# CHILDREN AS INTERNET USERS

**ANALYSIS OF THE DESIGNER ROLE IN PROVIDING A HAPPIER AND SAFER DIGITAL LIFE FOR CHILDREN.**

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**POLITECNICO**
MILANO 1863

SCUOLA DEL DESIGN

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# ABSTRACT

The Internet has changed the world we live in, our behaviours, thoughts and feelings, opening our lives to the globalization of news and cultures. The digital world created a blurriness in society rules, creating concerns about inappropriate content exposure and private information. This lack of regulation and awareness of the digital world has severe consequences on children's life.

During the rapid spread of digital and online experiences, children have been born in an digital world, growing up with digital devices and gaining digital literacy at an unprecedent rhythm.

This thesis explores how we as a society can protect our children from the digital world—investigating the responsibility to take a comprehensive and intersectional approach towards developing regulatory boundaries and creating public policies and digital spaces that promote the culture of cybersecurity.
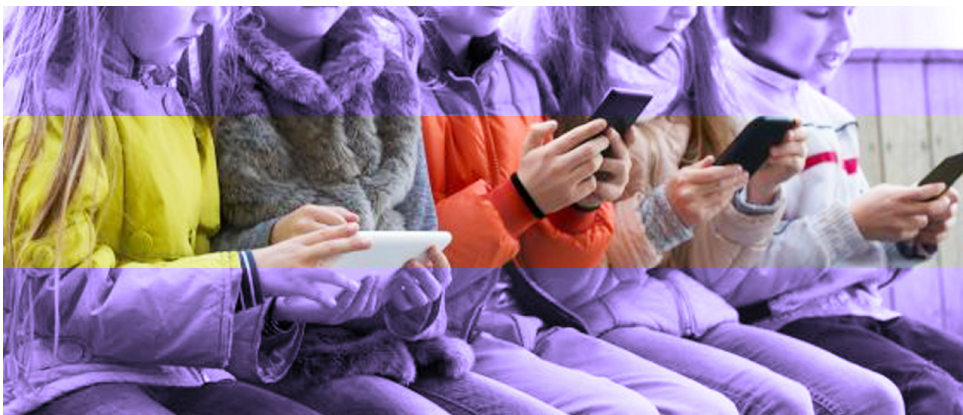
**Figure 0.1.** Happy digital Life.

**Can design and designers have a crucial role in crafting a better online experience for children?** Designers can bring a new model of knowledge and process into challenging problems and should recognise the responsibility to create solutions that push society forward, embedded in scientific and moral design practices.

Since designers help create social environments and change people's behaviour, design outcomes may be the key to improve social environments and interactions.

As such, the present thesis seeks to explore the role that design and particularly, communication design can have in providing a safer digital experience for children and proposes a model to achieve this goal.

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# INTRODUCTION

The Internet is continuously causing a rapid change in our communication environment. From its inception, the Internet brought about a worldwide never-ending conversation regarding the advantages and consequences of the online network and the changes cyberspace brought into our ways of living. In the past years, concerns related to the Internet's social implications increased with the exposure of government surveillance, massive data breaches, and misinformation, which led to an urgency for designing appropriate politics and legislation such as the General Data Protection Regulation (GDPR), which has been applied since 2018 in the European Union.

The majority of Internet technologies contribute to children's development of identity and social skills. Nowadays, children begin to live a digital life earlier than ever, growing up with this crossover betwen the physical and online worlds. There are a significant number of studies on the risks that children are experiencing online and the policies that are being implemented, mainly based on restrictions in Europe. However, there is an overall lack ofmaterial on how they can cope with digital life.

In a world where adults struggle to manage the misinformation and lack understanding of digital technologies. How can children have a better digital life?

Design thinking intercommunicates and integrates all fields, becoming an advantage when approaching complex social issues. Social Design has grown around the world, forcing designers to take social and ethical responsibility and creating a society-centered design approach. Currently, designers are taking a lead role in innovation labs and governments, tackling complex social systemic issues. It is essential to design and re-design physical and virtual environments to tackle social issues.

This thesis explores the designer's role, especially graphic designers, in creating a better online experience for children. Can design and designers have a crucial role in crafting a better online experience for children?

Although the dangers and challenges children face online are a very much broadcasted and explored topic worldwide, there is a lack of data and transparency on what is being made by European governments to provide children a safer environment online. Concerns increase when tech experts and engineers are open to not allowing their children to be part of the digital world. According to the EU Kids Online network, children (ranging between 12% in Germany to 69% in Serbia) help their parents when they find something challenging on the Internet. These numbers may indicate a continuing generational gap, where parents struggle to keep up with digital education and skills.

As a late Millennial growing up in a fast pace of ever-changing digital technologies, it was only during the time as a student in Politecnico di Milano where subjects such as digital transparency, ethical algorithm, digital unconscious, and more were brought to the author's attention. Consequently, this thesis attempts to shed light on an issue for the next generation, building a better digital world alongside more informed and educated children. It was necessary to consider how children behave and lead their lives as Internet users, collecting data from a child's perspective and opinions on the improvements that their digital life could have and in which digital environments. Classifying collected data per age, location, digital education, commonly used web spaces, and percentage of positive and negative experiences in those spaces.

Revising changes that the digital world brought on the overall children's life, analyzing studies on health and new habits, considering the policies and regulations in Europe and the various studies about how those regulations affect children's lives and education, and learn the current work on different possible policy approaches that can be used instead of today's. Furthermore, appreciating the importance of design and human-centered design on social issues and the analysis of selected case studies where design thinking and approaches contributed to re-thinking and re-designing complex structural system problems. Collecting diverse perspectives and researchers points of view on the social responsibility of a designer.

Explore Graphic Design's power on children's daily life and fields, such as education and Social Media: How communicators and graphic designers can make a difference in how people perceive and tackle complex information.

This thesis explores the importance of designers' skills and communicators in projects that are urging for change. It concludes with constructing a possible project where the ideas above combined take a different approach on the issue and provide a better experience for children by using design thinking to tackle virtual environment issues. This thesis explores the designer's role, especially communication designers, in making a better online experience for children.

# CHILDREN AS INTERNET USERS

# CHAPTER

**Figure 1.1.** Children in a Digital World.

# I. CHILDREN AS INTERNET USERS

Children as Internet Users is a topic broadly discussed worldwide, predominantly portraited as unfavourable by the media. This chapter demystifies children's digital life, exploring European children's relationship with the Internet and new technologies, analysing its many aspects, such as their online connection, activities, risks, opportunities and digital knowledge.

Furthermore, this chapter explores the areas that are central in providing children with a happy and safer digital life—the support systems, particularly the educational system, parenting and digital regulations.

# 1.1. Living in a Digital World.

Nowadays, we can consider that most European children have constant digital technology and connection access. For most children across the EU, being online has become an everlasting condition in their lives, where the line between an online world and the real-world is blurry, if not non-existing. These days, the smartphone has become the modern must-have gadget, personal and portable, allowing children to have online access anywhere, at all times. (Graphic 1.1)

Recent studies show that European children use their smartphones or mobile phones daily or almost daily. (Graphic 1.2.) Even though a disparity between older and younger children is apparent, the number of young children between the ages of nine and eleven years old who access the internet from a smartphone every day is quite substantial (EU Kids Online, 2020).[1]

**Graphic 1.1**
Daily use of different devices to acess Internet.



**Graphic 1.1 / 1.2** Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L, Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. EU Kids Online 2020: Survey results from 19 countries. EU Kids Online; 2020, pp. 18 -25.
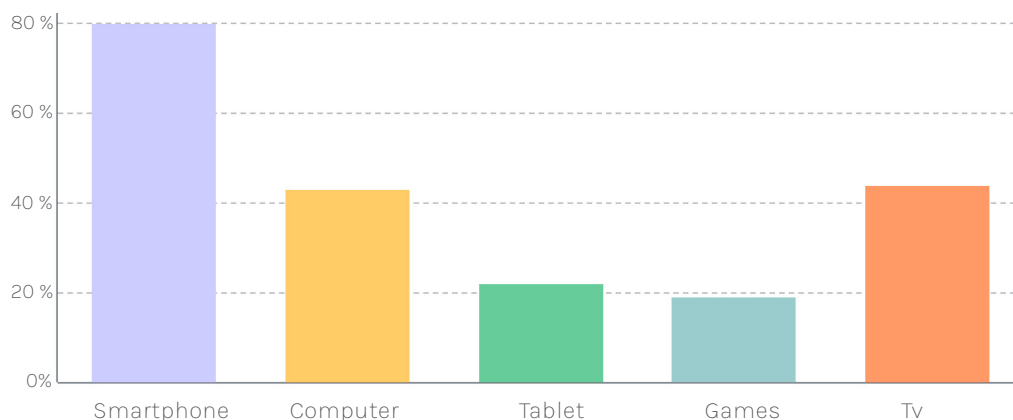
**Graphic 1.2**
Daily frequency of smartphone use to access the Internet.
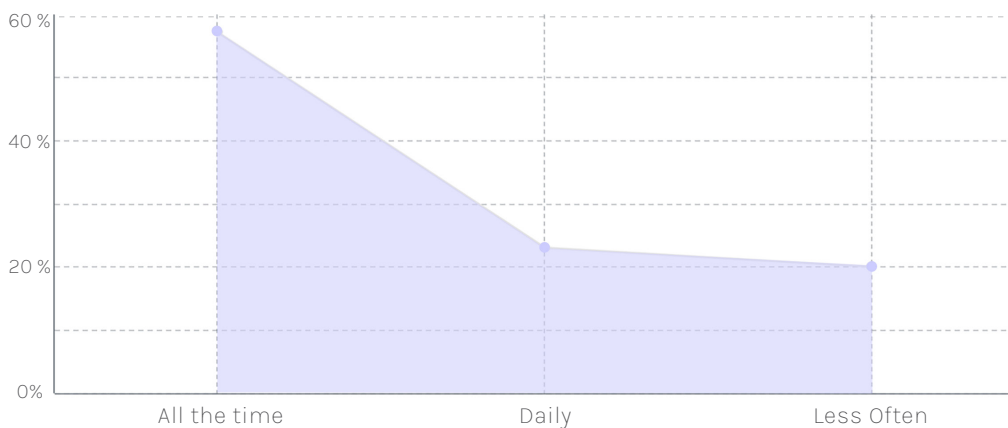


Consequently, the Internet is present in a variety of places in children's lives from a very young age. It offers company in the most tedious of times with the help of online games or networks, a way to speak with friends and family privately, a quick venue through which to access information in times of need, and a continuous offer of platforms and websites that provide tools to develop creativity and a playground for growth and identity.

