student who maintains commendable academic performance, holding an average score of 8 out of 10.
As she looks towards the future, Riley is on the cusp of a significant decision regarding her educational path. Despite her young age, she is determined to pursue her interest in sports. Her aspirations are evident as she expresses her desire to enroll in a sports scientific high school[1]. This educational

[1] In Italy is: Liceo Scientifico - sezione a indirizzo sportivo

choice will allow her to delve into subjects about physical movement and sports-related topics.
Riley is growing up well; she is a very responsible girl, and her cognitive abilities are pretty advanced for her age. She frequented a Montessori primary school and is used to doing things independently. Indeed, she always tidies her room on her own.
Riley maintains an optimal state of health, and her conscientious approach to well-being is evident in her consistent ability to avoid catching colds. Her only health issue is that she is celiac. Therefore, she must evaluate carefully each piece of food that she ingests.
She has a lot of friends and often hangs out with them. When she is not outside, she is used to staying at home alone because both her parents work until 6 p.m. and the other relatives live in another city.
She has a crush on a schoolmate, though she has yet to experience her first kiss. She is starting to put make-up on because she wants to feel beautiful.
She uses an iPhone mainly to talk/write with her friends. For entertainment purposes, she has a tablet at home that she uses to watch TV series on streaming platforms like Netflix when she is tired and wants to relax.

Miguel - Health Seeker - *Secondary*

Miguel is an 11-year-old boy born in Padua to parents of Mexican origin. He is about to start the secondary school in a month. His grades are quite good in discursive subjects like Italian language, History, and Arts, but he struggles a bit at the more technical ones like Maths and Science. He enjoys hanging out with his friends and is an outgoing boy. His main hobby is the guitar. Indeed, he started playing self-taught, and some months ago, his parents decided to make him join a music school. He is excited about that and hopes to establish a rock band with his friends.
His father is a truck driver, so he is rarely at home. While his mother is an art teacher at a high school, she is almost always present; while at work, Miguel is at school.
He likes to play games with his PC online with his friends. His favorite game is Fortnite. He spends about two hours a day playing. Not more because his mom forbids it. Indeed, she has forbidden him to have a smartphone, too. He also uses his PC to research topics of interest online, like tutorials about guitar on YouTube.
Unfortunately, his mom discovered that she had breast cancer in the second stage. Doctors claim that they can handle the situation. Meanwhile, she has to face several treatments that can also be quite invasive. She is always tired and carries Miguel with her when she must go to the hospital. Sometimes, he is present directly to the treatments. He is deeply engaged in this challenging circumstance, requiring significant emotional strength. His affection for his mother is profound, and he eagerly anticipates the day when this ordeal will end.

Jude - Classroom Engager - *Additional*

Jude is a 10-year-old boy full of energy for his passions and with no energy at all for his duties. He wants to enjoy his time by hanging out with his friends and joking. His main passion is basketball; he plays it with friends whenever the sun is outside. He also follows most NBA matches. His favorite team is the LA Lakers. Jude also likes to ride his skateboard and BMX bike. His room is full of Kobe Bryant and Tony Hawk posters, and he cried a lot when Kobe passed away. Sometimes, he spends afternoons trying to perform tricks and challenging his friends.
His parents are divorced, and he lives with his mom, while his father lives in another city with his new partner. His mother has a precarious job and struggles to make ends meet. She is forced to work several hours a day to make things work, and Jude is used to staying alone. However, his mom wants the best for Jude and puts a lot of effort into giving him a good life.
The only subject that Jude likes at school is Biology. He studied the basic anatomy and behavior of animals. He has an innate love for them. Indeed, he has a dog, which he loves very much. Concerning his performance in other subjects, he lacks the motivation to invest effort in them.
At school, he often gets disciplinary notes because of his attitude to talk with his friends constantly. Sometimes, he does also worse things like bad jokes to the teachers. This behavior is also present when he is out with his friends. Indeed, they like a lot to make pranks on people and disturb them.
When Jude is at school, he constantly watches the clock because he looks forward to going out. He struggles to keep his attention up during lessons, and he can concentrate only during practical sessions, where he is good because of his elevated dexterity. The only motivation to do his homework

and study is to have more free time and not be rejected at school.
Jude does not actively research new topics unless they are directly and practically related to his interests. He does only what he is told and forced to do.
He has an old and slow PC that he rarely uses, only for some video content. He also has a smartphone whose purpose is to keep up with his friends and his dad. He also uses it to make videos about his tricks and share them with his friends and his dad as a way to be in touch, especially with this last one.

3.3 Scenarios

To enhance our comprehension of the intricate interplay between individual aspirations and the associated tasks, we present a single conceivable utilization scenario of the KidsHealth® platform for each of our personas. We follow the Nielsen Norman Group's suggestions [Salazar, 2021] to avoid scenarios that lead to too-tailored solutions ignoring real-life situations. Each scenario comprises an actor, a motivator, an intention or intent, an action, and a resolution.

Curiosity - Mable *(Independent Explorer)*

Mable loves adventures, whether exploring outdoors or learning new things. After a nature walk with her babysitter, Vicky, she's tired but excited to explore more.

Motivator Encouragingly, Vicky suggests visiting KidsHealth® to learn about the human body and how to deal with things like bee stings, which makes Mable curious.

Intention She understands that it is exciting to know the inner world after exploring the outside world.

Action Mable decides to check it out on her tablet, specifically the kids' section. When she lands there, she finds a video about dwarfism that fascinates her. She forgets about everything else and watches it to learn more about this condition she's never seen before.

Resolution Mable enjoys the KidsHealth® content, especially the real-life videos that show things she's never seen before.

Deep Study - Lewis *(Classroom Engager)*

Fresh off another successful school day, Lewis received his Science test results and, as usual, secured a top position in his class. The teacher's praise left him amused. Their next subject is the human body, and the teacher aims to gauge self-learning skills by assigning individual topics for student-led lessons. To ensure comprehension, the teacher shared a concise list of trustworthy and kid-friendly sources, including KidsHealth®.

Motivator Lewis' Science teacher gave him homework to do free research about the human brain. He can present whatever he wants; the teacher gave him carte blanche.

Intent Lewis wants to excel in this task and get a good mark, to feel that unique sensation of having done something great and having achieved the highest result. He knows that his brain is vital, and he is also curious to know how it works. Even if he can choose a single topic about the brain and present it, he wants to make a good impression by doing comprehensive research.

Action Lewis , as soon as he gets home, jumps on his PC to start his research. He tries searching on Google for information about the human brain but soon realizes that such content is too difficult for him. So, he decides to start more lightly by consulting the sources suggested by the teacher. He reads that KidsHealth® provides quizzes to assess the knowledge and chooses it as the reference source. He browses KidsHealth® deeply to find the most information possible.

Resolution Lewis reads every article about the human brain on KidsHealth® and watches with attention every video by taking notes. Then, he arranges his notes and eagerly studies them. Finally, he performs the quiz on KidsHealth®, obtaining a high score. This result is reassuring that he has done an excellent job and is ready to give the speech in class.

Body Consciousness - Riley *(Independent Explorer)*

Riley possesses a strong awareness of her body and is keenly interested in its transformations and a commitment to prevention and well-being. Her school proactively promotes self-awareness among students regarding their growth and bodily changes. A few months ago, they conducted a preparatory session for all girls, focusing on the menstrual cycle.

Motivator Riley experienced her first menarche a few days back. Despite her fear, her mother's support helped her to face the situation. She encountered new sensations, discomfort, and physical pain. With her period now concluded, she's beginning to sense a growing sense of womanhood within herself.

Intent Motivated by curiosity, Riley seeks a deeper understanding of what transpired, its reasons, and what to expect. She wants to be prepared to face it in the best way possible.

Action Guided by her mother, Riley grabs her tablet and goes on KidsHealth® to find the needed information, navigating through the website. She watches with attention every single video and reads every word of the articles. During the reading, her mom engages Riley so she doesn't get distracted or bored.

Resolution Riley acquires knowledge about her period and is ready to face it next time without any fear.

Well-being - Riley *(Health Seeker)*

Riley possesses a strong awareness of her body and is keenly interested in its transformations and a commitment to prevention and well-being.

Motivator Unfortunately Riley is celiac, so she has to be very careful about what she eats. She is also an athlete, so she has to eat well.

Intent Riley is determined to comprehend the hazards of gluten, master its avoidance, and simultaneously adopt a health-conscious diet to maintain her body's optimal vitality.

Action Riley's mother made her know about KidsHealth®. She decided to pick up her tablet and go there and search for celiac disease, gluten, and healthy, tasty food.

Resolution Riley reads the articles about the food she must eat. Even if sometimes she gets distracted, she then goes on. She performs a quiz to ensure she has properly understood and asks her mother to print out the activity.

Shallow Study - Jude *(Classroom Engager)*

Jude is a rebellious boy who cares only about his free time.

Motivator Jude was absent from school today, and his best friend told him they were supposed to fill in a form with all the main body parts and write a small description of them.

Intent Jude decides to do that with his friend. They both want to be fast to go out with their skateboards.

Action So, they grab their smartphones, look for a comprehensive but easily understandable source and find KidsHealth®. They look through the website to find information about the human body and brief descriptions.

Resolution They both manage to do their homework by finding easy images and short articles. Now, they are ready to go out.

Health Issues - Miguel *(Health Seeker)*

Miguel embodies both high energy and responsibility. Sadly, his mother has been diagnosed with breast cancer, prompting him to faithfully accompany her to hospital visits while staying informed about the progression of the illness.

Motivator After her mother's recent check-up, the doctors have recommended commencing chemotherapy. His mother cautioned him that she would experience hair loss and constant fatigue.

Intent Miguel inquires about chemotherapy and possible alternatives, though his mother hesitates slightly in response due to her limited medical knowledge, trusting the doctors. Miguel's courage leads him to seek additional information from a physician at the hospital. After receiving clarification, the doctor recommends consulting KidsHealth® for reliable information and avoiding further internet searches.

Action Miguel follows the advice and goes on KidsHealth® with his smartphone, hoping to find all the needed answers to help his mom. He finds several videos about cancer and how to face it, so he decides to watch them with his mom, hoping this could also help her.

Resolution Miguel watches the videos and reads some articles. He gets a higher consciousness about this destructive disease and gains valuable insights to help her mom during the therapy.

Chapter 4

Design Proposal

For the sake of the redesign, we adopted suggestions from the Nielsen and Norman Group about usability for children [Sherwin and Nielsen, 2019].

4.1 Design Model

Recognizing the distinct needs and challenges presented by our young audience, we embarked on the path of developing an application that could seamlessly address their interaction preferences. This choice was driven by our insightful engagements with children during the usability testing of the website. It became evident that navigating and controlling the desktop version posed difficulties for children, aligning with research that underscores kids' comfort in using mobile devices and tablets. A study by the Nielsen Norman Group in 2017 highlighted this trend, revealing that 98% of U.S. households with children aged 0 to 8 owned a mobile device. Correspondingly, within the same age group, 42% of children had their tablets—a significant rise from the mere 1% reported in 2011. Thus, transitioning to an app format emerged as a natural progression, ensuring a smoother and more child-friendly interaction experience. Moreover, in our pursuit to provide accessibility across devices, our design standard guarantees optimal compatibility with tablets and phones and with desktop screens to ensure a seamless experience across various platforms.

Incorporating Jesse James Garrett's user-centered design framework, our design model for the kidsHealth app will be structured across five layers: Strategy, Scope, Structure, Skeleton, and Surface. This approach focuses on fulfilling user needs at every touchpoint, starting from broad objectives and narrowing down to specific interactions. From abstract to concrete. By focusing on a user-centered, goal-oriented approach, this design model ensures that we keep the end-users at the center of the design process. It aligns well with our objective of making this app a trusted and indispensable resource for kids' health education. We adopt an iterative approach, iterating until every error is below the urgency curve.

Strategy Plane

The strategy plane about the objective of the KidsHealth® platform and the user needs and goals has already been addressed in the previous sections.

Product Objectives

Short-term goals Our immediate focus is developing an intuitive and engaging platform for our primary audience of children aged 6 to 12. The aim is to offer a welcoming digital environment that captures their attention and encourages them to delve into various health-related subjects. By incorporating interactive elements, eye-catching visuals, and language that resonates with this age group, we aim to spark curiosity and provide a fruitful learning experience.

Long-term goals In the long term, we foresee the KidsHealth app becoming a fundamental pillar for educating children about health. Ongoing upgrades in content quality will mark this, user engagement features, and a harmonious fit within the larger KidsHealth® ecosystem. Our vision extends beyond the website to influence the broader brand image of Nemours, the organization behind KidsHealth®. As the site evolves into a foundational resource for children's health education, Nemours stands to gain brand reliability and reputation. A high-quality, user-focused app will testify to Nemours' commitment to child health and education. This will also amplify the popularity and credibility of Nemours' hospitals and other healthcare services. Our long-term evolution will be characterized by continuous improvement in content quality and user engagement.

Budget Leveraging Nemours' network of hospitals and healthcare professionals, it is possible to optimize content creation costs. This advantage allows us to focus our initial budget on design, development, and user testing. Future budgets will accommodate content updates and user research, further enhanced by potential cross-promotions with Nemours' hospitals.

User Needs and Goals

Expected users Drawing from our understanding of the website target audience [Section 1], we anticipate that our users will primarily consist of children aged 6 to 12, divided into two distinct age groups: Explorers (6-9) and Investigators (10-12). Explorers are characterized by their curiosity, visual learning preferences, and hands-on approach to interactive experiences. On the other hand, investigators exhibit analytical thinking, empathy, and a desire for in-depth understanding, particularly in health-related concepts. Our user base spans a spectrum, from those exploring health topics out of curiosity to those seeking educational enrichment and even those drawn to playful challenges. Because of their objectives, the three main kinds of users are independent explorers, school engagers, and health-seekers, as discussed previously.

User attraction The allure of the KidsHealth® website lies in its unique ability to provide captivating, educational content tailored to the interests and developmental stages of our young users. For Explorers, interactive quizzes, games, and videos engagingly introduce health concepts, fueling their curiosity. Investigators can delve into comprehensive articles, videos, and expert resources to satiate their analytical minds. The platform is designed to be an oasis of credible information in an accessible format, encouraging users to learn about health in an exciting, age-appropriate way. We also rely on the reputation of KidsHealth® and the role of educators to suggest and promote this resource.

User retention Sustaining user engagement is pivotal to the success of the KidsHealth® website. By focusing on personalized learning journeys, we aim to create an app experience that users will return to willingly. As users interact with the platform, we prioritize personalized data and preferences. Additionally, our system's assistive features, like a personal guide, offer suggestions and insights that intrigue the learning process. Users will find value in the system's ability to enhance their knowledge and understanding of health topics, making this app a trusted companion for their educational exploration.

Familiarity Since children predominantly use mobile devices with touch interfaces, we should focus on optimizing the mobile UI/UX. The design should mirror interfaces they're already familiar with, making it easier for them to navigate and reducing the likelihood of website abandonment.

Scope Plane

One part of the scope plane about the requirements of the KidsHealth® platform has already been addressed in the previous sections, and another part will be addressed in the subsequent sections about the actual redesign, such as the precise content requirements.

Content Management

Content type Our content will be a mixture of textual articles, interactive quizzes, interactive activities, video content, and infographics, all designed to be age-appropriate and in line with educational standards.

Content creators Content will be produced by a team of health professionals, educators, and experienced children's content creators to ensure accuracy, reliability, effectiveness, and age-appropriateness.

Reliability To ensure the reliability of the content, all information should undergo rigorous review and validation by Nemours' in-house medical experts and healthcare professionals. This approach guarantees that the content aligns with the latest medical guidelines and best practices.

Content management system A comprehensive CMS should be employed to allow for easy updates, the addition of new content, and the straightforward integration of multimedia resources.

Content Core Ideas

Engagement The app will feature interactive elements such as quizzes, games, and interactive articles to keep users continuously interested. These components aim to inform and involve the user in an immersive learning experience. It has to encourage active user participation beyond just reading or watching content.

Simplicity To ensure that our young audience easily navigates the new app, we place a premium on simplicity. A streamlined design, clear call-to-actions, and an intuitive menu system will ensure that users find what they want with minimal effort. Additionally, the interface will be designed to mimic styles and elements familiar to our target age group, making it resonate with other platforms they commonly use. This friendly interface layout will help reduce the learning curve, enabling users to interact with the app more naturally and efficiently.

Cohesion Taking user experience to heart, the app's elements—from its design interface to its content offerings—will present a cohesive, unified experience. This focus ensures that user engagement is maintained without being scattered or dispersed, offering a more rewarding interaction with the app. Redundancy should be present only if needed and should not create confusion.

Appropriateness Given the sensitive nature of health-related content and the young age of our target audience, ensuring content appropriateness is paramount. All information will be age-sensitive, and the presentation will be adjusted to meet the cognitive and emotional levels of our Explorers and Investigators alike. Kids should not be able to access inappropriate content that may be present in the other sections, like the one for teenagers.

Security Given our focus on a young audience, robust security measures should be implemented to protect user data and privacy. Compliance with child online privacy laws will be ensured, and clear, understandable privacy policies will be implemented.

Accessibility Understanding that our user base may have varying abilities, the app design implementation must adhere to web accessibility guidelines WCAG [W3C, 2008] to make this app as inclusive as possible. From color contrast to keyboard navigation and screen reader compatibility, we are committed to making health education accessible to all by taking into consideration visual, auditory, cognitive, physical, and language accessibility.

Findability and discoverability We're focused on making our platform's content easily searchable for users with specific needs and providing captivating content for serendipitous discovery to maintain engagement. Our research shows that determined children persist in their searches, whereas disengaged users switch resources or abandon their quest. Additionally, our upcoming app, featuring the same content as the website, aims to offer a seamless experience tailored to different preferences, enhancing accessibility and interaction.

Structure Plane

The structure plane will be addressed in the following sections with the actual app design, such as the information architecture [Section 4.2], the interaction design [Section 4.3], and the structure blueprints [Section 4.4].

Skeleton Plane

The structure plane will be addressed in the following sections with the actual app design, such as the wireframes [Section 4.5].

Surface Plane

The surface plane will be merged into the skeleton plane by making further considerations on the wireframes [Section 4.5].

4.2 Information Architecture

To design the Information Architecture, we adopted suggestions from the Nielsen and Norman Group [Laubheimer, 2022]. Having identified a considerable range of features and sections crucial for our application, we're taking a bottom-up approach to shape the system's structure. Specifically, we start by pinpointing the primary components that will comprise our system. After characterizing and describing these components, we then group them into broader sections. A categorical structure guides this organization [Shedroff, 2000]. The old features have been described in the assessment of existing resources [Section 2]. It's worth recalling that the overarching aim is boosting engagement and discoverability.

4.2.1 Identified Components

1 **Articles:** An article serves as a textual medium for conveying information or storytelling. Typically, articles are enriched with explanatory or engaging imagery to enhance user comprehension and engagement. They might also embed videos, but they are not mandatory. They have a brief assessment at the conclusion in the form of the so-called "multiple-choice cloze test", allowing users to gauge their understanding and mark the lesson as complete. This adds an element of gamification and engagement to the educational journey.

2 **Lesson:** A lesson functions similarly to an article but with a more explicit educational orientation. The competition of a lesson is required to unlock the subsequent ones.

3 **Video:** Videos are a way to show and tell about things with visuals and sound. They make learning fun and easy to understand.

4 **Game:** A game serves as a topic-related interactive component designed to both entertain and educate. Games may come in various formats, such as multiple-choice quizzes or activities that involve tasks like filling in the blanks or selecting words from a word bank. The interactive nature of games aims to engage the user and make learning more enjoyable. Additionally, completing a game often unlocks an achievement.

5 **Topic:** For any given body part of the human body, the topic serves as a central spot where you can find access to all the stuff related to it, like videos to watch, lessons to learn from, articles to read, games to play, quizzes to take, and activities to do.

6 **Human Body:** The Human Body is the main content center around which every other content revolves. We assume that there can be no other section type like the Human Body, because of its semantic importance. In the "Human Body" section, the design is kid-friendly and logically organized, moving from the head down to other body parts. These are presented in a way that enables kids to follow a logical pathway. Each central area, like the head, breaks down into smaller topics, like the brain and eyes.

7 **Centers:** Centers act as hubs that organize related articles under a broader macro-topic. So, they are basically article aggregators. Some of the identified centers are the following:

Puberty and Growing Up
Feelings and Environments
Health and Well-Being

Medical Conditions and Treatments
Pain and Injuries
Safety and Emergencies
Doctors and Medical Tests

8 **All Sections:** "All Sections" functions as the nerve center, directing users to critical areas designated as centers. This section enhances findability, making it easier for users to locate the specific information they're looking for. It is the hub for all the centers.

9 **Achievements:** An achievement acts as a virtual trophy, rewarding and motivating users. These achievements can be earned by completing games and lessons within the platform. By offering these virtual rewards, the platform engages users in a gamified experience that entertains and incentivizes the educational journey.

10 **Home:** The homepage is the primary hub. It is designed with a dual focus: to enhance engagement and discoverability while facilitating easy navigation to desired content. While the emphasis is primarily on sparking curiosity and promoting the discovery of captivating new material on KidsHealth®, the page also serves as a central hub for navigating to other key sections. Thus, the design aims to balance showcasing exciting content and providing intuitive pathways to specific pages users may seek.

11 **Profile:** The profile page is designed to offer a personalized experience by allowing for minor customizations. Additionally, it features a gamified presentation of app usage statistics to actively engage users in completing various exploration tasks and games on the site. For logged-in users, access to the profile page should be conveniently available from any app section. For users not yet signed in, an easy and intuitive sign-up process should be readily accessible to encourage them to join and personalize their experience.

- **Profile Selector:** If the user has not selected a profile yet, they should do it before entering KidsHealth®.
- **Profile Creator:** It allows the creation of a new profile to use on KidsHealth®.

Considerations about topics, videos, games, and lessons

As mentioned, the Human Body is the focal learning category on the KidsHealth® platform. It holds most of the site's video content and is the exclusive category featuring games. Additionally, this category is unique in offering comprehensive information for each topic. Every topic within the Human Body category currently comes with at least one video, lesson, and game. There are no other "topics", as defined, elsewhere. Articles might have a video, but it is not mandatory.

4.2.2 Information Architecture Structure

The information architecture is built bottom-up and flatly organized by a categorical structure [Shedroff, 2000]. Figure 4.1 describes the resulting information architecture. For clarity, not all topics, articles, lessons, games, and videos are listed.

Groupings

1 **Topic, Lesson, Video, Game** A specific learning topic groups related lessons, videos, and games.

2 **Articles** Articles are related to a specific general center that can contain more articles.

3 **Centers, All Articles** We aggregate all general centers uniformly because they are the hubs for all the articles. Centers are grouped by "all articles".

4 **Human Body** The Human Body stands out as the main content hub. It is a sibling of All Articles.

5 **Achievements** Achievements are rewards related to a profile.

6 **KidsHealth® Home** The home gathers the content access facilitators and the centers.

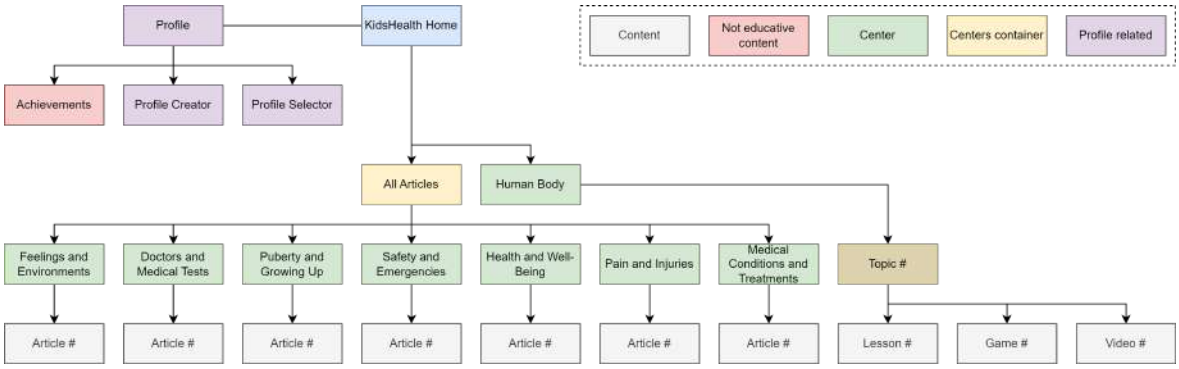


Figure 4.1: Information Architecture

7 **Profile** The profile gathers the achievements, the profile creator, and the profile selector.

4.3 Interaction Design

Recognizing the unique needs and challenges faced by our young users, we embarked on the mission of creating an app that skillfully caters to their favored methods of interaction. Insightful interactions with children influenced this decision during usability evaluations of the website. However, it's important to note that this transition to an app format emerged as the next step, ensuring a smoother and more child-centered interaction experience, all while maintaining the identical content available on the website.

Onboarding Guide For first-time users accessing the app after installation, a guide popup appears, explaining the functionality of the main buttons within the application. This user-friendly introduction helps new users quickly grasp how to navigate the app.

Profile The newly designed KidsHealth® app harmonizes interaction design principles with a reimagined user experience. This journey commences with the creation of a personalized profile, where users can select avatars, set goals, and monitor their activities and time spent on the platform. This user-centric approach caters to individual preferences and fosters engagement in line with interaction design principles.

Home At the core of the app lies the Kids Home page, ingeniously serving as a central hub for seamless navigation and content discovery. This user-centric approach ensures quick accessibility while promoting engagement. From there, users are presented with an array of sections accessible through clearly highlighted buttons, each designed with the end goal of enhancing interaction and engagement.

Human Body The hierarchical organization of content is a thread woven throughout the app's architecture. This hierarchy unfolds as users delve deeper into specific sections, starting with the **Human Body** button. Clicking on it reveals a structured pathway of organ categories, meticulously designed to ensure a sequential learning experience. The interactive elements featured within each organ topic, such as videos, articles presented in lesson-based formats, quizzes, and engaging activities, exemplify the fundamental principles of interaction design by creating immersive and enjoyable learning opportunities. Notably, articles are meticulously categorized by specific lessons, with a primary focus on topics directly related to the human body. Moreover, the app employs a systematic organization for lessons pertaining to each organ, mandating the completion of each lesson to unlock the subsequent one. Users will find that all lessons are automatically marked as completed and serve as keys to unlocking the next lesson once they successfully finish both the associated quiz and activity. However, in cases where users do not complete these assessments, a drop-down message emerges, signaling the incomplete status of the lesson's assessment, yet still granting users the choice to advance and unlock the next lesson.