## I.1.1. Online Activities.

Internet becomes more firmly and deeply fixed in surrounding children's lives, being progressively present in their everyday practices. According to the research made by the EU Kids Online Report, watching online videos, listening to music, navigating social media websites, speaking with friends, and playing online games are the top daily activities done by children online. (Graphic 1.4)

Social media websites are now estimated to have 3.6 billion users, half of the world's entire population (Graphic 1.3). The ruling social network among children invariably changes with time. It drifted from Facebook to other social networks such as Instagram, Whatsapp, or Tiktok. The principal and more dominant social networks are generally in multiple languages and offer users an instant connection with friends or strangers across geographical, political, or economic borders.

In 2018, the European Union applied the General Data Protection Regulation (GDPR),[2] which demands online platforms to have an age limit user of thirteen years old and parental consent to process children's data. Nevertheless, many young children, youngest than the allowed, visit a social networking site every day.

**Graphic 1.3**
Most popular social networks worldwide, by the number
of active users (In Millions).



Facebook ( 2740M)

YouTube (2291M)

WhatsApp (2000M)

Facebook Messenger (1300M)

Instagram (1221M)
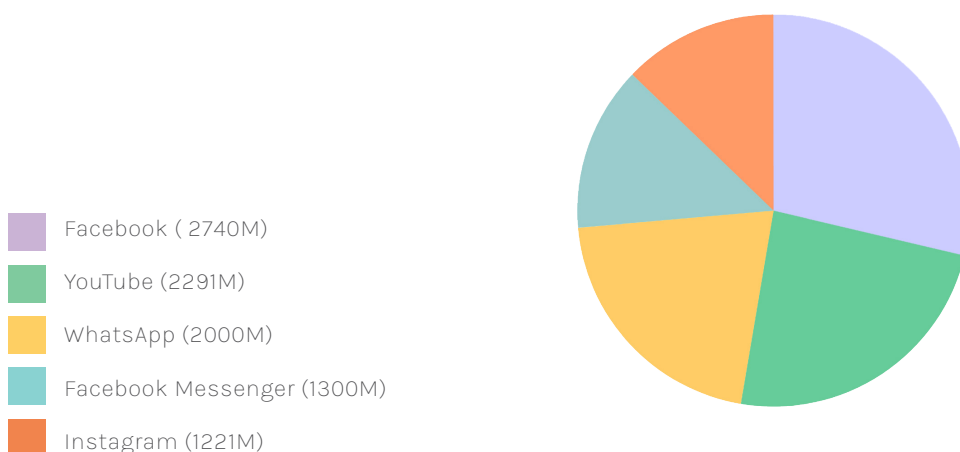
Graphic 1.3 Statisca. Most popular social networks worldwide, ranked by the number of active users (In Millions). Statistica Website. January 2021.
2. *European Comission.* Data Protection in EU: Lesgislation . ec.europa.eu.com. The regulation entered into force on 24 May 2016 and applies since 25 May 2018.

**Graphic 1.4**
Percentage of the most popular children's online activities.
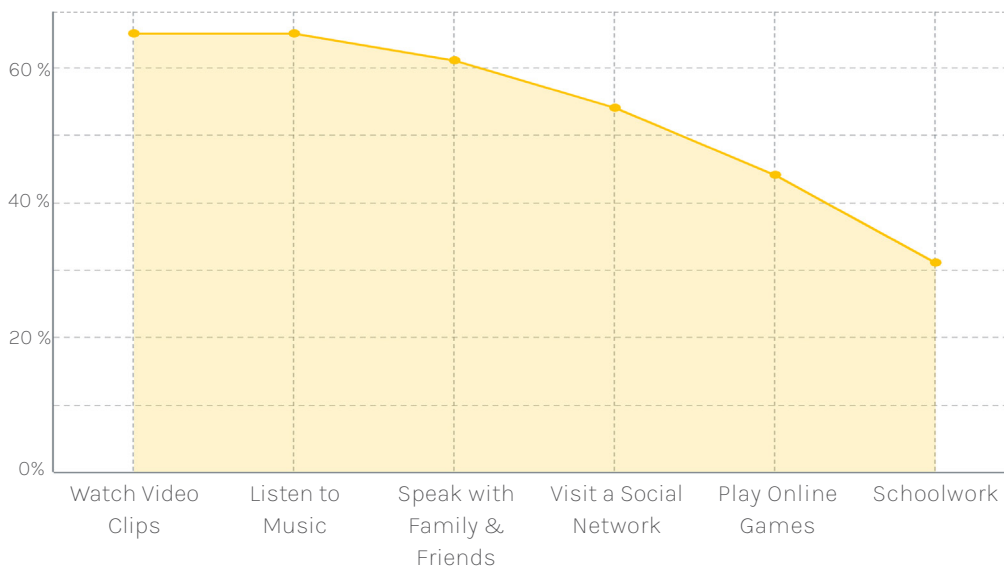


When online, one of children's most popular activities (Graphic 1.4) is to watch videos, so it comes as no surprise that one of the most used platforms is Youtube, an online video-sharing platform. YouTube and Youtube Kids have emerged as an alternative to broadcasted children's TV, providing endless content to young viewers consuming anything recommended, as decided by YouTube's algorithm and regulations. (Graphic 1.3) However, concerning and improper material is still widely available making more vulnerable and unsupported children an easy target. It is interesting to note that one of the top activities, such as playing online games, is the most gendered activity, with twice as many boys than girls playing daily in most countries . Such data makes us wonder how much presence the gender stereotypes can have in a sea of digital media content.

**Graphic 1.4.** Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L, Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. EU Kids Online 2020: Survey results from 19 countries. EU Kids Online; 2020, pp. 26

With the use of the internet for schoolwork, like most online activities, the frequency and variety increase with age. The correlations and assumptions that the normalization of mobile devices brings a broader variety of online activities are not necessarily accurate. Recent studies show that even though the division on access to devices and connectivity is narrowing down (UNICEF Report, 2017)[3], children with more education are more likely to use advanced online services than the users with lower digital skills, who tend to limit their digital lives to communication and entertainment activities (Livingstone and Helpster, 2010)[4].

## I.1.2 Digital and Social Skills.

Digital skills are an essential precondition of children's success in modern society, crucial to social lives, education, employment, health, and happiness. It is reported that regular European children score high on operational and social skills but lack information on navigation and content creation skills, (Graphic 1.5) which enforces conversations about the importance of digital and media literacy teachings. Digital literacy brings a set of competencies beyond digital and technical tools, including searching, evaluating, and managing the interaction with information found online.

Around the world, digital connectivity was seen as a way to transform educational systems - most Western nations invested in information and communication technologies (ICTs) Allowing children to participate in motivational learning experiences and to access extensive educational and learning content.

3. *Unicef. Children* in a Digital World: the state of the world's children. United Nations Children's Fund (UNICEF), December 2017.pp. 43
4. *Livingstone, Sonia and Helsper, Ellen (2010)* Balancing opportunities and risks in teenagers' use of the internet: the role of online skills and internet self-efficacy. New media & society, 12 (2). pp. 309-329

**Graphic 1.5**
Measurements of children's digital skills (% who say very true or somewhat true).



| | |
|---|---|
| Mobile Skills | I know how to install apps on a mobile device — 90 % |
| | I know how to remove people from my contact lists — 89 % |
| | I know which information I should and shouldn't share — 86 % |
| Social Skills | I know how to save a photo that I find online — 84 % |
| | I know how to change my privacy settings — 79 % |
| Operational Skills | I find it easy to choose keywords for online searches — 72 % |
| | I know how to make an in-app purchase — 69 % |
| Navigation Skills | I know how to create and post online video or music — 66 % |
| | I know how to keep track of the costs of mobile app — 64 % |
| Creative Skills | I find it easy to check if the info I find online is true — 59 % |
| | I know how to make basic changes to online content — 43 % |

However, the confirmation that the digital revolution brought educational benefits is mixed. The 2017 Unicef Report claims that technologies alone cannot improve children's education. It is necessary to support strong trained teachers, motivated learners, and software that complement the school curriculum.

With children going online earlier than ever and being the youngest children, the less qualified to read and understand online information is necessary to promote and incorporate digital literacy programs from the earliest years at schools. During the rapid spread of digital and online experiences, children have been born in an digital world, growing up with digital devices and gaining digital literacy at the same rhythm as Instagram followers.

**Graphic 1.5.** Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L, Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. EU Kids Online 2020: Survey results from 19 countries. EU Kids Online; 2020, pp. 36

# I.2 Digital Natives.

In 2001, Marc Prensky[5], an award-winning speaker and author on education, created the terms "Digital Native" and "Digital Immigrant," which he used to describe the difference between generations. "Digital Native" represents today's children, the ones that grow up with the Internet, and "Digital Immigrants" for those who were introduced to the Digital world later in life and needed to adapt to a new paradigm.

In the present moment, children are digital natives, but that does not define that they automatically understand their vulnerability to online risks or their responsibility to be good digital citizens. Children need guidance and support to make the most out of a connected world.

## I.2.1 A Generational Gap

The assumption that the digital natives quickly became masters of new technologies in the online world is damaging on several fronts. Victoria Nash[6], a policy professor at the Oxford Internet Institute, defends that the "digital natives" term diminishes parent's and educator's confidence in supporting young Internet users. With the unprecedented fast time that technology and the internet were embedded in our lives, a generation gap was inevitably created. European schools implemented the Internet and new technologies to educate—however some teachers still relay on children's guidance on new technologies.