Content Categorization Further enriching the app experience is the thoughtful categorization of content. The **All Sections** button showcases how interaction design principles bolster findability by categorizing articles into key topics. Additionally, the incorporation of interactive elements, like the feelings-based filter on the home page, intuitively aligns with user emotions, further deepening engagement.

Content Access Facilitators Throughout the app, a seamless integration of features like **Continue** helps kids streamline their journey by offering a quick and convenient way to resume their interaction with partially completed articles, lessons, or games. The **Popular** feature facilitates interaction by highlighting the most popular or reviewed articles and makes the process of searching and accessing content easier. These 2 features, positioned strategically for easy access, contribute to a fluid engagement.
Same for **Games** section, known to attract kids' interaction due to their interest, leads them to engage in quizzes with multiple-choice questions and dynamic activities where kids match words to label images, fostering interactive learning. This feature, absent in the website version, reflects our commitment to enhancing user engagement through innovative interaction design.

Search Moving to the **Search** tool, we've taken into consideration that kids prefer an easy-to-use search engine. By letting them choose where they want to search—articles, games, videos, or the dictionary—we've simplified the interaction. Drawing from insights by the Nelson and Norman Group, indicating that children aged 5 to 11 commonly rely on autocorrect to address typos and spelling difficulties, we've seamlessly integrated autocorrection into the search tool. This enhancement further refines the interaction process, ensuring a smoother encounter for young users. Additionally, we've ensured that the **Favorites** feature is seamlessly integrated, allowing users to bookmark their searches within their personal accounts. This enhancement enriches the overall interaction experience by offering a personalized touch.

In conclusion, the design journey of the KidsHealth® app intertwines user insights, interaction design principles, and innovative architecture. This holistic approach guarantees not only a child-friendly platform but also a cohesive interaction framework that embodies clarity, hierarchy, and effective content management.

4.4 Structure Blueprint

In the outlined structure blueprints, there are three types of elements [Blueprint 4.1]. These include **pages**, which serve as full-screen views; **components**, which are essentially widgets or interactive elements; and **navigation** points, which are intended to guide users to other pages on the platform. Some relations are marked as **undefined**, which means either that they are trivial or their following structure is the same as other elements.

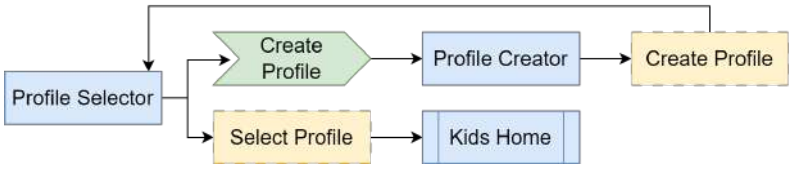
Blueprint 4.1: Blueprints legend

Profile Selector

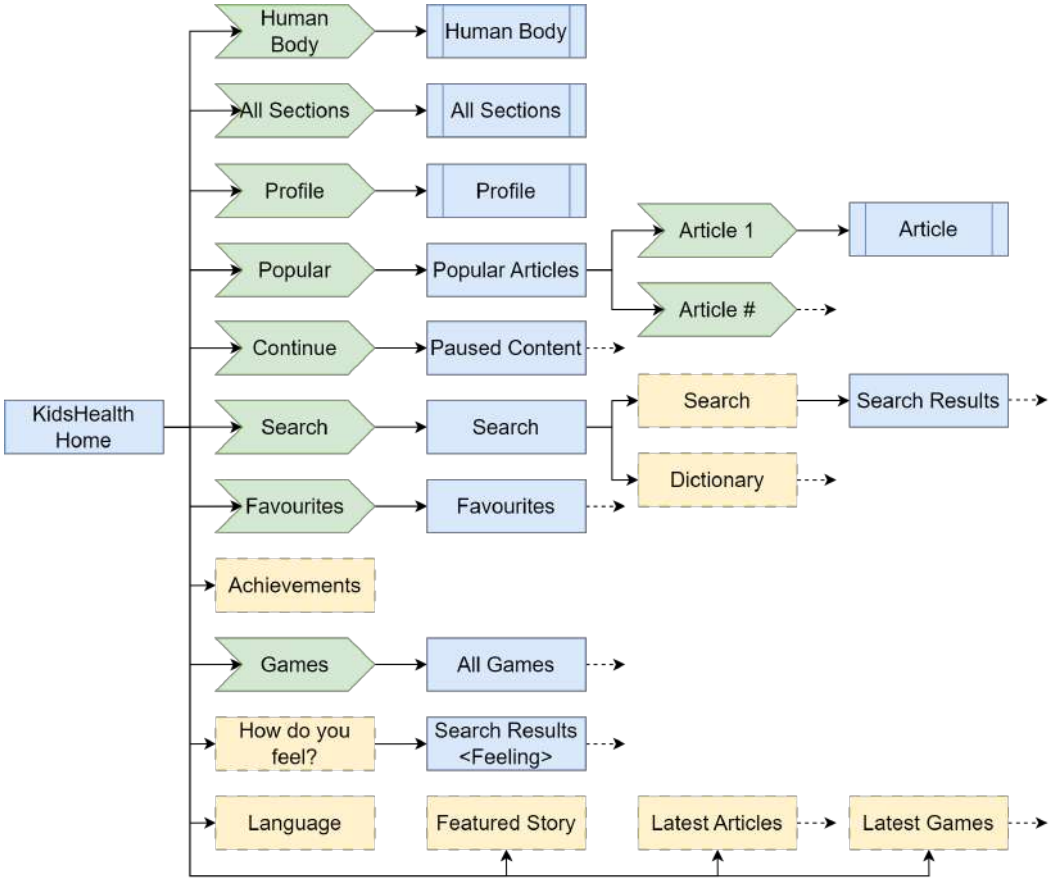
Upon first accessing the revamped KidsHealth® website, users are greeted with the Profile Selector page [Blueprint 4.2]. This serves as the gateway to either create a new profile or choose from existing ones. Once a profile is selected, the user is directed to their designated section. For the scope of this project, we are focusing exclusively on the kids' section.

KidsHealth® Home

The homepage acts as the primary nexus for all content [Blueprint 4.3]. It offers multiple navigational pathways leading to various sections featuring articles. Additionally, the homepage is equipped with specific components designed for quick access to some content.



Blueprint 4.2: Profile Selector



Blueprint 4.3: Home

Profile

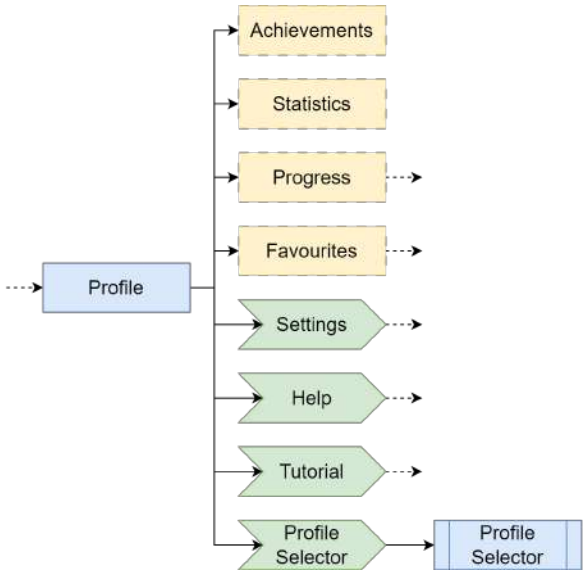
The profile page for logged-in users [Blueprint 4.4] displays several components related to achievements earned, user statistics, progress tracking, and favorited content. This page also provides easy access to standard account management options, including settings, help, tutorial, and profile selection.

All Sections

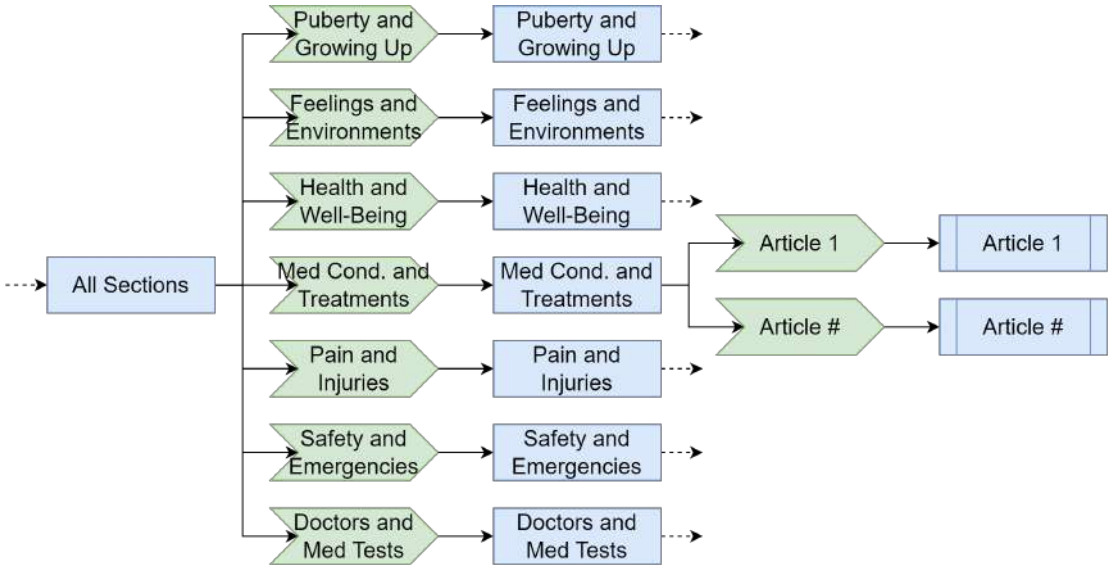
The 'All Sections' page acts as a central hub that leads to various centers [Blueprint 4.5]. Each center houses its own set of articles, providing an organized way to explore the content.

Human Body

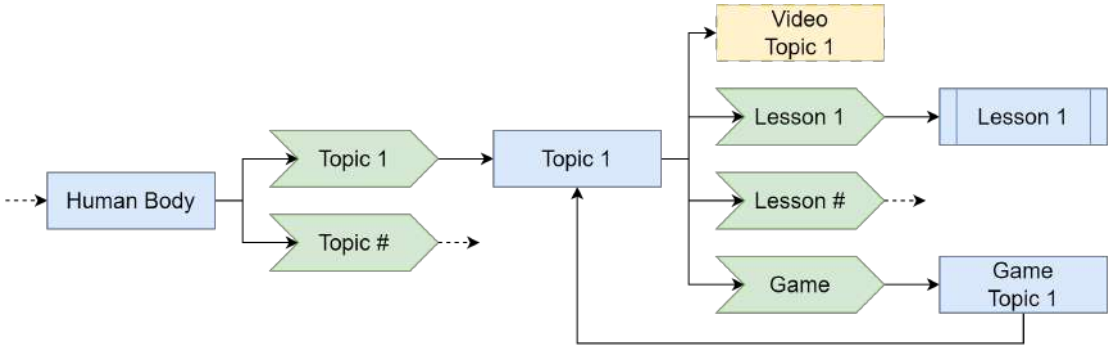
As of now, the 'Human Body' serves as the sole lesson-oriented center [Blueprint 4.6]. It provides gateways to a variety of related topics, each containing a specific set of lessons, games, and a video.



Blueprint 4.4: Profile



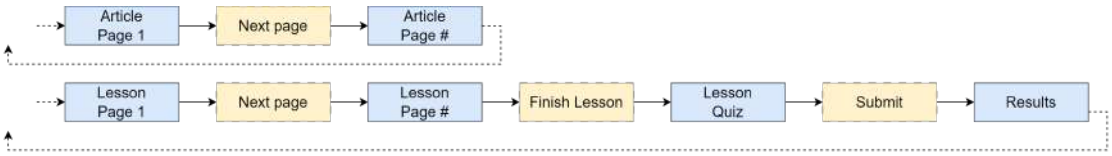
Blueprint 4.5: All Sections



Blueprint 4.6: Human Body

Article and Lesson

Both articles and lessons [Blueprint 4.7] are formatted with text broken down into digestible sections. At the conclusion of each lesson, a quiz is presented, followed by a results page to assess understanding. Upon completion of either an article or a lesson, users are navigated back to the originating page.



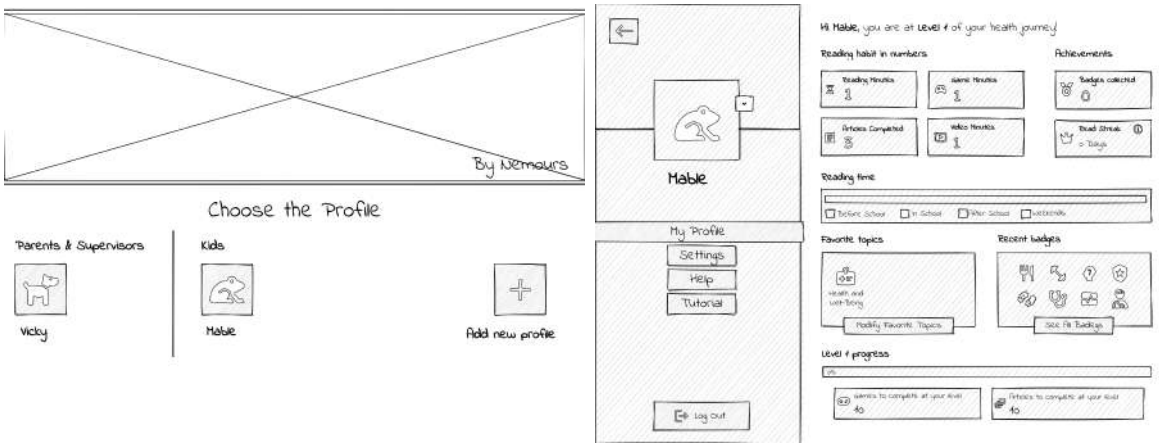
Blueprint 4.7: Article and Lesson

4.5 Wireframes

The key wireframes for the redesigned KidsHealth® platform will be presented in this section, with designs primarily tailored for tablet devices. Although the desktop layout is expected to mirror the tablet design closely, some minor modifications may be needed for smartphone interfaces. A complete set of wireframes and mockups is available for review in the project's supplementary materials.

Profile

Figure 4.2a represents the profile selector appearing when entering KidsHealth®. Figure 4.2b shows the profile page where the user can access useful info.



(a) Profile Selector

(b) Profile

Figure 4.2: Profile Scenarios Wireframes

Home

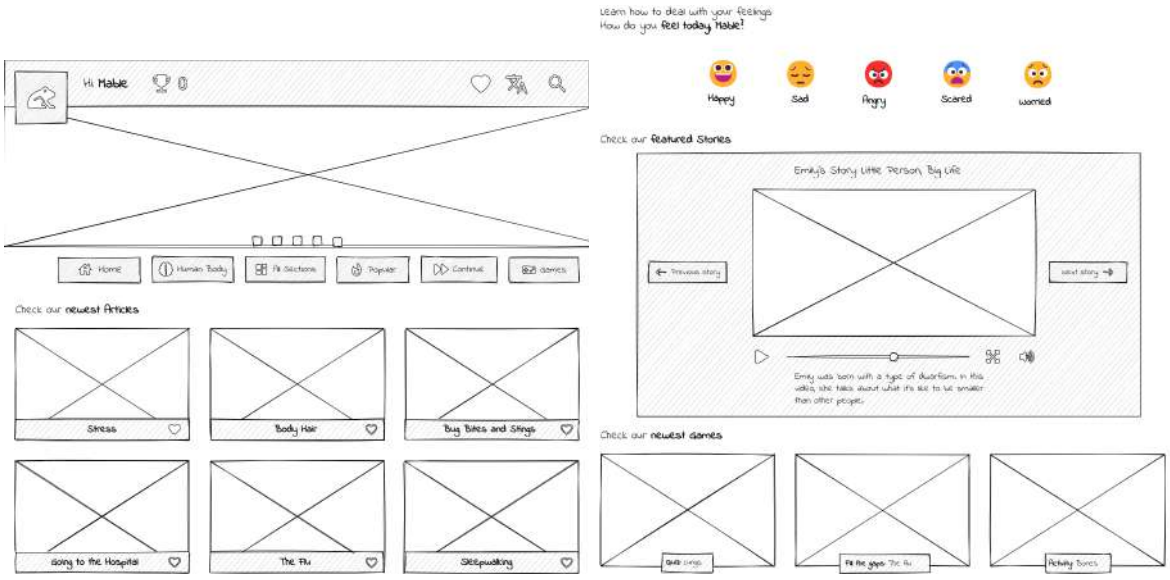
Figure 4.3 represents the KidsHealth® homepage. Both the two top navbars are intended to be sticky and to hide when scrolling.

Search

Figure 4.4a represents the search page with some suggested results. Figure 4.4b is the dictionary search accessible from the search page.

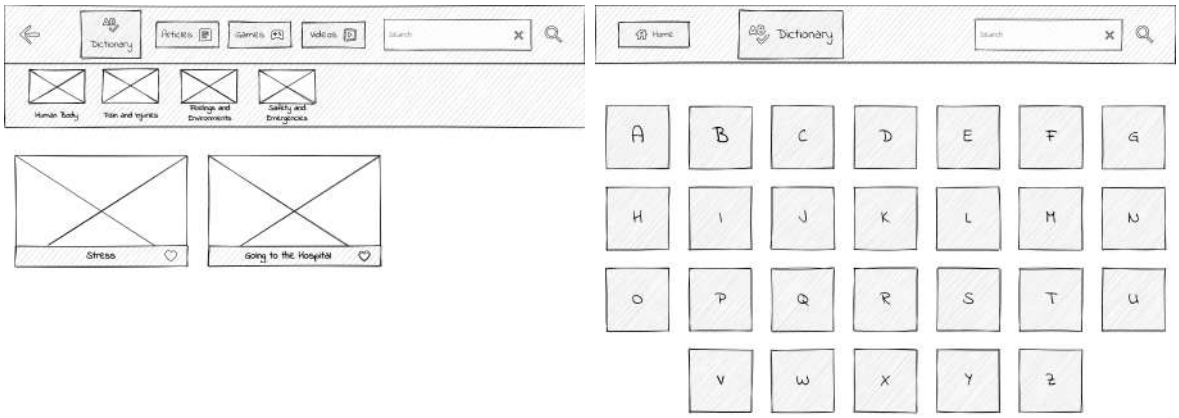
All Sections

Figure 4.5 represents the "All Section" page. It is the central hub of all the centers, so these are displayed with cards. The whole card is clickable.



(a) (b)

Figure 4.3: Homepage Wireframe



(a) Search (b) Dictionary Search

Figure 4.4: Search Wireframes

Human Body and Topic

Figure 4.6 represents a lesson-oriented center, while figure 4.6b is the topic page.

Article and Lesson

As depicted in figure 4.7a, the starting pages for both an article and a lesson are essentially identical. Figure 4.7b shows the test to end and complete a lesson.

Games

There are multiple kinds of games. Figure 4.8 shows a quiz, while figure 4.9 represents a word-bank activity. Both with their starting points and results.

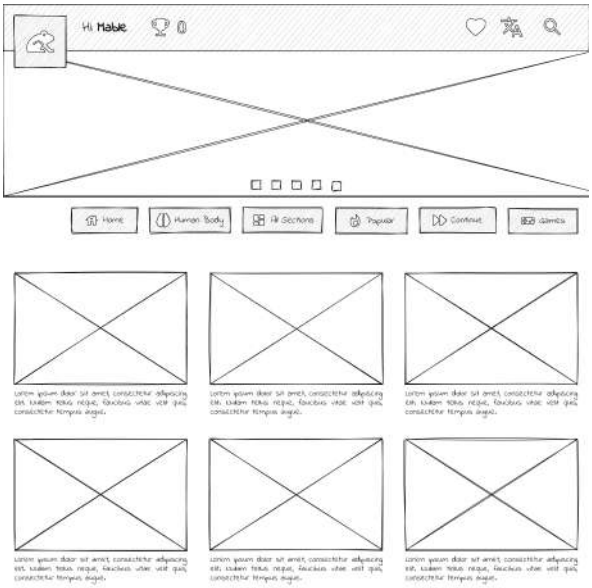
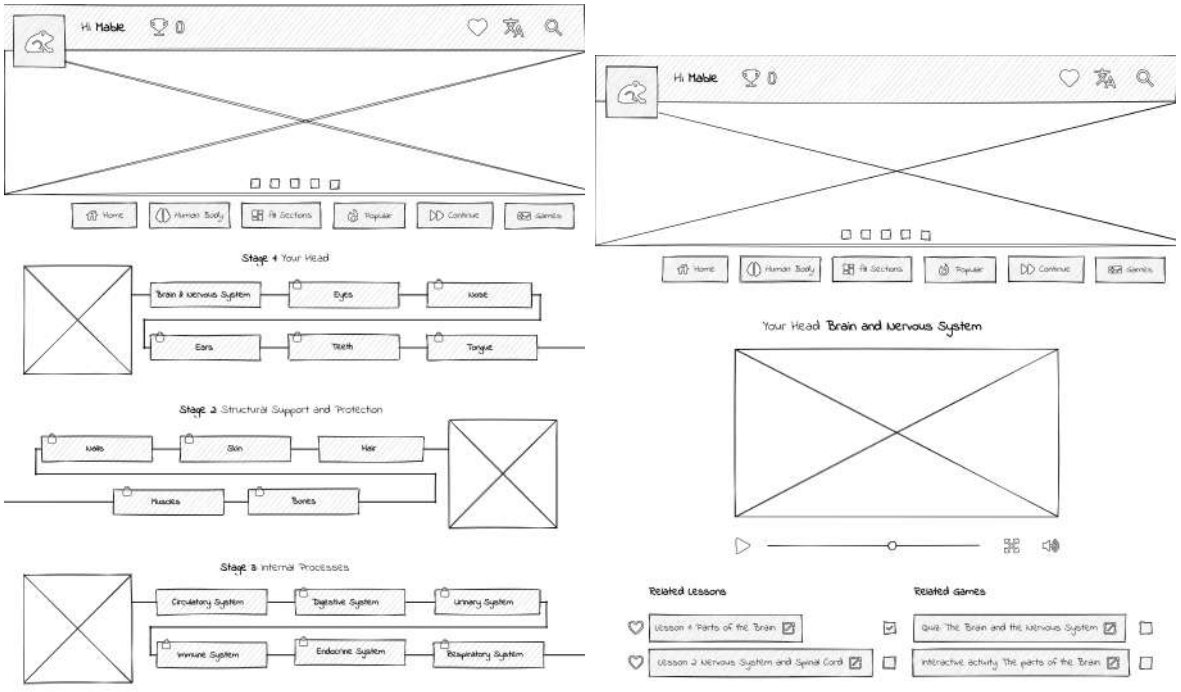
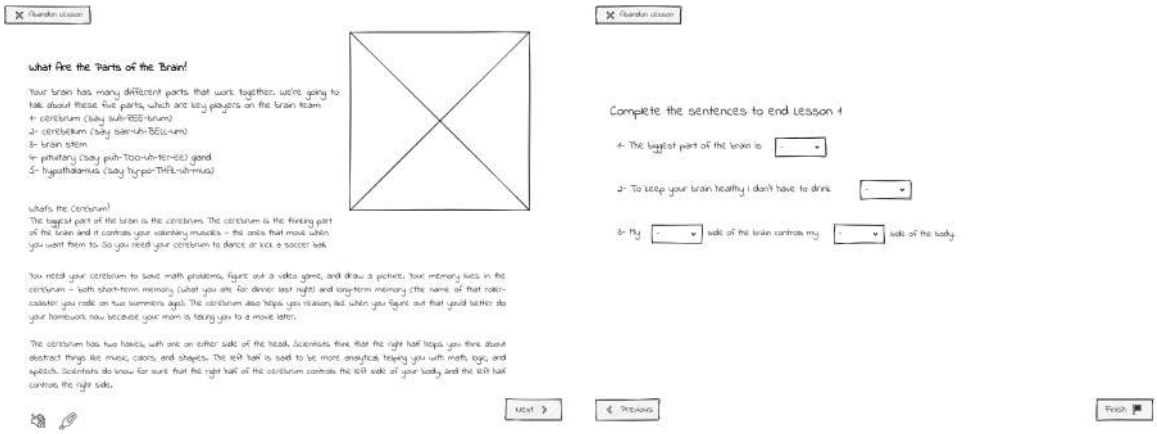