5. *Prensky, M.* (2001), "Digital Natives, Digital Immigrants Part 2: Do They Really Think Differently?", On the Horizon, Vol. 9 No. 6, pp. 1-6.
6. *Nash, Victoria.* "The politics of Children's Internet Use" In "Society and the Internet: How networks of information and communication are changing our lives". Graham, Mark & Dutton, William H, with foreword by Manuel Castells. Chapter 21; pp. 534-554. Second edition. United Kingdom: Oxford University Press, 2019

**Graphic 1.6**
Who children talked to after having negative online experiences.
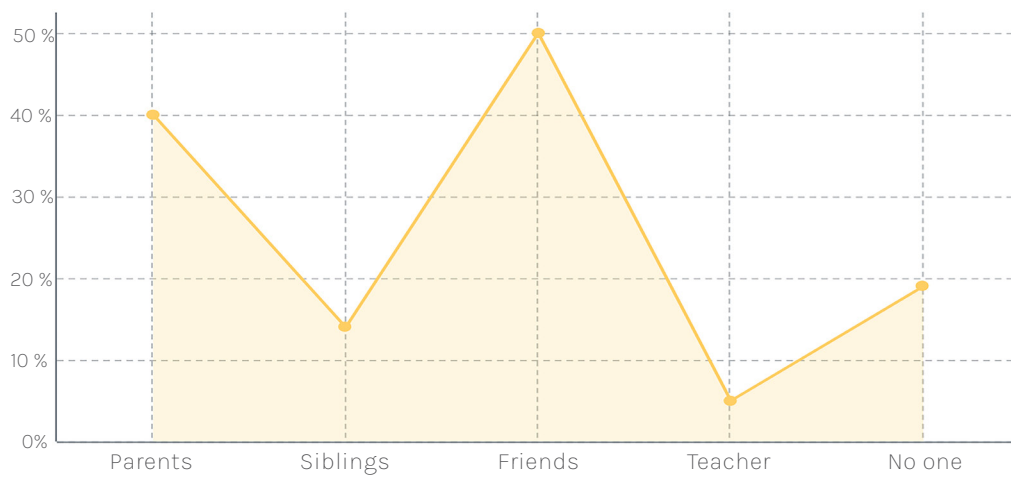


Studies frequently show that children rely on other children when they have problems online and to have conversations about their negative online experience (Graphic 1.6). Even though parents are children's second choice, teachers are far from being an option of support since children are more likely to tell no one than a teacher (Graphic 1.6).

The lack of a support from adults in  children's lives reduces opportunities to communicate social norms or give emotional support. Holding up teachers' digital skills and literacies progress seems to be a priority for most studies, alongside the need to develop skills and knowledge to support their students' use of Information and Communication Technologies (ICTs).

## I.2.1.1 Digital Parenting.

Undoubtedly, parents are responsible for helping and protecting their children, having the provider's role, cultivating children to grow into healthy and capable adults. However, it may not aways be just a parent who teaches a child about internet use – a child can teach the parent and explain how digital technologies work. (Graphic 1.7).

As children increasingly spend more time in an unsteady and complex digital world, parents lack the time, knowledge, and means to be prepared for this role. Parents are in a constant battle with contradictory messages portrayed in several media, such as the dichotomy between topics like online pornography (Figure 1.3) and how unique a new platform might be to improve creative skills. (Figure 1.4)

**Figure 1.2**

**Figure 1.3**





**Figure 1.2** Qustodio Advertising, a leading app for parent control.
**Figure 1.3** Youtube Kids Advertising, an app just for kids.

**Graphic 1.7**

Helping parents when they found something difficult online.
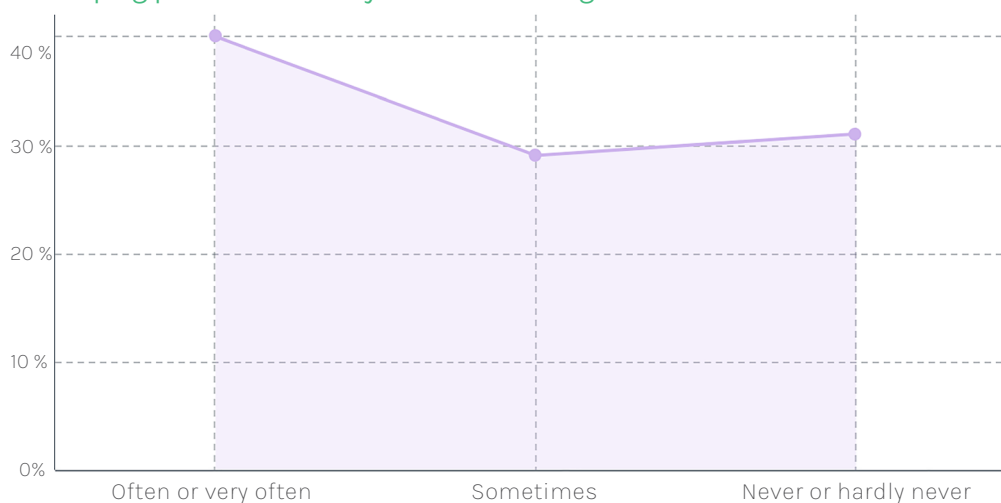


Even though parent's anxieties about children's digital lives are reasonably coherent, according to Jasmina Byrne and Sonia Livingstone,[7] the more uneducated parents are more likely to have a restrictive approach to the Internet.  Since more than half of the parents ask for children's help when dealing with the Internet (Graphic 1.7), one wonders how many opportunities children waste due to uneducated parents. Unsupervised connectivity has the potential to cause harm, just as access to the Internet has the potential to benefit children around the world.

A more balanced, knowledgeable perspective of the internet is required for parents to create a relationship based on dialogue and guidance when dealing with their children's digital lives.

**Graphic.1.7** Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L, Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. EU Kids Online 2020: Survey results from 19 countries. EU Kids Online; 2020, pp. 117
**7. Jasmina Byrne and Sonia Livingstone**, Article: "Parenting's new digital frontier" In Children in a Digital World: the state of the world's children. United Nations Children's Fund (UNICEF), December 2017.pp. 104-105

# I.3 Digital Dangers and Opportunities.

Digital technology is already the most significant game-changer of our time, playing a pivotal role for children and young people in expressing their growth and social identities. The number of possibilities that a world of connectivity and digitalization can bring to all our lives are infinite. It can be life-changing for the most vulnerable children worldwide, opening numerous closed doors for social inclusion and opportunities to learn and grow to full potential. The more positive aspects of Internet use rarely receive the same media coverage and recognition.

Studies report that risks and opportunities usually come hand in hand ( Victoria Nash,2019)[8]. However, more opportunities bring undoubtedly more risks to children's lives.

## I.3.1 Risk and Harm Balance

Two main perspectives exist when dealing with the digital lives of children. Those more excited by digital opportunities usually do not give attention to online risks appropriately, and those who let the anxiety surrounding child protection rule their philosophy create limitations on children's civil rights of freedom.

Many risks arrive at the surface of an online user's digital life according to UNICEF,[9] researchers now typically organize the wide range of risks encountered online into three categories, such as: content risks; contact risks and conduct risks.

8. *Nash, Victoria.* "The politics of Children's Internet Use" In "Society and the Internet: How networks of information and communication are changing our lives". Graham, Mark & Dutton, William H, with foreword  by Manuel Castells. Chapter 21; pp. 534-554. Second edition. United Kingdom: Oxford University Press, 2019

**Content risks**, happens when a child is exposed to unwelcome content (e.g. sexual, pornographic and violent images).

**Contact risks**, when a child participates in risky communications (e.g. an adult seeking inappropriate contact).

**Conduct risks**, when a child  behave in a way that contributes to risky content or contact (cyberbullying, where children write or creating hateful materials).

Analyzing the extent to which risks became harmful is highly challenging. Risk exposure is natural for children to learn how to adapt to testing environments, yet the fact that risk does not mean instant harm does not eliminate the chances of harming a child.  Researchers around the world reinforce the importance of education, defending that digital skills can reduce the harmful consequences of exposure to risks.



**Figure 1.4**. Digital Natives.
**9.** *Unicef. Children* in a Digital World: the state of the world's children. United Nations Children's Fund (UNICEF), pp. 72 December 2017.

## I.3.2 Policy Regulations

In governments worldwide, a discussion between protecting children online and defending their rights to access information causes a collective disagreement. Studies involved in measuring harms to children resulting from Internet use challenges measure not harm or even risk, but the risk of the risks. (Slavtchecha Pet-kova, Vera, 2015).[10]

There is a lack of information regarding the relationship between online risk and effective harm to children, creating anxious pressures and policies based on judgments about Internet use's potential risks. Although children use the internet for similar purposes, their life's context and circumstances differ significantly (Global Kids Online).[11] There is a need to include children's voices and online experiences, build dialogues around the healthy and harmful use of digital technology in society.

In the digital area, where evaluation science is relatively new, the evidence is not used to inform policy-making, emphasising the reduction of the most anxious risks Internet policy seems to promote protection but not empowerment (Lund and Livingstone).[12] There is a need for child-focused internet policies to protect children from online violence or promote the Internet's opportunities. It is necessary to use evidence-based policy based on the varieties of children's digital access, experiences and needs.

10. *Slavtcheva-Petkova, V., Nash, V. J., and Bulger, M.* "Evidence on the Extent of Harms Experienced by Children as a Result of Online Risks: Implications for Policy and Research," Information Communication & Society, 18(1): 48–62 2015..

11. *Byrne, J., Kardefelt-Winther, D., Livingstone, S., Stoilova,* M. Global Kids Online Research Synthesis, 2015-2016. UNICEF Office of Research Innocenti andLondon School of Economics and Political Science. 2016.

12. *Lund, P. and Livingstone, S.* "Media Literacy," in their Media Regulation: Governance and the Interests of Citizens and Consumers. London: Sage, chap 6 pp.117–42.2012.

A serious-minded policy approach should embrace all the resulting trade-offs and complexities without being driven by politics of fear (Nash, Victoria, 2019).[13] Some new technologies are on the rise, more complex than ever seen before. The Internet is a fast-changing environment in which evidence is still lacking and good practice not yet evaluated (EU Kids Research,2020).[14] To provide children with a more full and fair digital life, educators, researchers, and policymakers should expand the conversation and exchange pieces of evidence for better policies.

13. Nash, Victoria. "The politics of Children's Internet Use" In "Society and the Internet: How networks of information and communication are changing our lives". Graham, Mark & Dutton, William H, with foreword  by Manuel Castells. Chapter 21; pp. 534-554. Second edition. United Kingdom: Oxford University Press, 2019
14. Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., Livingstone, S., and Hasebrink, U. EU Kids Online 2020: Survey results from 19 countries. EU Kids Online; 2020.

**||** DESIGNER IN A DIGITAL WORLD

C H A P T E R

## II. DESIGNER IN A DIGITAL WORLD

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          **II.2.2.1 Effect-driven design.**

**II.3. Participatory Design.**
       **II.3.1. Co-creation**

**II.4. Social Design**
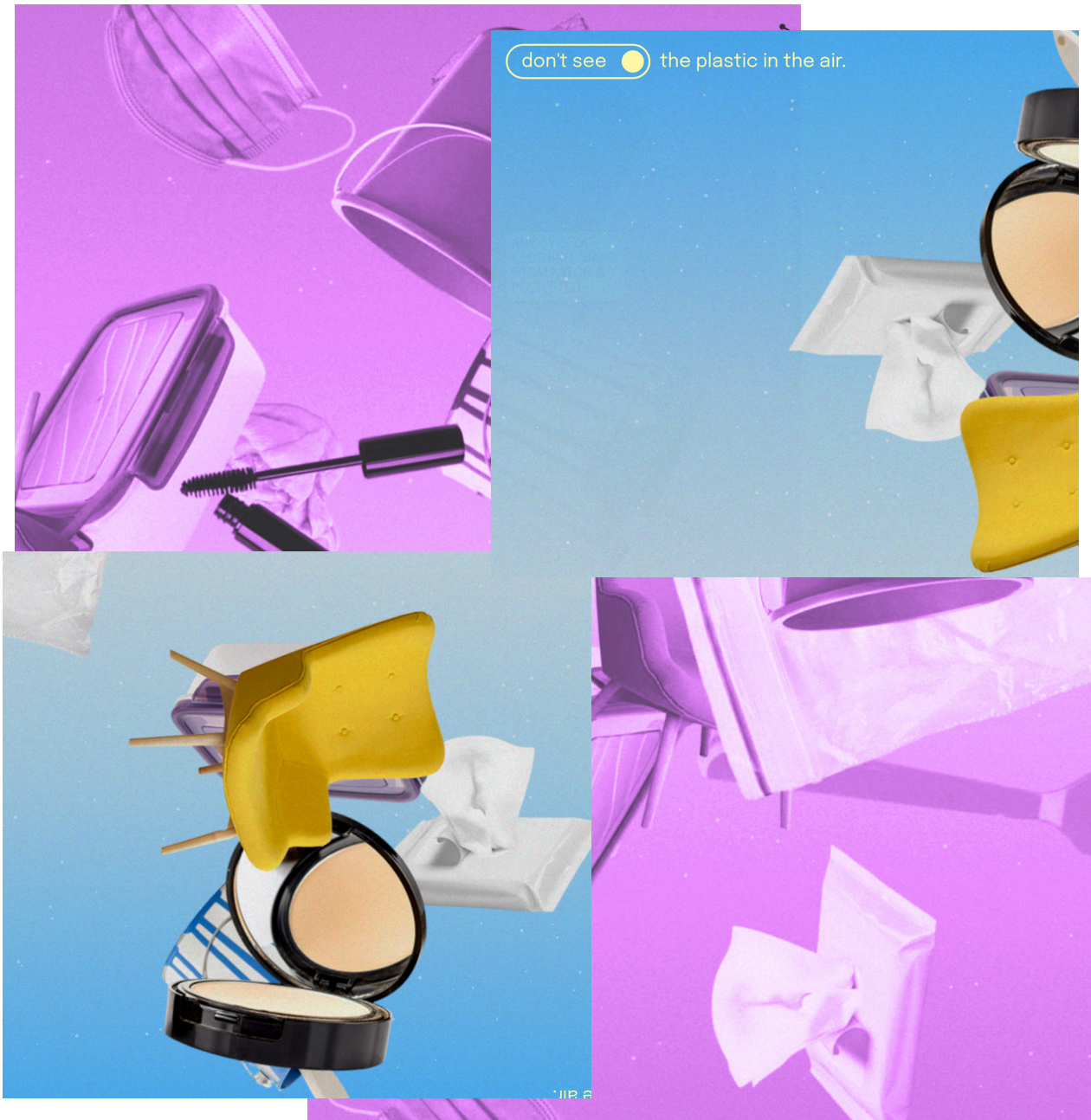
**Figure 2.1**. **Plastic Air.** An interactive website that visualises a type of pollution called airborne microplastics.

# II. DESIGNERS IN A DIGITAL WORLD

The design field has contributed to a large amount of what we see and experience in our daily lives. Chapter two explores the role that design plays in society, analysing its influence on people's thoughts and behaviours. By investigating the designer's responsibility and reviewing the lack of study on design's future consequences, the chapter introduces new design approaches that focus on improving society.

# II.1 Designer Role in Society

Since the dawn of history, humans have been developing tools and technologies to go after new ideas for collective needs. Design has made an important contribution in providing everyday solutions for individual and collective visions that affect our cultural identity, social structures, economies, cultural development and environments.

Design has been and still is a fertile ground for social innovation. Since the industrial revolution, the design created every product, service, and systems impacting society by building marketable products that fulfilled people's tastes and demands (Christian Bason,2017).[15] All these artefacts combined do shape a great deal of our society (Nynke Tromp; Paul Hekkert, 2018).[16] A fast and life-changing transformation in technology has recently resulted in significant shifts in social and technical systems.

Nowadays, no one can deny the significant role designers play in society, creating noticeably more of what we see and experience. In some places, people check their phones more than 150 times per day. Knowledge workers spend a third of their day in email, and some teenagers send 4,000 texts per month, or every six minutes awake.[17] This data shows how tech designers' decisions significantly impact billions of people worldwide by creating digital environments designed to grab users' attention for as long as possible. Designers have not only  the power to create spaces for people to navigate but also can dictate how long  users are going to spend there.

15. *Bason, Christian.* Leading Public Design: Discovering Human-Centred Governance. Great Britain: Policy Press, University of Briston,2017.
16. *Tromp, Nynke & Hekkert, Paul.* Designing for a Society: Products and Services for a better world.Great Britain: Bloomsbury Visual Arts, 2018.
17. *Tristan Harris.* Conversations Series event, 'Ethical Design for Digital Natives', held at UNICEF House on 31 January 2017 .

## II.1.2 Design thinking

Design thinking has been portrayed in various articles and books, helping to popularise the design profession and related practices. Design has been portrayed as a discipline that inspires non designers to borrow some of its approaches and tools since design thinking is almost a household term in business circles.

According to Roger Martin,[18] design thinking balances two different cognitive styles: the analytical-logical mindset that characterises numerous organisations, professional bureaucracies and the more interpretative, intuitive mindset that characterises the arts, creative professions. Tim Brown[19] also acknowledges that 'design thinking is neither art nor science nor religion. It is the capacity, ultimately, for integrative thinking' . Michlewski,[20] has sought to create some order in the various design 'frames' by suggesting that design thinking mainly places itself squarely between the practical concerns of design professionals, on the one hand, and the epistemic concerns of design researchers and philosophers, on the other.

Design thinking is becoming an important asset when dealing with complex and social issues—often offering unique value in the fight against social inequalities and joint society problems. Dick Buchanan states that design thinking is about moving toward 'new integrations of signs, things, actions, and environments that address human beings' concrete needs and values in diverse circumstances'.

18. *Martin,R.* The design of business: Why design thinking is the next competitive advantage, Cambridge: Harvard Business Press, 2009.
19. *Brown,T.* Change by design: How design thinking transforms organizations and inspires innovation, New York: HarperCollins, 2009.
20. *Michlewis,K.* Design attitude, Farnham : Gover, 2015, pp.144.

Christian Bason's attention directs to design as an approach to management, placing it at the core of effective strategy development, organisational change, and constraint-sensitive problem-solving. As shown in the table bellow, (Graphic 2.1) Bason has characterised three perspectives, which help define design and how its approaches and tools are constantly changing.

**Graphic 2.1**

Changing Definitions of design by Christian Bason.

| Design defined as | Characteristics | From | To |
|---|---|---|---|
| Plan | Plan for creating graphics,products, service, systems. | Commercial | Social |
| Practice | Methods for creative problem-solving user research, involvement, rapid prototyping, test and experimentation. | Expert | Collaborative |
| Reasoning | The cognitive ability to move between the opposing processes of analysis, involving rigour and "algorithmic" exploitation and synthesis, involving interpretation and exploration . | Thinking | Thinking-in-action |

## II.1.3 The Influence of Design.

Today's professional designers are well aware of how products affect their users, studying and analysing people's behaviour. Design considers how safe a product can be used, the kinds of emotions it can elicit and ultimately, user's overall experience when interacting with it (Schifferstein & Hekkert)[21]. Since designers help create social environments and change people's behaviour, Nynke Tromp and Paul Hekkert believe that design outcomes may be the key to improve social environments and interactions.

**Graphic 2.1. Bason, Christian.** Leading Public Design: Discovering Human-Centred Governance. Great Britain: Policy Press, University of Briston,2017, pp.43

21. *Schifferstein & Hekkert Unicef. Children* in a Digital World: the state of the world's children. United Nations Children's Fund (UNICEF), December 2017.pp. 72

### II.1.3.1 Communication Design.

Professional communicators and designers have, according to David Berman[22], unique skills such as the domain of language and the ability to record it, causing a prodigious influence on society in these three areas:

**1.** How messages intended to influence significant audiences behaviour are selected, crafted, and delivered.

**2.** How people are portrayed and represented visually.

**3.** How raw materials for designed objects are consumed.

Victor Papanek[23] recomends causion against the consequences of commercialising design and calls upon designers to move away from commercial design and instead be responsible for people's actual needs. In a consumerism-driven and advertising-filled world, graphic design can become more important than the product it helps promote.

Design changes how people perceive and behave and utilises branding to influence consumer spending, where the brand symbol becomes more attractive than the product itself. Good design should be about what is good about the product, not what is "bad" or vulnerable in the buyer (David Berman). Communication design can adjust to different socio-cultural contexts, opening conversations about different cultural understandings.