Figure 4.5: All Sections Wireframe



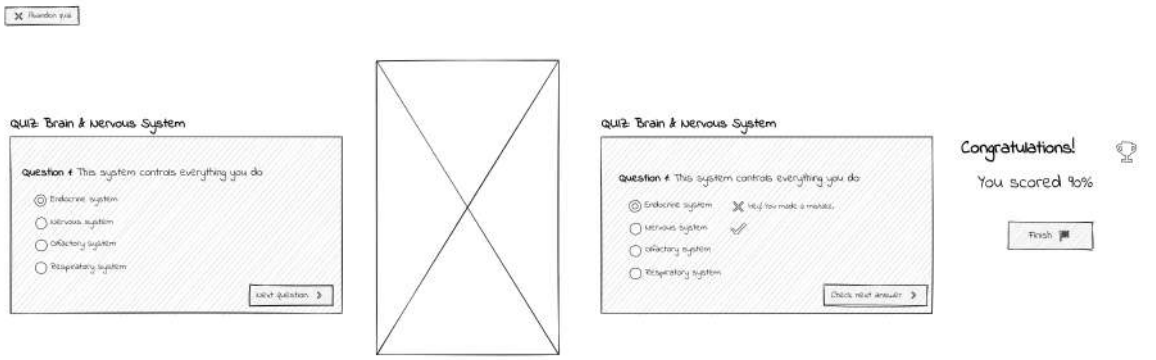
(a) Human Body (b) Topic

Figure 4.6: Lesson-oriented Center and Topic Wireframes



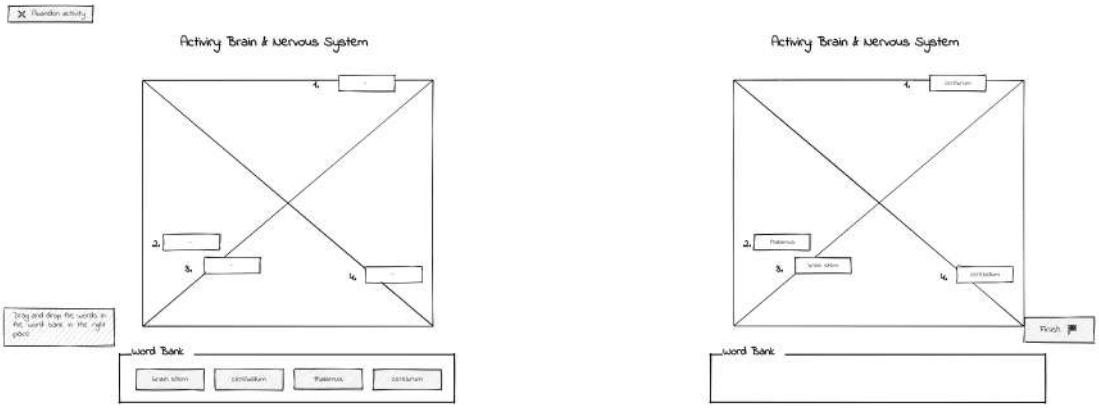
(a) Article/Lesson Start (b) Lesson End

Figure 4.7: Article and Lesson Wireframes



(a) Quiz Start (b) Quiz Results

Figure 4.8: Quiz Game Wireframes



(a) Activity Start (b) Activity Results

Figure 4.9: Word-bank Activity Game Wireframes

Chapter 5

Evaluation of Design

This chapter delves into the critical phase of evaluating our design. The primary purpose of this evaluation is to ensure that the envisioned user experience aligns with our design goals and is practical and user-friendly. Considering the design is a crucial step in the development of our project. It allows us to assess how well our design caters to the needs and expectations of our target audience. By systematically analyzing the design, we can identify potential issues, usability problems, and areas for improvement. This process helps us refine the plan, ensuring our users a seamless and engaging experience. Our evaluation process comprises two distinct but complementary methods: Inspection and User Testing. Each technique serves a specific purpose in assessing the design's effectiveness and user-friendliness.

- **Inspection:** This method involves a detailed design examination by experts and stakeholders. It identifies potential usability issues, assesses adherence to design guidelines, and ensures that the design meets its intended objectives. Inspection provides valuable insights before user testing, allowing us to address fundamental issues early in development.
- **User Testing:** User testing involves real users interacting with our design. This method allows us to gather feedback on usability, user satisfaction, and the overall user experience. Through user testing, we can observe how our target audience interacts with the design, identify pain points, and make data-driven improvements.

By combining these evaluation methods, we aim to create a design that meets the functional requirements and provides an exceptional and user-centric experience.

5.1 Inspection

After producing the wireframes and mockups, we will conduct the inspection phase using cognitive walkthroughs. We will accomplish these walkthroughs using high-fidelity and interactive mockups to evaluate user reactions to the existing experience.

We will establish some ground rules for evaluators to ensure an efficient and focused meeting. While these rules may evolve with practice, here are some initial key rules:

- Keep the conversation focused on user reactions to the current experience. This session is not for brainstorming or recommending design changes.
- Avoid justifying or discussing the reasoning behind the current interface design.
- Keep laptops closed and avoid multitasking during the session.

The facilitator will remind everyone of these ground rules during the walkthrough. For the session, the facilitator has the following materials ready:

- The prototype to be evaluated and a plan for how it will be presented to the group.

- Formal action sequences for the tasks under analysis.
- The personas to be used for evaluation.
- Materials for recording the outcomes of the walkthrough.

5.1.1 Accessibility

Accessibility remains a pivotal consideration in the redesign of KidsHealth®. The eventual implementation of this design should adhere rigorously to the Web Content Accessibility Guidelines (WCAG) as per the established standards [W3C, 2008]. In the mock-up stage, special attention was paid to factors such as color contrast and font size to ensure compliance with the WCAG's AA-level criteria. Utilizing tools like Adobe Color[1], we conducted an assessment of these elements. This step not only validates our design against established accessibility standards but also sets a precedent for inclusive design as we move forward. Our aim is to make the platform accessible to as broad an audience as possible, including those with special educational needs, disabilities, and any other impairment.

5.1.2 Cognitive Walkthroughs

During the walkthrough, we aim to determine whether users will likely succeed at each step in the predefined action sequence; we also document the reasons for their determinations. To assess user likelihood of success, we consider four analysis criteria at each step:

1 Will users attempt to achieve the correct result?

2 Will users notice that the correct action is available?

3 Will users associate the correct action with the result they intend to achieve?

4 After the action, will users see that progress has been made toward their goal?

The detailed assessment of the analysis criteria at each step can be found in the project attachments.

5.1.2.1 Cognitive Walkthrough 1

Persona Lewis.

Task Perform a quiz about the Brain and the Nervous System.

Action Sequence We assume Lewis has already created his profile and opened the application on his tablet. We also deactivated some buttons, like the "Games" one, to force the user to engage with specific patterns.

Happy Path

1 Click on the personal profile, "Lewis".
2 Click on the "Human Body" button on the homepage.
3 Click on the "Brain and Nervous System" lesson.
4 Scroll down and click on the quiz "The Brain and the Nervous System".
5 Answer the question and click "Next question" (until the last question).
6 Click on the "View Results" button.
7 Click on the "Finish" button.

Walkthrough Lewis opens the application on his tablet and sees the profile selector. He immediately recognizes his profile thanks to the avatar he chose during the profile creation. Once he clicks on his profile, he is redirected to the app home, where he immediately sees the carousel, the navigation bar with all the sections, and a collection of articles and other information. He understands that he must click the "Human Body" button as the brain and nervous system are part of the human

[1] https://color.adobe.com/it/create/color-contrast-analyzer

body. Immediately after, he clicks on the button that matches his goal, “Brain and Nervous System”. After clicking on the topic, he is shown a page with a video and the available lessons and games. He understands that a quiz is like a game, and he clicks on “Quiz: The Brain and the Nervous System” when looking at that part of the page. After that, he begins the quiz by answering each question until the last, always selecting an answer and then clicking “Next question”. At the last question, he clicks on “View Results” as he is sure of the answers he put, and he doesn’t need to recheck them. After clicking the “View Results” button, he is shown his score, which satisfies him. Eventually, he clicks on “Finish, ” redirecting him to the brain and nervous system page, where the quiz is marked as completed by the small icon on the right of the button.

Summarized Assessment Each step was successful since the four questions passed the test. Therefore, the walkthrough is credible.

Improvements As a minor improvement, we will address the situation when the user clicks on “Abandon quiz”, adding a message informing that by confirming that action, the system will not save the quiz answers.

5.1.2.2 Cognitive Walkthrough 2

Persona Lewis.

Task Perform an interactive activity about any human body topic.

Action Sequence We assume Lewis has just finished the quiz game of the same article, and he now proceeds with the activity.

Happy Path

1 Click on the interactive “The Parts of the Brain” activity.
2 Drag and drop the words from the word bank to the available spots.
3 Click on the “View Results” button.
4 Click on the “Finish” button.

Walkthrough After finishing the quiz, Lewis decided also to perform the interactive activity to complete the topic “Brain and Nervous System”, as he had already watched all the lessons. For this purpose, he clicks on the “Interactive activity: The Parts of the Brain” button. Lewis sees an image of the brain with four empty spots; at the bottom, four words are inside a word bank. He selects one of the words with his finger and drops it to the spot he thinks might be correct. After positioning all the words, a “View Results” button appears. He clicks on the “View Results” button, and the system highlights each word in green. Eventually, he clicks on the “Finish” button.

Summarized Assessment The second step was marked unsuccessful because the third question failed the test. Therefore, the walkthrough is not credible, as the user might encounter trouble performing the activity.

Improvements As a simple improvement, we will add a small help window to suggest to the user the right action, namely “Drag and drop the words from the word bank to the right spot”.

5.1.2.3 Cognitive Walkthrough 3

Persona Miguel.

Task Search for an explanation of what chemotherapy is.

Action Sequence We assume Miguel has already created his profile, has opened the application on his tablet, and accessed his profile. We assume he doesn’t know about chemotherapy, so he needs to use the search functionality.

Happy Path

1 Click on the lens icon to open the search page.
2 Click on the text box to open the keyboard input.
3 Type the word ”chemotherapy”.
4 Hide the keyboard.
5 Click on the resulting article.

Walkthrough Miguel launches the app on his tablet and immediately spots the universally recognized lens icon for search. Tapping on it, he's taken to the search page where some suggested content appears, but it's not what he's after. He then notices the text box and taps on it, intuiting that it's where he can enter his search terms. As he taps, the system keyboard appears, and he begins typing his search query: ”chemotherapy.” The app dynamically updates the search results with each character he inputs. Although the keyboard obstructs some search results, the text box remains visible. After completing his query, he uses the system button to hide the keyboard, revealing a page full of relevant search results. Spotting an article explaining what chemotherapy is, he taps on it. The app navigates him to the article he's interested in, and he reads the required information.

Summarized Assessment Each step was successful since the four questions passed the test. Therefore, the walkthrough is credible.

Improvements None.

5.1.2.4 Cognitive Walkthrough 4

Persona Mable.

Task Enter the profile to check how many badges were collected, and then log out from the profile.

Action Sequence We'll assume Mable has already created her profile and opened the application on her tablet.

Happy Path

1 Click on the personal profile, “Mable”.
2 Click on the avatar on the header.
3 Click on the “See All Badges” button.
4 Click on the “Close” button.
5 Click on the “Log Out” button.

Walkthrough Mable saw from the application advertisement that her profile contains a lot of cool badges and achievements. She wants to check how many badges she can collect using the app. She clicks on her avatar and enters the app home. Then, she clicks again on the avatar in the header to access her profile. From there, she sees the small window with the badges, and to see them all, she clicks on “See All Badges”. After exploring every badge, she closes the window and clicks “Log Out” since her babysitter, Vicky, must enter her supervisor profile.

Summarized Assessment Each step was successful since the four questions passed the test. Therefore, the story is credible.

Improvements The walkthrough revealed that the task is straightforward. However, we could add a “Profile” label below the avatar to eliminate possible confusion or make the user's name in the header an additional link to the personal area.

5.1.2.5 Cognitive Walkthrough 5

Persona Riley.

Task Look for Digestive and Immune System Lessons

Action Sequence We assume Riley has already created his profile and opened the application on her tablet. We also deactivated some buttons, like the “Search” one, to force the user to engage with specific patterns.

Happy Path

1 Click on her profile, ”Riley.”
2 Click on the “Human Body” button on the homepage.
3 Scroll down to find ”Internal Processes,” searching for the digestive & immune system.
4 Click on the first topic, ”Circulatory System,” to unlock the topics she is interested in.
5 Read ”Circulatory System” lessons and complete the associated quiz and activity.
6 After finishing, click back to access the newly unlocked topic, ”Digestive System.”
7 Repeat the same process for other topics until she unlocks ”The Immune System.”

Walkthrough Riley is a 12-year-old who, during her initial interaction with the app, found it easy to navigate and get what she needed. She has celiac disease and is always eager to learn more about it to manage her health effectively. When she opens the application on her tablet, she recalls that topics related to celiac disease mainly revolve around the digestive and immune systems. Consequently, she identifies that she can find relevant lessons in the ”Human Body” section. She clicks on it and scrolls down, locating the two topics she needs in the ”Internal Processes” stage. However, she realizes that these topics are locked, and she must start with the ”Circulatory System” to unlock them.
Once Riley logs in to her profile and selects the avatar she had chosen earlier, the app redirects her to the profile selector. Upon clicking on her profile, she returns to the app’s home screen. Riley realizes that she needs to click the “Human Body” button again to proceed. Starting with the first lessons on the ”Circulatory System,” she skims through them to unlock the subsequent lessons. After watching a related video, reading an article, and successfully completing a quiz and an activity, she feels a sense of achievement. Riley then navigates back and finds that the ”Digestive System” is now accessible.
Upon clicking on it, she encounters a page with a video and available lessons and games. Riley is delighted to have reached her desired topic and begins by studying the lessons before moving on to the quiz to assess her newly acquired knowledge. She diligently progresses through the quiz, selecting answers and clicking “Next question.” Upon completing the final question, Riley clicks on “View Results” and is satisfied with her score. Finally, she clicks on “Finish,” redirecting her to the digestive system once more. Riley then presses the “back arrow” to access the newly unlocked topics until she arrives at the ”Immune System.”

Summarized Assessment Each step was marked successful since the four questions passed the test. Therefore, the story is credible.

Improvements As a minor improvement, we will address the situation where if a user achieves a higher score for a certain topic, they will be able to choose which topics they desire to unlock next.

5.1.2.6 Cognitive Walkthrough 6

Persona Mable.

Task Use the dictionary search to find an interesting article.

Action Sequence We assume Mable has already created his profile, has opened the application on his tablet, and accessed his profile.

Happy Path

1 Click on the lens icon to open the search page.
2 Click on the dictionary button.
3 Click on a letter.
4 Click on an article.