22. Berman, David B. Do Good Design: How designers can change the world, FGPC, R.G.D. Berkeley, California, January 2009.
23. Papanek Victor. Design for the Real World: Human Ecology and Social Change. Second Edition. Chicago: Academy Chicago Publishers 2005, (first published 1972).
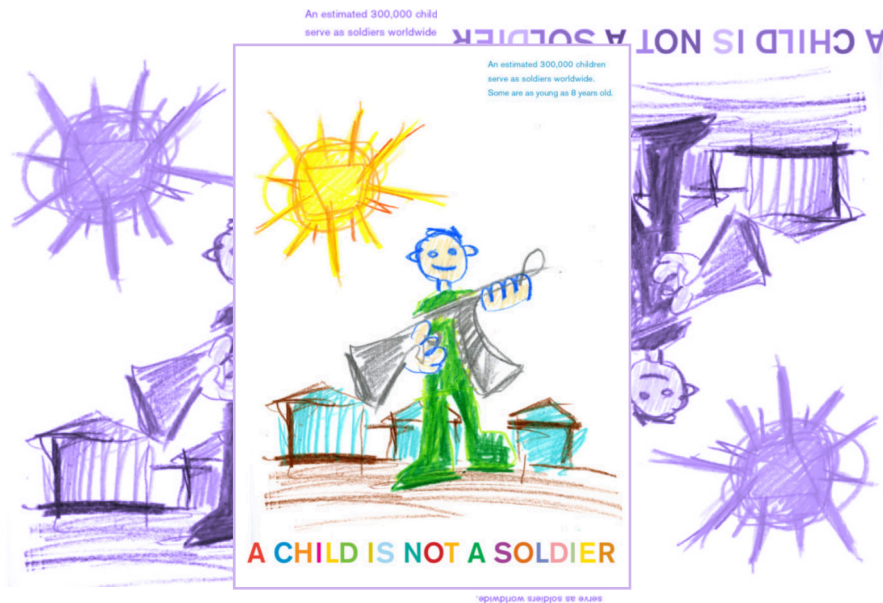
**Figure 2.2**



**Figure 2.3**



There is a cultural dimension to communication design that is affected by traditions, multiculturalism, ethnicity, diversity, language, gender, beliefs, and a certain ability to "transform the visual heritage of places and peoples into contemporary commercial currency and cultural expression" (Emily Campbell)[24] Graphic design is a powerful method to promote cultural identities. Designers need to be aware of their ability to reinforce mutual understanding amongst peoples and nations.

**Figure 2.2. Christopher Kosek,** Art Center College of Design students: 60th anniversary of the Universal Declaration of Human Rights. Designmatters. Pasadena, California : Art Center College of Design, 2008.
**Figure 2.3. UNICEF,** Unicef Brand: Graphics Manual - Lite Version. Unicef signature language, pp.9. Edition 1.2, 2016.
*24. Emily Campbell,* Design and Architecture newsletter, pp. 3 . 2006, British Council, 2006.

## II.1.4 The Designer Responsability

Designing products and services with hidden influence frequently provokes many objections. Nynke Tromp and Paul Hekkert defend that designers should recognise the responsibility to design this hidden influence and take it to create designs that push society forward, embedded in scientific and moral design practice.

Since users, especially children and young people, deal with the consequences of technologies created for companies' financial gains and not users' actual needs, there is a need for designers and companies to submerge into a more ethical design. It is a collective responsibility, particularly of the tech industry and governments, to advocate for children's best interests to be represented in debates on the design of technologies.

In a time of unprecedented environmental, social, and economic crisis, designers must choose what their young profession will be about: inventing deceptions that encourage more consumption or helping repair the world (David Berman). Milton Glaser arguments[25] that, at the very least, design should "try to do no harm". More responsibilities need to be given to designers as the new agents for change. Designers have the profound capability to influence the world, if not simply because design affects every detail of how individuals live their lives (Heskett)[26]. Design can create new strategies using creativity and design thinking, a new practice shaped around socially responsible behaviour aligned with what is good for people.

25. *Soar, Matthew*. The first things first manifesto and the politics of culture jamming: Towards a cultural economy of graphic design and advertising. Conversation with Milton Glaser, pp.576.Cultural Studies.Taylor & Francis Ltd,2002.
26. *Heskett, John.* Toothpicks and Logos : Design in Everyday Life. New York/Oxford: Oxford University Press, 2002.

# II.2. Design for Good.

Ezio Manzini,[27] characterised 'design for social good', emphasising that design in the 21st century has followed economic thinking's evolution in reflecting 'the loss of the illusion of control, or the discovery of complexity. The recognition of social complexity and the ambition to design for positive social change has led to multiple design components. Design takes concrete form in the service professions that meet human needs, a broad range of making and planning disciplines (Christian Bason,2017).

A growing variety of designer perspectives consider how artefact use might affect others and the environment. 'We believe we can change our environment in ways that will better serve our purposes' (C. West Churchman).[28] More recently, design scholars have begun to look for ways to account for social consequences that arise over time (Nynke Tromp and Paul Hekkert ). Christian Bason explains that the willingness to dive into a more ethical design, a practical design for good practice, can be in part captured by the movement of social entrepreneurship and social innovation (Figure 2.4) and by the growing interest in public sector innovation. (Figure 2.5)

**Figure 2.4**



**Figure 2.5**



27. *Manzini, Ezio.* 'Introduction', in Meroni, A and D. Sangiorgi. Design for services, Farnham: Gower Publishing, 2012.
28. *Churchman,C.* The design of inquiring systems: Basic concepts of systems and organization, London: Basic Books. 1971.
**Figure 2.4.** The Polimi Desis Lab: design for social innovation.Department of Design. Milano: Politecnico di Milano.
**Figure 2.5.** Danish Design Centre. Promote the use of design in business and industry, Copenhagen.

## II.2.1 Society-Centred Design Practice.

A user-centred design, today's prevailing model, is essential to anticipate user's responses to a product and service. However, human-centred design often looks at people solely as individuals fixing a new problem without considering the wider society and its consequences in the future. Designers are progressively considering the longer-term of product use, design for the collective, for society. A design whose objective is social – and thus seeks to improve society as a whole – requires designers to explicitly articulate what is of benefit to society as a whole and in the long run' (Nynke Tromp and Paul Hekkert).

Designing for society brings the necessity to purpose-built designs for the 21st century. Improves society for a better future rather than an improvement for today, moving beyond human-centred design to society-centred design. Society-centred design is a new problem-solving perspective that puts society at a central point of the design process. To design a broader context of society-centred systems that impact and shape our society it is necessary to study citizens and their behaviour.

### II.2.1.1 The Behaviour.

People's choices and actions ultimately affect how we build our social relationships, structures, economies, and environments. In our acts, we affect other human beings' lives, as such behaviours are an important force for societal transformation (Banerjee, 2014).[29]

29. *Banerjee, Banny.* Innovation Large-scale Transformations, In Christian Bason, Design for Policy. London: Routledge, 2014.

It is the behaviour that creates relationships, and through behaviour change, relationships can change. Design only creates social change when it leads to fundamental behaviour changes. Behaviour can be directly facilitated or even required by design. In contrast to other behaviour-advocating interventions like campaigns, schemes and subsidies, design can enable, stimulate or even force behavioural changes. Products and services are, literally, 'actionable'; they afford actions and can be perceived as such (Gibson, J).[30]

Although behavioural change takes time, a focus on behaviour allows for a structured evaluation of social interventions (Nynke Tromp and Paul Hekkert). As seen in Chapter one, Research and policy-makers deal with a lack of material on the study of children's behaviour that could improve regulations and measures dealing with social interventions such as the measurement between exposure to online risks and harm. The study of behaviour enables designers to envision how their designs could contribute to abetter society, linking abstract descriptions to our everyday world's tangibility.

## II.2.2 Systems thinking - Holistic Reasoning.

Numerous factors shape individuals behaviour. Social issues are mostly multidiscplinary problems, It is necessary to understand the context that co-shapes the behaviour to build an effective intervention. Applying holistic reasoning means understanding that the problem is a component of a more extensive system and seeking to understand the multitude of relationships between it and the other components in that system (Ackoff, 1994).[31]

30. *Gibson, J. James.* The Ecological Approach to Visual Perception.Hillsdale, New Jersey: Lawrence Erlbaum Associates. 1979.
31. *Ackoff, R. L.* Systems Thinking and Thinking Systems. System Dynamics Review. 10(2-3), pp.175-188, New York: John Wiley & Sons Ltd, 1994.

Systems thinking provides a look into the relationship between multiple domains. Systems thinking sees the relationship between the intervention and desired behavioural change as not the kind where 'cause leads to effect', but as a nonlinear relationship among various causes and effects. (Sweeney & Sterman, 2000).[32]

A study made from various disciplines and interviews with various experts from diverse fields allows the design team to generate a holistic view of the phenomenon at hand. Making the right design decisions about what kind of behavioural change to pursue and how it should be explicit to be questioned and tested, substantiated by scientific arguments, is key to good design performance. Designers can integrat multiple, sometimes seemingly opposing, theories we often hold regarding worldly phenomena - This is an exceptional quality in the problem-solving of social issues.

## II.2.2.1 Effect-driven design

To question and study why a product or service has a reason to exist avoids the production of meaningless designs. The effect-driven design approach explores, understands, and ultimately decides the social impact the designer wishes to achieve before devising any design intervention (Nynke Tromp and Paul Hekkert,2018).[33]

Being effect-driven means one has to reason from end to means rather than from a means to an end (Hekkert & Van Dijk).[34] Instead of thinking about what to design to achieve a specific goal, study the behavioural purpose, the anticipated social implications, and the argumentation for why both are valuable.

32. *Sweeney, L.B; & Sterman, J.D.* Bathtub Dynamics: Initial Results of Systems Thinking Inventory .10(2-3), pp.175-188. 2000.
33. *Tromp, Nynke & Hekkert,* Paul. Designing for a Society: Products and Services for a better world.Great Britain: Bloomsbury Visual Arts, 2018.
34.*Hekkert, P & Van Dijk, M.* Vision in Design: A Guidebook for Innovators. Amsterdam: BIS Publishers. 2011.

# II.3. Participatory design

Participatory design started in Norway in the 1970s when workers from the Iron and Metal Union were given a say in how computers should be integrated into the workplace (Schuler & Namioka).[35] This design practice defends that inclusion and conversations with people potentially affected by a future design are a must-have part of the design process.

In the digital world, design travels across all human activities. Social and physical tools for designing are becoming available to all people. Today, everyone is a designer, and the future of civilisation is our common design project (David Berman). Professor Ezio Manzini[36] distinguishes between 'diffuse design' by non-experts or ordinary people and 'expert design' by professionally trained designers. Many forms of open design explore the different ways technology can enable diverse stakeholders to collaborate in the design process, (Figure 2.6) including activities that embrace mass creativity and collective intelligence (Figure 2.7).

**Figure 2.6**



35. *Schuler,D & Namioka, A.* Participatory Design:Principles and Practices. Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1993.
36. *Manzini, Ezio.* Design: When everybody designs: An introduction to design for social innovation, Cambridge: The MIT press, 2015.
**Figure 2.6. Neighborland.** A public engagement platform designed for government agencies, developers, and civic organizations to collaborate with their stakeholders in an accessible, participatory, and equitable way.

**Figure 2.7**
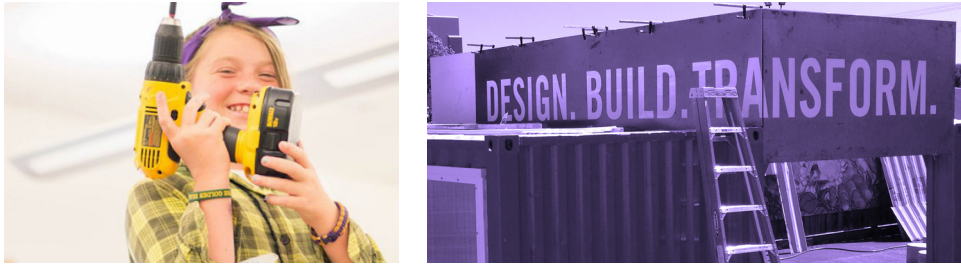


## II.3.1. Co-creation.

The new design practice for collaborative design includes a social approach where outcomes are co-created or co-designed with various actors. For instance, creative problem-solving methods, user research and involvement, visualisation, concept development, rapid prototyping, test and experimentation help designers 'rehearse the future' (Halse, 2010).[37]

Across business and government, significant strands of design practice are simultaneously shifting to 'co': To col-laboration, co-creation and co-design as central features, emphasising the direct and systematic involvement of users, clients, partners, suppliers and other stakeholders in the design process (Figure 2.7) and, in essence, challenging the role of the single designer (Christian Bason, 2017).[38]

The designer's traditional role was to work with a client to provide design 'input' based on a brief or problem specification. Nowadays, the collaborative design we live in forces the designers to shift towards one as the facilitator, involving actors from end-users to managers to staff in the design process and co-creation.

**Figure 2.7.** Studio H. creates with school students, renovated schools facilities and other socially transformative projects.
*37. Halse, J., E. Brandt, B.Clark and T.Binder.* Rehearsing the future, Copenhagen: Danish School Press 2010
**38. Bason, Christian.** Leading Public Design: Discovering Human-Centred Governance. Great Britain: Policy Press, University of Briston,2017.

# II.4 Social Design

Recently, interest in social design has gained protagonism. Significant research in this field has been done, with the growing participation by several consultancies and innovations centres, acknowledging the design influence and unique attributes that can contribute to our society's social improvement.

An analysis made by Nynke Tromp and Paul Hekkert [39] of the contemporary field, identifies three distinctive approaches to social designing:

**1. Social design improves the conditions of underrepresented people,** Taking the traditional user-centred design approach and applying it to issues that have social relevance. The goal would be to develop products, services and systems that meet the needs of disadvantaged people in our societies. By focusing on the powerless in our societies and improving their conditions and their ability to meet life's demands, society improves as a whole.

**2. Social design improves the performance of public sector bodies**. The goal is to transform our societies' political heart from within by helping organisations concerned with societal objectives to rethink their issues and work towards being more human-centred. In doing so, designers or design teams may 'use' a design project as a proxy to involve various stakeholders along the way and teach them design thinking tips and tricks.

39. *Tromp, Nynke & Hekkert, Paul.* Designing for a Society: Products and Services for a better world. Great Britain: Bloomsbury Visual Arts, 2018.

**3. Social design builds social capital.** Design efforts benefit the community as a whole rather than specific groups of individuals (in contrast to the first approach). In this approach, designers work with the community rather than for the community. The goal is to articulate how to strengthen social capital and rethink how people deal with each other and their (local) environment.

After this, regardless of the design approach in use, there is no doubt that design and designers have an essential contribution in creating our collective lives as a society. Design has been and still is contributing to social innovation and improvement.

Any nation needs to understand the larger agenda of the work of designers. By working with designers, a nation invests in the growing ability to change and work on innovation and creativity Enabling change and enabling creativity is perhaps the most crucial challenge that our societies face (Victor Papaneck),[40]

40. *Papanek Victor.* Design for the Real World: Human Ecology and Social Change. Second Edition. Chicago: Academy Chicago Publishers 2005, (first published 1972).

# III METHODOLOGY RESEARCH

## c h a p t e r

## III. METHODOLOGY RESEARCH

### III.1. Children's digital lives.

### III.2. Survey ( Quantitative Method)
#### III.2.1. Survey Format
#### III.2.2. Survey Data Analysis
#### III.2.3. Survey Data Results
##### III.2.3.1 Main Findings.

### III.3. Interviews (Qualitative Research)
#### III.3.1. Interview Focus Group
##### III.3.1.1. Interview Professionals
#### III.3.2. Interview Structure
##### III.3.2.1 Interview Questions
#### III.3.3. Interview Analysis
##### III.3.3.1 Thematic Analysis
##### III.3.2.2 Content Analysis
#### III.3.4. Main Findings

**Figure 3.1**. Methodology Research

# III. METHODOLOGY RESEARCH

Chapter three presents methodology research based on the previous chapters. It breaks down the quantitative and qualitative research method processes. It explains both the importance of the online survey and the interviews with multiple disciplinary professionals, analysing the collected data and comparing information to deliver the reader a complete overview of the relationship between children and the Internet.

# III.1. Children's digital lives.

The Internet brought about a worldwide conversation regarding the advantages and consequences of the online network and the changes cyberspace brought into our ways of living.

In light of the information gathered in the first two chapters, there's no doubt that children's digital life is complex and varies depending on multiple factors, such as education and support systems.  With the increasing fast time that technology and the internet installed in our lives, there is a lack of support from adults in children's lives, which reduces opportunities to communicate social norms or provide emotional help. (Chapter1,pp.25)

**Figure 3.2**



**Figure 3.2.** Children's Digital Lives..

For that reason, it was essential to understand more of the adult's behaviour as the child's provider and supporter. By a quantitative research method, an online survey provided a way to analyse generalisable knowledge about the issue, taking into account relatable variables such as the adults' educational background, professions, nationality, age, and create testable assumptions on adults' opinions on children's digital lives.

Accordingly, with the data from Chapter two , today's professional designers study and analyse people's behaviour towards a particular product, having a unique set of skills that integrate multiple theories by applying holistic reasoning, an exceptional quality in problem-solving social issues.

As a result, a qualitative method of research-based interviews is used to better understand the multitude of relationships between children, the internet, and the other system components. A study made from interviews with various experts from diverse fields allowed me to generate a holistic view of the issue.

# III.2. Survey.

A survey was the quantitative method chosen to collect general and brother information about adults' thoughts and opinions regarding children's digital lives. Due to covid-19, an online survey was the perfect flexible method to quickly access a large sample without constraints on time or location.

By creating a survey, the aim was to collect information about adults' backgrounds, characteristics, preferences, opinions and suggestions on how we as a society can improve children's digital lives. Targeting adults who have a close relationship with children in their lives, for example, parents and teachers.

## III.2.1. Survey Format

The online survey format (Annexed File) was built using the online tool Google Forms,[41] which consisted of 29 questions divided into two parts: A and B.

**Part A,** targets adults and is divided into four subsections. (Figure 3.2)

**A.1. Children's digital lives**, consisted of seven closed-ended questions to know the subject matter and their opinion on children's digital lives. Starting with personal questions of the interviewee background such as nationality, age, work profession, being a parent or non-parent, and their clear opinion of the importance children give to the internet in their daily lives.

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41. *Google Form.* A videotelephony proprietary software program developed by Zoom Video Communications. Website: https://zoom.us. April 2021.

**A.2. Education,** was the topic chosen for the second sub-section, which consisted of 12 closed-ended questions related to the importance of digital literacy and digital citizenship. The focus was not only on children's knowledge but also on adult's and the educational system's ability to help a child in need.

**A.3. Internet Regulations,** the third subsection and the smallest, with only two closed-ended questions, aim to understand the general knowledge of the existing regulations and the opinion on social responsibility when taking part in creating digital environments.

**A.4.** Based on the current situation, a **Covid-19 Restrictions** sub-section seems a necessary topic to include, targeted only at parents, to understand, besides the obvious, if covid-19 restrictions brought a change of thought and relationship with the internet and digital technologies, for both the parents and the child.

**Graphic 3.1.**
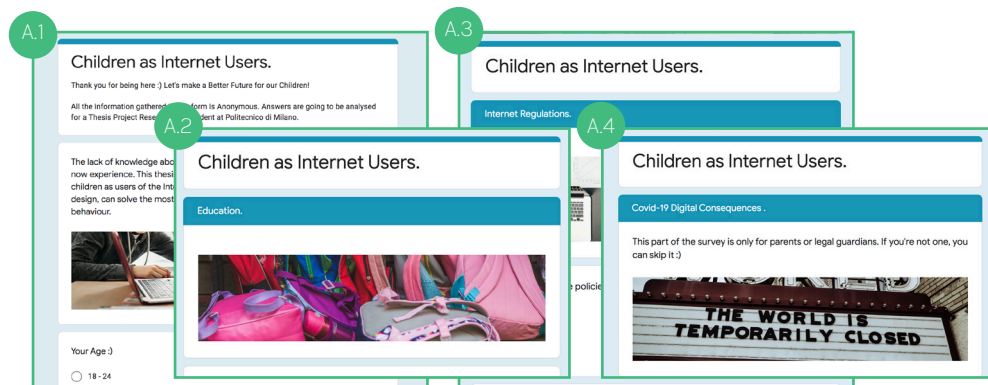


**Graphic 3.1.** Resume of Part A Survey Format.

**Part B, Children's voices matter,** targets Children of the age 9-13 years old (Chapter 1, pp.25), requesting adult's to ask a total of seven questions to their fellow friends near them. This part consisted of a mix of closed-ended and open-ended questions to collect a personal lens of children's perspective, essential for a more participatory design (Chapter 2, pp. 25). General questions regarding their time spent online, where they spend it, what they encounter, and with whom they share their digital lives.