Walkthrough Mable opens the app on her tablet, drawing her eyes to the well-known search lens icon. She taps it and lands on the search page, unsure of what she's searching for. She then observes that the top bar has changed to include a dictionary button, sparking her curiosity. Deciding to explore, she taps the dictionary button, and a screen displaying the alphabet appears. Intrigued, she randomly selects the letter 'S'. A new page surfaces, listing content that starts with the letter 'S'. The article on 'stress' catches her eye, thanks to its compelling image, so she taps on it. The article about stress comes into view, and she begins reading.

Summarized Assessment Each step was successful since the four questions passed the test. Therefore, the walkthrough is credible.

Improvements We noticed that the affordance of the button to close the dictionary was not very clear. As a minor refinement, we'll make it explicit that clicking the button will collapse the dictionary when it is active. We'll achieve this by using clear descriptions and color coding.

5.2 User Testing

In this testing session, we have adopted the same methodologies previously applied while evaluating our existing resources [Section 2.2]. Through diligent observation of user behaviors, collecting valuable feedback, and identifying pain points, we aim to gain insightful and realistic assessments of our system.

After a design process that involved numerous improvements, we have developed a new application based on the evolving blueprints, wireframes, and mockups. We conduct tests specifically on these interactive mockups, organized into small, interactive scenarios.

5.2.1 Testing Protocol

Our approach for the tests follows guerrilla discount usability testing principles.

Our test subjects consist of selected children who had prior experience testing the old version of the website before the development of the application. These tests are administered by a single team member, with the passive presence of the children's parents.

We evaluate various aspects, including success rates (whether users accomplish tasks with or without assistance), **efficiency** (the occurrence of mistakes, backtracking, or attempts to exit a scenario), **learnability**, and the overall **enjoyment** of using the product. Similar to our previous approach, we incorporate a System Usability Scale (**SUS**) assessment [Section 2.2.1.2] into our testing process. We also assess the sense of **relief** for the users that have already tested the old system.

Our approach is iterative, allowing us to make adjustments after evaluating each test. Given our time and budget constraints, this method is particularly beneficial, as it enables continuous, efficient improvements.

The testing process involves a non-functional prototype of the platform, constructed from mockups based on wireframes. Given that not all content is designed and interactions are not fully developed, we've divided the test tasks into two distinct categories for a comprehensive evaluation. The first set of tasks pertains to the fully mocked-up sections, where assessments are carried out according to a predefined protocol.

Tasks

Tasks 3, 6, 7, and 11 are not fully functional.

In the second set of tasks, which cannot be fully executed due to the prototype's limitations, we focus on understanding users' expectations by asking questions such as "Based on what you're seeing, explain how you would expect to..." or "What do you think might happen if you clicked on...?".

To achieve this, we engage kids by asking them:

1 What do you anticipate from the functionality of the "Popular" buttons?

Task Number	Task	Severity
1	Consult a lesson about the brain and the nervous system	9
2	Perform the quiz for the same topic	7
3	Perform the activity for the same topic	7
4	Look for an article about puberty	8
5	Look for an article that starts with the letter S	9
6	Add an article to your favorite list	3
7	Consult the favorite articles	4
8	Finish reading the previous interrupted article	6
9	If today you feel angry, where would you go?	5
10	How much time have you spent reading articles?	4
11	Change your avatar icon	2

Table 5.1: Tasks Performed

2 How do you imagine you can finish reading an article you started yesterday? Do you think there's a specific button for this purpose?
3 When you see a heart icon, what do you think it represents? Do you expect it to be related to your profile?
4 If you encounter a translation symbol next to the search bar, what actions do you believe it enables?
5 When you navigate to the brain lesson, what do you think the two symbols located at the bottom left —a speaker icon and a highlighter— will allow you to do?

Urgency Curve

In each iteration, we establish an urgency curve, assigning a point value to each task based on its severity and the impact of associated issues. This approach was selected for several reasons. First, when considering a single user, frequency is not a meaningful metric, and errors vary significantly across tasks. Additionally, we aim to weight tasks differently to account for their distinct contributions to both the overall user experience and the primary objectives of the application. The severity is a static measure of the relevance associated with each of the tasks performed during the testing phase, based on our sensitivity, It actually serves as a reference that is fixed in all the iterations. While the impact is based on the success, efficiency, learnability, and enjoyment results. The defined severities are in table 5.1.

5.2.2 Iteration 1

The first test iteration was performed with Alessandro. He was interviewed for segmentation purposes and performed the contextual inquiry on the legacy KidsHealth® website but without testing it.

5.2.2.1 Testing Results

The testing results for Alessandro can be found in Table 5.2, and the answers to the SUS are in Table 5.3.

Non-functional tasks answers

1 I think that in the popular button, there are videos watched by many people.
2 I can go to "Continue".
3 I think it represents the favorite articles. I think they are only my favorites, not everyone's.
4 I can use it to translate the words, to change language.
5 The speaker icon is needed when you don't want to read, so you can listen. The highlighter can be used to highlight the important parts of the reading.

Task	Success	Efficiency	Learnability	Enjoyment
1	Success	Medium: overlook	-	High
2	Success with assistance	Medium: hesitations, overlook	Medium	High
3	Success	Medium	High	High
4	Success with assistance	High	High	Medium
5	Failure	Low: overlook, hesitation, mistakes	Low	Low
6	Success	Very High	-	High
7	Success with assistance	High	High	High
8	Success	High	High	High
9	Success	Medium	Medium	High
10	Success with assistance	Very High	High	High
11	Success	Medium: user immediately corrected his action	High	High

Table 5.2: Test Results for Alessandro

Statements	Alessandro
Statement 1	4
Statement 2	4
Statement 3	3
Statement 4	3
Statement 5	4
Statement 6	1
Statement 7	3
Statement 8	2
Statement 9	4
Statement 10	1
Statement 11	5
Statement 12	4
Statement 13	5
Total	73.1

Table 5.3: SUS Results of Alessandro for the redesigned application

5.2.2.2 Testing Analysis

After the first testing iteration, we can confidently state that the issues outlined above the urgency curve, relative to the old design, have been successfully addressed and corrected. This improvement can be attributed to the reorganization of the information architecture and the implementation of the new user interface. Concerning the specific tasks evaluated, all tasks, except for task number five, were completed with minimal to no assistance. In cases where assistance was required, it typically involved minor guidance from the analyst to help the user maintain focus on the relevant page. While overall efficiency was generally high, there were instances where minor or moderate oversights occurred. Notably, in one instance, the user clicked on a non-functional element, but quickly realized the correct action to take, particularly in the context of changing their avatar. Importantly, the enjoyment of the user remained consistently high throughout the testing procedure. The user exhibited rapid learning and adaptation to the application's interface and functionality.

Regarding task number five, it is essential to note that this was the sole task that encountered difficulties. Despite being informed that the prototype was not fully functional, the user attempted to search

for the letter ”S” using the search bar. The analyst had to guide the user in considering real-life search practices, ultimately leading the user to click on the dictionary button. Notably, the user expressed a preference for searching for complete words rather than individual letters, citing concerns about navigational challenges as more articles with the same letter are added.

In the second part of the testing, which focused on user expectations, the user exhibited appropriate expectations. However, there was a misunderstanding regarding the functionality of the highlight button when reading an article.

5.2.2.3 Urgency Curve

The urgency curve of the tasks considering the impact of the issues and the task severity is in Figure 5.1.

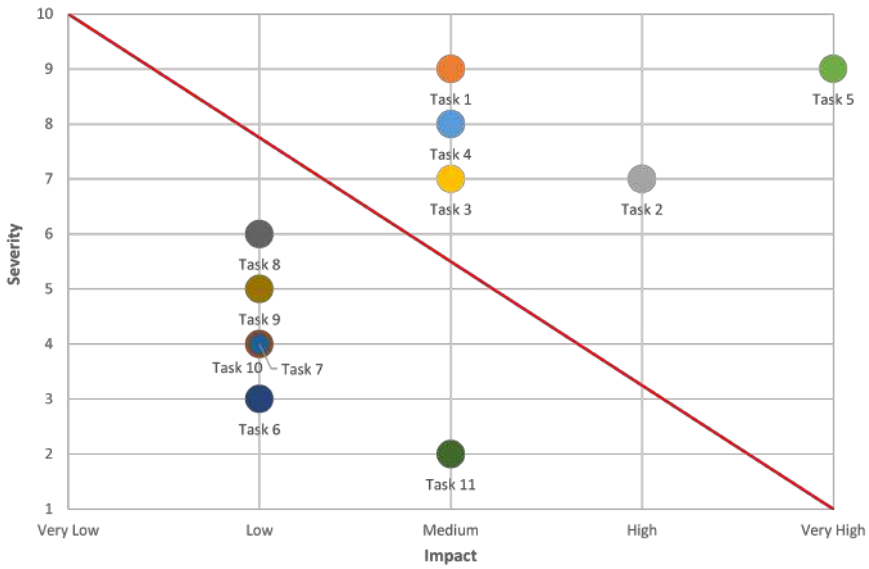


Figure 5.1: Urgency Curve Iteration 1

5.2.2.4 Improvements

In response to valuable feedback obtained during our testing sessions, we’ve made several significant enhancements to the application. Firstly, we opted to simplify the application’s focus by removing the dictionary feature, leaving its functionality exclusive to the search bar. Additionally, we introduced an additional filtering system to enhance the search function’s efficiency and user-friendliness for children. This improvement enables users to easily specify their search criteria, including content type (articles, videos, or quizzes), relevant category or topic, and information order (Newest, A to Z, Z to A, Oldest).

Furthermore, we addressed a usability concern that emerged during testing, specifically regarding the ”highlighting” symbol. Alessandro found it confusing, leading us to remove it and integrate its functionality with the audio description symbol. Now, when users click the audio description symbol, it automatically highlights the words being read by the system. This modification significantly enhances the reading experience for children, allowing them to effortlessly follow along with the text as it’s narrated.

These improvements reflect our commitment to creating a more intuitive, user-friendly, and engaging platform for our young users.

5.2.3 Iteration 2

5.2.3.1 Testing Results

The second test iteration was performed with Simone. He was interviewed for segmentation purposes and also tested the legacy KidsHealth®.

5.2.3.2 Testing Results

The testing results for Simone can be found in 5.4 and the answers to the SUS are in Table 5.5.

Task	Success	Efficiency	Learnability	Enjoyment
1	Success	Medium: overlook	High	Medium
2	Success	Medium: hesitations, overlook	Medium	High
3	Success	Medium	High	High
4	Success with assistance	High	High	High
5	Success	High	Very High	High
6	Success	Very High	-	High
7	Success with assistance	High	High	High
8	Success	High	High	High
9	Failure	Low : overlook, hesitation, mistakes	Low	Low
10	Success with assistance	Very High	High	High
11	Success	Medium: user immediately corrected his action	High	High

Table 5.4: Test Results for Simone

Statements	Simone
Statement 1	4
Statement 2	2
Statement 3	3
Statement 4	3
Statement 5	3
Statement 6	1
Statement 7	3
Statement 8	2
Statement 9	4
Statement 10	3
Statement 11	4
Statement 12	4
Statement 13	4
Total	67.3

Table 5.5: SUS Results Simone for the redesigned application

Non-functional tasks answers

1 I believe that the ”Popular” button is meant for accessing the most searched topics.
2 Of course, the ”Continue” button seems self-explanatory; it allows you to continue from where you left off, as the name suggests.

3 The heart icon appears to be for adding articles to my favorites list, and I assume I can access them from my profile.
4 I've already used it to translate to Italian, and it's quite clear.
5 The speaker icon seems useful when you don't want to read, so you can listen. (The highlighter symbol was removed).

5.2.3.3 Testing Analysis

In general, Simone's test was successful, with only one notable failure, which we will discuss in detail below. However, even after the improvements made following the first iteration, we can identify some key issues faced in this second iteration. One significant challenge was overlooking, primarily related to the necessity of scrolling due to the large scale of elements, especially when performing tests on a tablet. Additionally, there were issues related to less-than-ideal grouping and spacing between features and buttons.

Simone's performance in Task 2, which involved finding a quiz, was notably improved. He completed it without requiring any assistance, whereas in the first test before the redesign, he needed assistance for a similar task. Similarly, in Task 5, which involved searching for an article starting with a specific letter, Simone was able to complete it without any assistance. The improvements made after the first iteration, particularly in this task, significantly enhanced the speed of interaction with the app.

However, in Task 9, a high-impact failure occurred. Simone had difficulty locating this task because he initially attempted to find it through the search function. His eye contact, especially on the home page, was directed towards the upper screen, without considering the possibility of scrolling down on this page. The issue of overlooking became more apparent in several tasks due to the size of elements and the necessity of scrolling.

It is worth mentioning that Simone tested the legacy KidsHealth® [Section 2] and its SUS score was 61.5 while now it is 67.3 with an improvement of the 9.3%. The sense of relief here is quite evident.

5.2.3.4 Urgency Curve

The urgency curve of the tasks considering the impact of the issues and the task severity is in Figure 5.2.