**Graphic 3.2**
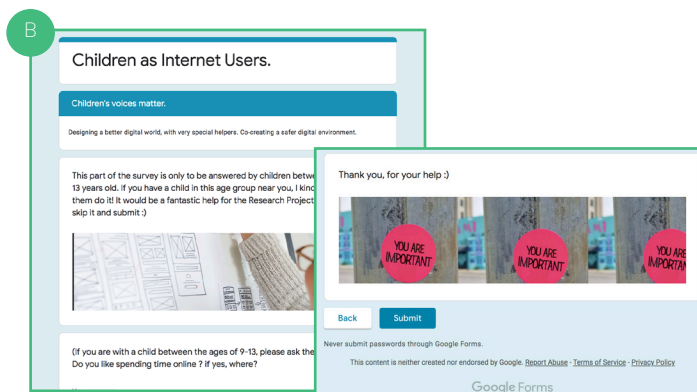


The Survey is divided into two parts to give a more extended analysis and a space for a generational comparison of the perceptions and views on children's digital lives. The main goal of building a layout with different sections was to make the analysis more connected with the topics portrayed in the first chapter and give the reader a path to follow and a better understanding of the survey goal.

**Graphic 3.2.** Resume of Part B Survey Format.

## III.2.2. Survey Data Analysis

The Google Form platform processes the collected data. With the help of the Excel Microsoft tool, the data is given treatment by removing incomplete or incorrectly completed responses. Each data was visually brought to life with the help of design visualisations programs such as Graph 3.0 and Piktochart.

Since most of the Survey had closed-ended questions, the data collected was quickly transformed into numerical statistical data, analysing the Survey coherently and truthfully. In the open-ended questions, a code of the responses was created by assigning labels to each response and organising them into categories.

**Graphic 3.3**
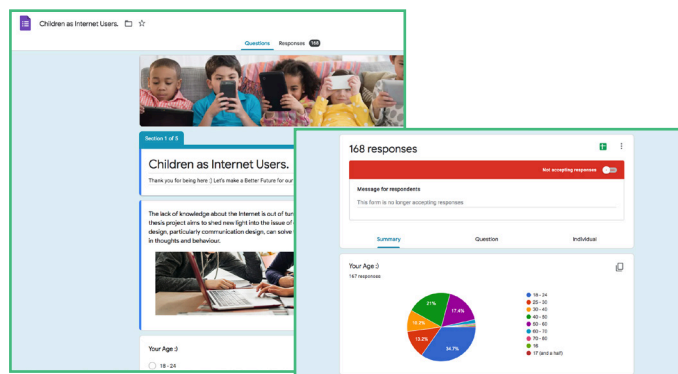


**Graphic 3.3.** The Google Form platform.

## III.2.3. Survey Data Results

As explained in the format of the Survey, the Survey combines two Parts. In Part A, intended to be answered by adults, there is a report of 168 replays.
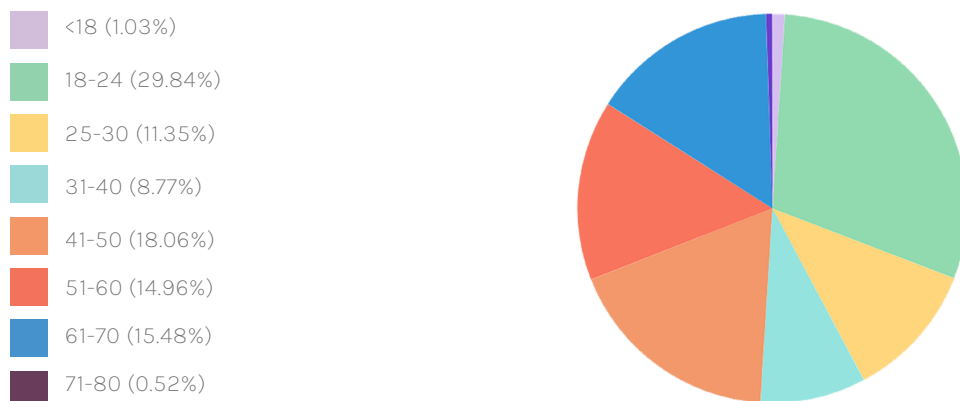
### Part A
### A.1. Children's digital lives.
Participant's backgrounds and general opinion.

Even though a small percentage of answers comes from continents such as America (3.6%) and Asia (4.2%) , the data report is mainly from people who live in European countries, with 91,1% of replays. The result comes as no surprise since the form was shared mainly in European Facebook groups and forums in languages such as French, Spanish, Portuguese, Italian and English.
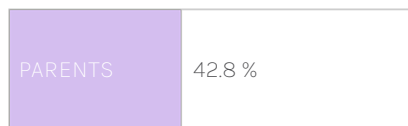
**Graphic A.1.1**
Most common age group of the survey participants.

- <18 (1.03%)
- 18-24 (29.84%)
- 25-30 (11.35%)
- 31-40 (8.77%)
- 41-50 (18.06%)
- 51-60 (14.96%)
- 61-70 (15.48%)
- 71-80 (0.52%)

**Graphic A.1.2**
Amount of Participants Parents or Non-Parents

| PARENTS | 42.8 % |

| NON-PARENTS | 57.2 % |

The age group with more relevance is between 18-24 years old, with 29,84% of the answers. (Graphic A.1.1) One can speculate on many fronts - the interest comes from a curious generation that already needed to cope with the internet growing up or from the empathy of those on the same page. The second option becomes evident when the student category (23,8%) is the highest for the profession option. It is interesting to notice that the rest of the age groups have a similar amount of replays; surprisingly, the age group 30-40 years old (Graphic A.1.1) has fewer replays. Since 42,8% of the respondents are parents (Graphic A.1.2), the lack of answers from the 30-40 age group indicates that a significant percentage of parents are already parents of grownups or older children. Work professions have a similar amount of replays from different fields; unexpectedly, people working in the education field do not make a considerable number, with only 7,1% of replays.

More than half of the participants think that children between the ages of 9-13 years old spend, on average, four to six hours online. The devices in which children more frequent access the internet, according to the respondents, are mobile phones (58,1%) and tablets (26,9%). This data shows that most participants are aware of the impact and constant presence of the internet in children's lives.

**Graphic A.1.3**
Percentage of the Importance that children give to the internet, on a scale from 1 (very low) to 5 (very high).
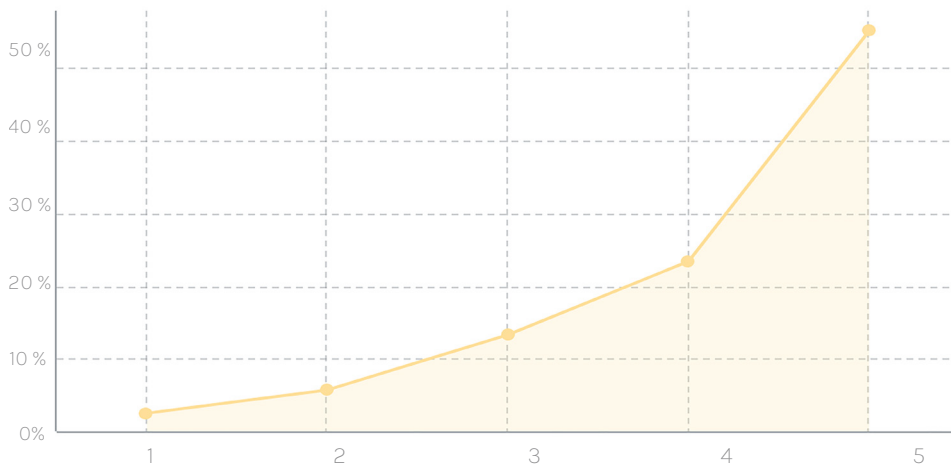


### A.2 Education.
The importance of education in the digital world.

It is common ground that digital word and education go together, with 84,8% of the respondents aware of the fundamental role that the internet and new technologies play in children's education Questions 15 and 16 ( see the file in annexed) ask to enumerate from 1 to 5, in order of importance, positive and negative aspects of the

internet. In both questions, the result is vague; most options have the same weight. However, 82,1% of the participants say to be well informed about the internet risks and benefits of the internet. The same incoherence happens between questions 22 and 26; when asked if the participants felt qualified to educate children on how to deal with the internet, 60,6% of people answered Yes, despite that when asked to report any great website for children, 96,7% replayed that "did not know". This data is very concerning, since, as seen on graphic A.1.2, 42,8% of the participants are parents.

On the importance of digital education in schools, respondents are consistent. Results report that 71,8% believes that schools do not offer a proper digital education, and 91% views that the teacher needs to have good digital literacy. Considering that the participants prefer only to let teenagers be autonomous after having 14 years old, there are concerns related to children's digital lives safety.