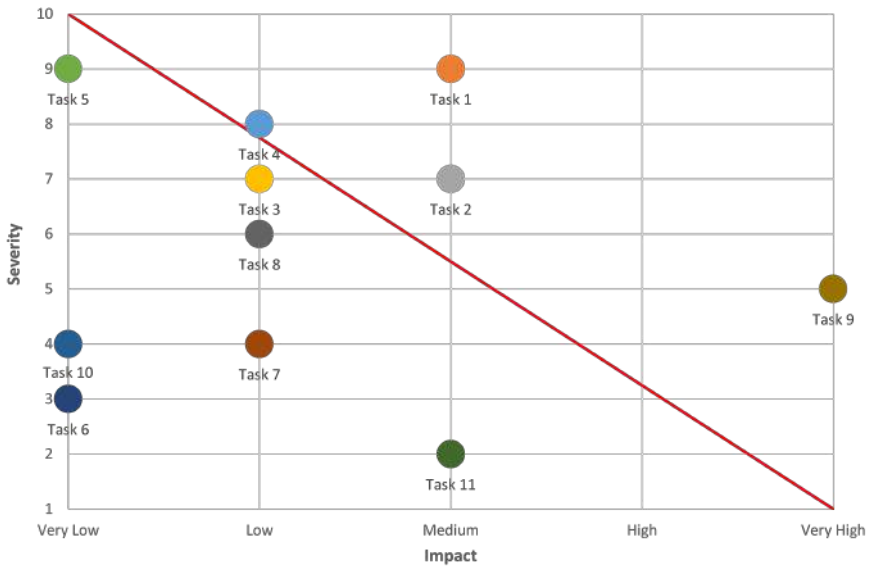


Figure 5.2: Urgency Curve Iteration 2

5.2.3.5 Improvements

Simone's performance during the second test iteration was generally successful, with only one notable issue we'll discuss shortly. Despite improvements made after the first iteration, we encountered some key challenges in this round. One primary challenge was the problem of overlooking, primarily due to the need for scrolling on tablet screens because of the large on-screen elements. Additionally, ongoing issues persisted related to suboptimal grouping and spacing between various features and buttons, especially in Task 9. To address these challenges, we implemented several improvements. Firstly, we retained the carousel on the home page while removing it from other sections. This aims to ensure that all features are immediately visible when the app launches on a tablet, thus mitigating the overlooking problem. We also tackled this issue by reevaluating element grouping and size. In some areas like Home, Popular, and Games, we drew inspiration from popular streaming platforms and adopted a design approach to minimize the need for vertical scrolling. Articles and games within the same category are now presented in a single horizontally scrollable row. In other areas, we reduced the number of rows and increased the number of columns, effectively presenting more elements in the same space. These changes have significantly improved the user experience by making content more accessible and eliminating the need for excessive scrolling.

5.2.4 Iteration 3

The third test was performed with Karol, an 11-year-old girl. She tested the legacy KidsHealth® website and was subjected to contextual inquiry.

5.2.4.1 Testing Results

The testing results for Karol can be found in Table 5.6, and the answers to the SUS are in Table 5.7.

Task	Success	Efficiency	Learnability	Enjoyment
1	Success	Medium: hesitations	-	Very High
2	Success	High	Medium	High
3	Success	High	High	High
4	Success	Low: long hesitation	High	High
5	Success	High	Medium	High
6	Success	Very High	-	High
7	Success	Medium: overthinking	High	Medium
8	Success with assistance	Medium	High	High
9	Success	Medium	Medium	High
10	Success with assistance	High	High	High
11	Success	High	High	Very High

Table 5.6: Test Results for Karol

Non-functional tasks answers

1 I guess there are contents seen by many people.
2 I would have searched the article but then I noticed the ”Continue” button.
3 It should be about saving articles to read later.
4 It changes the language of everything.
5 The speaker should reproduce a voice reading the article. (The highlighter symbol was removed)

Statements	Karol
Statement 1	3
Statement 2	1
Statement 3	5
Statement 4	2
Statement 5	4
Statement 6	1
Statement 7	4
Statement 8	2
Statement 9	4
Statement 10	1
Statement 11	5
Statement 12	4
Statement 13	3
Total	80.8

Table 5.7: SUS Results of Karol for the redesigned application

5.2.4.2 Testing Analysis

This test showed that all the major issues were solved. However, it's worth noting that the subject had experience on the old website and therefore had some expectations, even if some weeks passed between the two tests. No particular issues need to be highlighted. There were some hesitations for certain tasks but the learnability was overall high as well as the success rate.

The major issue of this test was a minor overlooking of the continue button. Indeed, for task 8, Karol intended to redo the path that brought her to the intended article. However, a small hint by just asking if there was another way, made her realize the presence of the continue button.

We can appreciate a minor improvement in the SUS score even if some answers are worse than the previous ones. The SUS score for the legacy KidsHealth® was 78.8 and for the redesigned application it was 80.8. The improvement is of the 2.5%, with a slight sense of relief. Even if this quantity is small, we have to consider the fact that the overall SUS score of the previous test was already quite high.

5.2.4.3 Urgency Curve

Everything is (almost) below the urgency curve, so there is no such urgent need for improvements. The urgency curve of the tasks considering the impact of the issues and the task severity is in Figure 5.3.

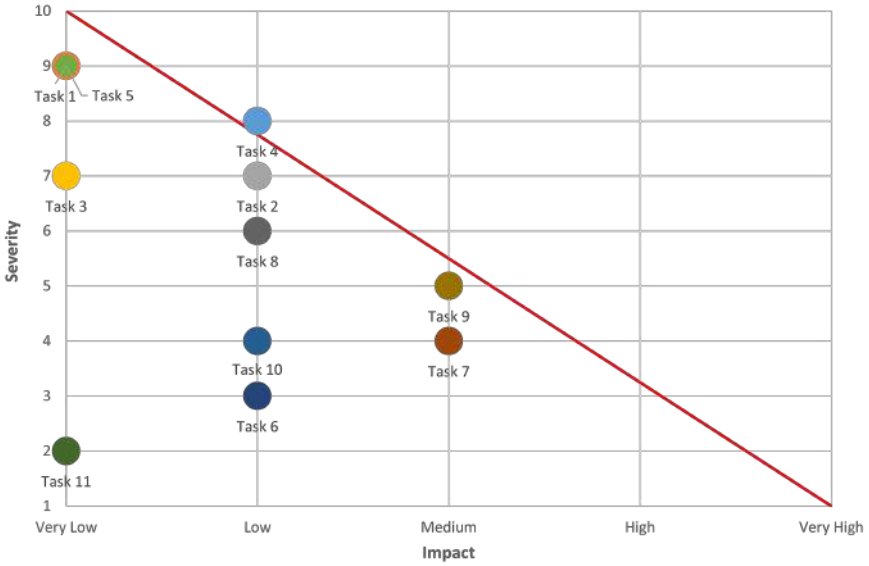


Figure 5.3: Urgency Curve Iteration 3

Chapter 6

Final Recommendations

After thorough research, iterative testing, and evaluations, we present the following conclusive recommendations and final remarks for the redesign of the KidsHealth® platform. These guidelines aim to optimize user experience, functionality, and accessibility across various elements of the platform.

6.0.1 Considerations and Suggestions

User Interface & Design

Standardize Centers Given that Centers are the focal points for specific macro topics, they have been uniformly designed for seamless user navigation.

Affordances Buttons and other features are now more intuitive. Clear labels and contrasting colors have been used for better visibility.

Focus Points We utilized focus heat maps to fine-tune the design so that the user's attention is directed toward essential elements like the navigation bar and search functions.

Content Structure

Prioritize 'Human Body' Section This section requires special attention as it hosts a majority of videos and is the only section offering games.

Content Sequencing In order to unlock and access new micro topics, users should (not mandatory) complete lessons from the previous topic, guiding them in a structured learning path.

Accessibility

WCAG Compliance The revamped KidsHealth® platform aims to achieve the highest level of compliance with the Web Content Accessibility Guidelines (WCAG) [W3C, 2008], ensuring a universally accessible user experience.

Inclusive User Testing The design process should be inclusive of children with special educational needs. This would involve conducting user research that includes explicitly these demographics and subjecting the platform to rigorous testing to meet their unique requirements.

Audio Player To further improve the user experience for those with visual impairments or special educational needs like dyslexia, consideration should be given to the development of an audio player that audibly narrates the text of articles and lessons. This player could highlight the specific text being spoken in real-time and hide all the rest, in order to facilitate focused, linear engagement with the content. A review of existing literature and further research will be necessary to validate and refine this concept.

Iterative Testing & User Feedback

Dynamic Iterative Process We continuously updated the platform based on individual test results rather than batch sequences, due to budget and time constraints. However, we recommend performing several other rigorous tests.

Urgency Curve We employed an urgency curve to prioritize tasks based on their severity and impact on overall user experience. We suggest using also other parameters like budgeting.

Mockups and Prototypes

Multi-Device Adaptability The wireframes provided are intended for tablets, but the desktop interface should be identical. Light adaptations will be necessary for smartphones.

User Expectation Surveys Further tests should be performed on the implementation of the non-functional tasks, rather than using expectation surveys.

6.0.2 Interactive Engaging Content

We grouped every interactive content under the games category to exploit gamification principles. We propose adding the following kinds of games to boost the engagement of kids.

Quiz Questions

Objective: To evaluate the immediate understanding of a recently discussed concept.
Implementation: Embed multiple-choice or true/false questions after relevant paragraphs within articles.

Interactive Flashcards

Objective: To facilitate quick revision and test understanding of key terms.
Implementation: Flashcards with terms or phrases can pop up on clicking a particular keyword within the text.

Mind Maps

Objective: To help kids organize and summarize what they've learned.
Implementation: Provide a user-friendly tool for creating a mind map at the end of the article.

Fill-in-the-Blanks

Objective: To engage children actively with the text.
Implementation: Embed blank spaces for important keywords that kids must fill in as they read the article.

Short Quizzes or Assessments

Objective: To evaluate overall comprehension.
Implementation: At the end of each article, include a quiz that covers the main points and ideas discussed.

Crossword Puzzles

Objective: To reinforce vocabulary and key concepts.
Implementation: Embed a crossword puzzle using terms from the article.

Summarization Activities

Objective: To test the extraction and comprehension of main points.
Implementation: Ask children to write a brief summary at the end of the article.

Storytelling or Drawing

Objective: To gauge both comprehension and creativity.
Implementation: Allow space for storytelling or drawing to depict key takeaways from the article.

Debate or Persuasive Writing

Objective: To challenge more advanced learners in forming reasoned arguments.
Implementation: Include debate topics related to the article for classroom or forum discussion.

Specialized Games for 'Human Body' Center

Interactive Anatomy Puzzles

Objective: To familiarize children with the structure of the human body.
Implementation: Provide jigsaw puzzles that allow for the arrangement of anatomical structures.

Body Bingo

Objective: To make learning about the human body interactive and rewarding.
Implementation: Create bingo cards with terms or body parts that can be marked off as they appear in the content.

Human Body Hunt

Objective: To encourage exploration and information gathering.
Implementation: Design a scavenger hunt across the website with clues leading to information or interactive displays about the human body.

Body Trivia Challenge

Objective: To test and reinforce knowledge about the human body.
Implementation: Design a timed quiz game with scores and lifelines for an engaging learning experience.

Final Thoughts

In conclusion, the proposed enhancements offer a robust framework for the ongoing improvement of the KidsHealth® platform. While our suggestions are not all-encompassing, they aim to substantially elevate the user experience and widen the scope of accessibility. These changes, if implemented, hold the potential to make learning more engaging, effective, and inclusive, thereby benefiting users of all backgrounds and learning needs. We are confident that these upgrades will solidify KidsHealth® standing as a trusted and educational resource for children, parents, and educators alike.

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Appendix A

Segmentation Interview Answers

Alessandro

Known disabilities or special educational needs: None.

General Questions
- A1: I am 9 years old.
- A2: I'm going to attend the last year of primary school.
- A3: I have a computer, a tablet, a phone, and an Xbox. I can use them, but sometimes, when I am using them too much, my parents stop me.
- A4: I prefer my computer because of the games I can play.
- A5: My favorite app is Roblox because I can play together with my friends, it's easy to use and there are a lot of mini-games. Then I really like YouTube to watch videos and YouTube Shorts and I find easy the way videos are placed.

Interests and Personality
- B1: I like to learn about history and literature.
- B2: I like superheroes like Spiderman and batman, and GTA5.
- B3: I like to go out and play football with my friends, go to the park, play video games, and sleep. My favorite sport is basketball, in fact, I have a basketball hoop in my garden and I always play with it.
- B4: I'm very outgoing, I like to talk and spend time with other people, and I don't like to stay alone.
- B5: Yes, I'm scared of the dark, and when someone gets hurt. I would like to learn how to deal with my fears.

Learning Style
- C1: I like to learn both through videos and reading, but I prefer reading.
- C2: I watched a lot of videos for geography, history, and science. I prefer when there are characters like in cartoons.
- C3: When I want to learn something new I open the books I have in my home, I search on the internet for some videos or other things, and for practical stuff, I read the instruction manuals. for example, I learned how to solve the face of the Rubik's cube thanks to YouTube.
- C4: Images help me a lot.
- C5: At the after-school program I got used to studying with other kids.

Parental education
- D1: My Mom and dad both have the high-school diploma.
- D2: Yes, a lot.
- D3: Rarely, maybe only when I'm doing something wrong.

Website's content
- E1: No, not yet.
- E2: Yes, I would like it.
- E3: Yes, but I prefer quizzes. I also like to challenge my friends to see who is the best.
- E4: I think 118 or 112.
- E5: Yes, I feel stressed when my teachers give me too much homework, while at home I feel

stressed when my mom wants me to do every homework. also, I don't like when my classmates exclude someone during the breaks.

E6: No, I enjoy going to the doctor and I sometimes read about the medical test on Google.

E7: Yes, I think it is important, but I would not read it, I can do it myself. If I need help I can ask my mother.

Gabriele

Known disabilities or special educational needs: None.

General Questions

A1: I am 8 years old.

A2: I'm in the third grade of primary school.

A3: I have a tablet. I have rules and my dad gives me usage limits.

A5: My favorite apps are car games, specifically one where a kid can turn himself into different vehicles. I like it because the kid changes a lot of shapes.

Interests and Personality

B1: I like to learn about art.

B2: I can't find a favorite TV show or movie.

B3: I like to watch the television or to draw.

B4: Sometimes I'm more outgoing, sometimes quiet. I talk to everyone and I don't get embarrassed.

B5: Yes there are many things that worry me and I would like help with those.

Learning Style

C1: Surely I prefer reading, but I also like the videos my teacher lets us watch at school.

C2: I have never searched for a video by myself, only at school. In any case, I prefer videos with cartoon characters.

C3: I like to read many times and repeat loudly.

C4: Reading a lot or asking for my parent's help.

C5: I prefer alone, but if I can't understand something I study with others.

Parental education

D1: My parents both have master's degrees.

D2: Yes, and they berate me if I am not doing well.

D3: Yes, for example, they always tell me to cover myself when it is cold.

Website's content

E1: We have studied the different body parts during English classes.

E2: Yes, I would like that.

E3: Yes.

E4: Yes, my mother's number.

E5: Not at home, sometimes at school.

E6: Sometimes. The videos would not help me feel less stressed.

E7: Yes, I think it is important.

Mattia

Known disabilities or special educational needs: None.

General Questions

A1: I'm 8 years old.

A2: I'm in the third grade of primary school.

A3: I have a tablet but I can't use it whenever I want and for how much I like.

A5: I like a game called Rodeo because I like animals and in this game, you can ride many of them.

Interests and Personality

B1: I like Italian literature.

B2: I like challenges and races as games.

B3: I like to watch the television, play games, and watch videos on YouTube.

B4: I'm more outgoing.

B5: No.

Learning Style

C1: I like both reading and watching videos.

C2: Yes and I like when there are cartoon characters.

C3: Watching videos.
C4: Write the information down and then read it.
C5: I like to learn with other people.

Parental education
D1: They have both master's degrees.
D2: Yes, they are very happy and proud when I get a good grade.
D3: Yes, like brushing my teeth, don't eat too many sweets, to have a complete diet.

Website's content
E1: Yes, I've watched a cartoon called "Siamo fatti così".
E2: I already do it.
E3: Yes I like it. For example, after studying about the seasons at school, my teacher gave me a quiz to understand if I learned correctly.
E4: Yes, my parent's numbers.
E5: No.
E6: Yes, I feel nervous. I think the videos could help me.
E7: Yes, I think it is important.

Simone

Known disabilities or special educational needs: None.

General Questions
A1: I'm 8.
A2: I'm in the third grade of primary school.
A3: Yes, I have a Nintendo Switch and a Tablet.
A4: I mostly use the Nintendo Switch because I have many games I can play with other people.
A5: I like Mario Kart because it is a fun game and the characters are cool. I also like Just Dance.

Interests and Personality
B1: I like math.
B2: Yes, I like many cartoon television channels and Nintendo games. My favorite movie is "Puss in Boots".
B3:. Playing with my brothers or playing with the Nintendo Switch, but only after finishing my homework.
B4: I'm very quiet when I'm doing some homework, and outgoing when playing with my friends or schoolmates.
B5: Yes, for example, when my classmates fight with each other or when my parents come home late I'm scared there might have been an accident. I would like someone who helps me deal when I feel those sensations.

Learning Style
C1: I like reading, especially fairy tales that always have a moral.
C2: Not very often, but I prefer when there are cartoon characters.
C3: Reading or watching documentaries, especially about animals.
C4: Images and documentaries.
C5: I prefer to study by myself.

Parental education
D1: They both have master's degrees.
D2: Yes.
D3: Sometimes, in particular about not eating too much.

Website's content
E1: Yes, I have studied the heart and brain which takes care of the whole body.
E2: Yes, I would like to.
E3: Yes, I like that, and my teacher, after studying the food, gave us a game where we had to place the right words in the correct spot.
E4: Yes, my dad's number, or also my mom's when I will memorize it.
E5: I mostly feel worried at school because many times my classmates have arguments with older kids at school and I'm scared the older kids could hurt the younger ones.
E6: Yes, yesterday I had to go to the doctor and I was very stressed. even though I have never watched a video of such kind, I feel they could help.
E7: Yes.

Karol

Known disabilities or special educational needs: None.

General Questions	A1: I am 11 years old.
	A2: I'm going to attend the first year of middle school.
	A3: I have my personal smartphone, but I can't use it a lot.
	A5: I use YouTube a lot and WhatsApp to chat and video call my friends and family members. I also like the game Brawl Stars because of its characters.
Interests and Personality	B1: I like science and a little bit of math.
	B2: My favorite TV show is Stranger Things
	B3: I like to spend time with my friends. I also go to dancing classes, and I like reading and watching movies. I also spend time with my aunt, she is 23, and we have conversations about a lot of topics.
	B4: It depends, when I approach someone new I am very shy, but with my friends I am outgoing.
	B5: Yes, I'm interested in reading about these topics.
Learning Style	C1: I like to learn new things by watching videos or documentaries.
	C2: Yes, I have watched videos and documentaries, both alone and at school. I prefer when a human teacher explains the topics.
	C3: I like to highlight the text and learn step by step.
	C4: Images and examples help me a lot.
	C5: I prefer to study alone. When I can't understand something I like to study with other people.
Parental education	D1: My parents both have the middle school diploma.
	D2: Yes, my mother always asks me how am I doing at school.
	D3: Not so much, just some things about food.
Website's content	E1: Yes, we have studied the whole human body.
	E2: Yes, I would like to learn new things or revise things I have already studied.
	E3: Yes.
	E4: I know 118 and 112.
	E5: No.
	E6: No, I don't feel nervous when I have to go to the doctor.
	E7: Yes.
Pre-adolescent Questions	F1: No, I don't know what puberty is.
	F2: Yes, I'm taller.
	F3: I would like to know what puberty is exactly.
	F4: I have no idea.
	F5: Yes, I can always talk to my mom.

Ginevra

Known disabilities or special educational needs: None.

General Questions	A1: I'm 10 years old.
	A2: I am going to attend the first year of middle school in September.
	A3: I have a smartphone and a tablet. I can't use them during lunch or dinner, and I have to turn them off by 10 p.m.
	A4: I prefer the smartphone because I can always access the internet.
	A5: I like YouTube videos and some games like Brawl Stars and Roblox.
Interests and Personality	B1: I like history and math.
	B2: My favorite movies are Avatar and Harry Potter, in general, I like fantasy movies.
	B3: I like to play with my dog and help my mother. I also practice Kung Fu.
	B4: I'm shy, especially with strangers.

E3: Yes, but I would not read about it.

Learning Style
C1: I like watching videos.
C2: Yes, I prefer videos with cartoon characters.
C3: Usually I highlight and repeat.
C4: Images are very helpful.
C5: I like to learn and study alone.

Parental education
D1: My parents both have high school diplomas.
D2: Yes, but they never ask me about school because they trust me and they know I am a good student.
D3: My dad always tells me to eat the vegetables we grow in our garden, because they are healthier. My mom tells me not to eat much and to eat slowly.

Website's content
E1: Yes, we have studied everything.
E2: No, I'm not interested.
E3: Yes.
E4: No, I don't know any emergency number, I would call my parents.
E5: Sometimes I feel insecure when I am with other kids.
E6: No, I ask my mother.
E7: Yes.

Pre-adolescent Questions
F1: No, I don't know what it is.
F2: Yes, many changes.
F3: Yes, I would like to know more about why my body is changing.
F4: I think it will affect every aspect of my life.
F5: Yes, I can talk to my mother.

Aldo

Known disabilities or special educational needs: None.

General Questions
A1: I'm 9 years old.
A2: I will attend the last year of primary school.
A3: I have a smartphone and an Xbox, and I can use them when I want to.
A4: I prefer my smartphone because I can bring it everywhere.
A5: I like YouTube and WhatsApp. I like to chat with my family and friends, I always send them good morning and good night.

Interests and Personality
B1: I like history.
B2: No, I don't really have a favorite TV show, but my favorite movie is The Brave. My favorite fame is FIFA.
B3: I like to use my phone, to eat, to play football in my garden. I am also a Boy Scout.
B4: When I first meet someone I am quiet.
B5: Yes, I'm scared of dark and quiet places, like my garden during the night. Yes, I would like some help to deal with my fears.

Learning Style
C1: I prefer reading.
C2: Yes, for example, I learned how to read the clock by watching a video. I also watched some science videos. I prefer videos with cartoon characters, but only if the animations are good.
C3: I read many times and then repeat.
C4: I like images, and sometimes I get confused when there are too many examples.
C5: I like to learn with other people.

Parental education
D1: My mom has a middle school diploma, while my dad has a high school diploma.
D2: Yes.
D3: Not really, they just tell me not to eat a lot and to wear a jacket when it is cold.

Website's content
- E1: No, we have not.
- E2: No, I watch videos about history.
- E3: I don't do them, but I would like to if only I could find them.
- E4: I only know the firefighter's number, for other problems I know my parents' numbers.
- E5: Yes I feel stressed when my classmates are too loud, and sometimes when I forget my exercise book in school, I am worried I have to do again the homework.
- E6: I never want to go to the doctor, and I would feel stressed also after watching a video.
- E7: Yes, with anger, you can't solve problems.

Carlotta

Known disabilities or special educational needs: None.

General Questions
- A1: I'm 7 years old.
- A2: I have finished my second year of primary school.
- A3: I have a tablet and I can use it anytime I want.
- A5: I like video games and YouTube. I always watch cartoons and interesting videos.

Interests and Personality
- B1: I like literature.
- B2: No, I don't have a favorite movie or TV show, but I love cartoons.
- B3: The thing I love the most is dancing, and playing with my aunt's dog.
- B4: With my friends I am very outgoing.
- B5: Horror movies scares me a lot. When I am worried I want to call or talk with someone.

Learning Style
- C1: I prefer reading.
- C2: I prefer cartoon-animated videos about math.
- C3: I read a lot and then repeat.
- C4: When I can't understand something, my mother makes it easier for me, we make schemes and images to help me.
- C5: It depends on what I have to study. Also, if I have more time I study with my friends, but if I am in a hurry I always study alone.

Parental education
- D1: My parents both have high school diplomas.
- D2: Yes, they care a lot.
- D3: Sometimes about the food, for example, they tell me not to eat too much sugar.

Website's content
- E1: No, we have not studied the human body.
- E2: Yes.
- E3: Yes, I prefer more activities and mini-games.
- E4: I know my mom's number. (She tells us 118, but she does not know what it is for).
- E5: Nothing makes me feel stressed at home or at school.
- E6: Yes, I get nervous and I think that watching videos might help.
- E7: I think it is important. I think about it, but I don't talk with anyone about it.

Andrea

Known disabilities or special educational needs: None.

General Questions
- A1: I'm 12.
- A2: I've just completed middle school because I started school one year in advance.
- A3: I have a phone and a gaming PC and there are no rules about them.
- A4: I use mostly the phone because I'm rarely at home.
- A5: I like Clash Royale because I can play with whoever is in the world. Then I use TikTok and YouTube to watch interesting content about gaming, fishing, and sports.

Interests and Personality
- B1: I like science but next year I will start learning cooking.
- B2: My favorite series is Stranger Things and my favorite game is GTA5. I don't watch films usually.

B3: I like to play games with my PC, go fishing and hang out with my friends. Sometimes we all go out together on bikes.
B4: Outgoing, definitely.
B5: I'm scared about being alone at home during the night. Then I'm scared of my dad when he gets angry for something wrong that I did.

Learning Style

C1: Videos because it's the only way that I don't get distracted.
C2: I always watch videos about everything in my interests. I have no preference between cartoons and real people as long as they are exposed in a clear and immediate way.
C3: I watch a video or someone tells me how to do and then I will try on my own.
C4: Repeating things and have a feedback about what's wrong and why.
C5: Always alone.

Parental education

D1: My mother has a high school diploma while my father finished middle school.
D2: Yes, a lot. They want me to always study and achieve high grades.
D3: Yes, they claim that I should eat more vegetables to stay healthy, and often they warn me about the risks of smoking.

Website's content

E1: Yes, we learned the purpose of some organs.
E2: Sure, as long as they are not boring lessons.
E3: Not too much but they could be useful to check if I understood well.
E4: 112 or 118.
E5: I feel stressed when my parents argue with each other or when there are too many school checks in a row.
E6: I rarely go to the doctor but each time my mom explains everything in detail if she gets that I'm nervous. A video would surely help.
E7: Yes, otherwise you either go crazy or have terrible physical issues.

Pre-adolescent Questions

F1: Someone told me at school but it wasn't so clear.
F2: I'm growing some little mustaches.
F3: I would like to know when I will become physically like my father.
F4: I think that I will become more independent.
F5: Sometimes I talk about this stuff with my older cousins.