**Graphic A.2.1**
Age for children to be autonomous online.
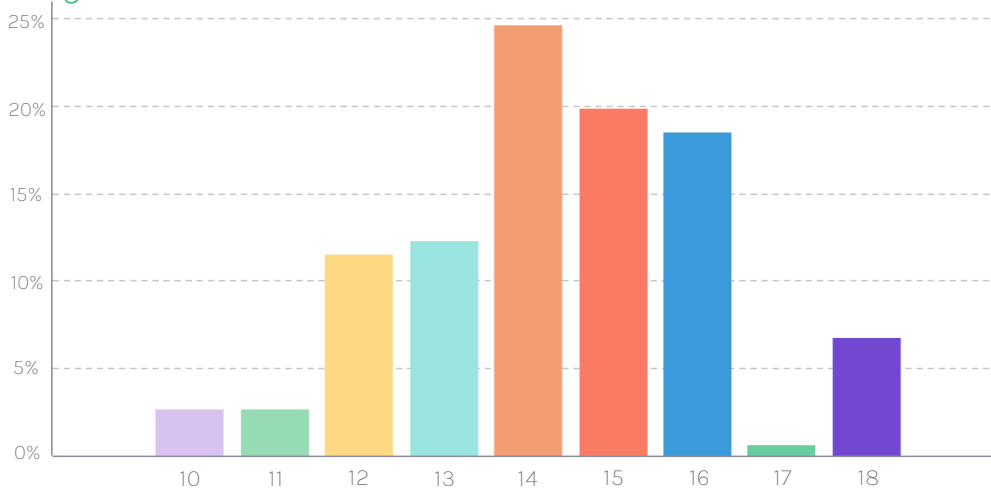
## A.3 Internet Regulations.
### General knowledge of the existing digital regulations.

Most participants, 73.8%, are not aware of the policy/ regulations adopted by their country related to child digital safety. Interesting to note that 81,7% says that tech workers should be responsible for creating a safer place for children. Again, it shows incoherence and lack of general knowledge on the issue.

## A.4 Covid-19 Restrictions.
### Changes made by Covid-19 restrictions.

Children screen time increased up to four hours more than usual (38,4%). Parents say that they were more concerned than relieved with the internet presence in the child's life; however, 40.4% of the parents did not thought about it. Less than half of the parents say that they were aware of the child's activities online, but 56.3% did not have moments together online with their child.

**Graphic A.4.1**
Children screen time increased by Covid-19 restrictions.



Legend:
- No (18.6%)
- 1h (1.2%)
- 2h (27.9%)
- 3h (12.8%)
- 4h (38.4%)
- >4h (1.2%)
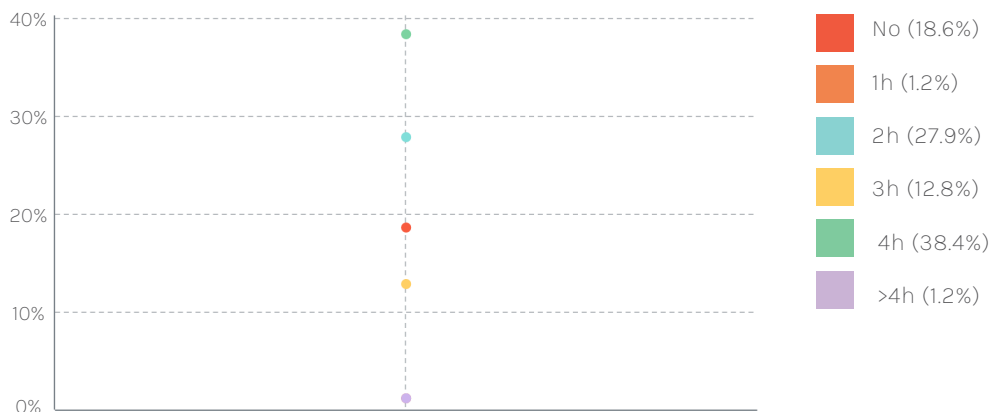
This data makes question how much parents are indeed in sync with the children's digital lives, their activities and passions, seems superficial supervision without the knowledge or willingness to be part of their digital world.

### III.2.3.1 Main Findings.

Before reflecting on the data results, it is necessary to consider that 168 participants , do not translate to the European population. However, it gives an insight into a group of mainly European adults, half of them parents, from different age groups and backgrounds.

**1.** Almost half of the participants have less than thirty years old. The Survey is composed of half parents, half no parents. Since there is such a higher number of the younger group age of students , it is possible to conclude that there are a high number of parents.

**2.** It is common sense how much the internet and new technologies are present in children's daily lives and the necessity of a good education in school to prepare the kids for a better digital life.

**3.** Adults show an incoherent position on self-knowledge regarding the risk and opportunities that the internet gives to children.

**4.** Alarming, lack of awareness of the existing digital environments for children and the lack of effort from parents into being included in their child's digital activities.

# III.3 Interviews

When designing a solution, to make the right design decisions about what kind of behavioural change to pursue it is necessary to study and analyse various disciplines with various experts from diverse fields. (Chapter 2, pp. 47) The Interviews brings a better questioned and tested research method to a vision for a design proposal that could make a difference in children's digital life and contribute to a better society.

The interview research method's main objective was to have a more significant majority of perspectives on the topic from different fields that work directly with or for children, such as Education, Psychology, Tech, Policy and Design. (Graphic 3.4) The participants were selected to gain a broader insight into the possibilities for improving the children's digital environments. Semi-structured interviews were conducted with four professionals from the main target fields.

**Graphic 3.4**

Digital Environments



Education
Psychology

Understanding
Children's
Digital Lives

Design
Tech Industry

Child's Growth

**Graphic 3.4.** Pofessional Fields that work directly with or for children.

## III.3.1 Interview Focus Group

The interviews were held in a semi-structured way, which provided a more in-depth understanding of professionals perceptions, motivations and emotions when dealing with children's digital lives. After an extensive analysis of the topics explored in the first two chapters, it was apparent the primary professions that significantly impact children's lives, providing tools, regulations, support, and insight that can provide support and deep insights into child's digital experiences and behaviours.

Firstly, after the parents and legal guardians, the educators, who spent a more considerable amount of time with children, providing support and knowledge of digital skills and the psychologists who can professionally bring a unique view, with a more depth insight into the harms and opportunities that the online experiences bring to the children's lives. (Chapter 1, pp. 32)

Secondly, the policymakers and designers who provide and create solutions that influence the overall child's digital lives and experiences. The policymakers develop rules and norms that dictate children's relationships with the internet and, consequently, their behaviour. The designers can influence and create digital environments where children inevitably spend time or encounter during their online activities (Chapter 2, pp. 42)

### III.3.1.1. Interview Professionals

A brief introduction to the four chosen professionals .

#### Luís Marrana.
#### Children Tech Teacher.

Luís is a professional in business leadership and development, a Coordinator on Training and a motivator, present educator — external Assessor at Jury RVCC, Business Consultant and Coach. The educational background covers several areas, including a degree in Law and complementary training in marketing and company management by Oporto Catholic University.

Specialist in developing curricula, training and teaching basic computer skills to children and adults, working as a managing partner and professor on the Futurekids Schools ( a tech education centre) for thirteen years and volunteering as a professor in a community organisation, Atmosfera is dedicated to Children well being and growth. Luís shares the experiences and knowledge of working with children and for them.

#### Samanta Magalhães.
#### Clinical Psychologist.

Samanta specialises in psychoanalytic psychotherapy, childhood and adolescence psychotherapy and psychoanalytic psychodrama. Professional expert in group and painting therapies, parental supervision and psycho-corporal therapies bioenergetic-inspired.

Partner and former coordinator of the analytical psychotherapy intervention group at the Fio de Ariana cooperative specialised in children and adolescents. Collaborator for four years in the Oporto hospital Maria Pia's child psychiatry department: specialised in children and adolescents. Clinical Supervisor in the area of Psychotherapy. Exercise of intensive and exclusive clinical practice in private practice since 1998 until today. Samanta shares her professional experience, bringing a unique, deep perspective on children's digital lives.

## Victoria Nash.
### Director and Senior Policy Fellow on Oxford Internet Institute.
Victoria is the Oxford Internet Institute Deputy Director and Senior Policy Fellow. Her research focuses on the opportunities and risks experienced by children using digital technologies; she also leads to OII engagement on Internet regulation and digital policy issues. Victoria research interests draw on her background as a political theorist and concern the normative policy implications of evidence characterising children's use of Internet technologies.

Holding several digital policy advisory roles, including membership of the UK Government's multi-stakeholder UK Council on Internet Safety (UKCIS) Evidence Group, frequently called on to give expert evidence in UK and EU policy consultations on broader issues such as platform governance.

**Elena Marinoni.**

Strategic and visual Designer, Trend Forecasting Expert.

With a background in strategic design, Elena works as a trend forecaster and consultant for top companies to help them gain a competitive advantage by leveraging emerging trends, therefore supporting innovation processes and inspiring marketing and communication strategies consistent with the evolution of consumers' needs and social and cultural change.

Graduated from Politecnico di Milano, Elena is an experienced lecturer with a demonstrated history of working in the education management industry. Since 2007 she has been a lecturer at Istituto Marangoni for several topics such as Trend Forecasting, Panorama, Contemporary Design Analysis and Sociology Of Design. Since 2020 she is the Programme Leader for the Visual Design Department at Istituto Marangoni Design School (Milan, Italy).

## III.3.2 Interview Structure

Due to covid-19 restrictions, each interview was held on the online platform, Zoom. It featured between six to seven questions per interviewer with approximately a thirty minutes duration, and all the discussions were filmed with consent and transcribed for textual analysis.

An analysis based on the main findings gathered from the first two chapters' research was made to build the interview questions.

The Questions explore different research topics, such as the importance of education, the existing generational gap, the European policy regulations present in Chapter 1 and secondly, topics presented in chapter two: social responsibility of tech companies and designers, the notion of co-design and the use of designer's skills for good.

## III.3.2.1  Interview Questions

The interview is divided into two parts: general questions on the issue and specific questions regarding the professionals field and work experiences.

**General Questions.**
Question to be made regardless of the area of the interviewee.

**1.** In your opinion, how important it is for children to have a digital education?

**2.** When providing an unsafe digital space for children, Should companies take social responsibility?

**3.** When designing for children, Do you think it is possible to co-design with them and not only for them?

**4.** To provide a happier and safer digital life for children. In your opinion, what are the main changes that need to happen?

**Education & Psychology.**

**1.** Are citizenship and digital citizenship the same, or does the digital term add topics and different norms that need to be explored?

**2.** Would the relationship between children and parents/ teachers prosper with more open conversations about digital experiences?

**Design & Policy.**

**1.** Do you believe in policy / regulations based on restrictions or choice? Should the parent make children's digital choices?

**2.** How can graphic design have a social impact on children's digital environments?

**3.** In your opinion, how can design promote better social behaviour online?

**4.** What designer's skills can significantly improve children's digital lives?

## III3.3- Interview Analysis

After the interviews were transcribed, a thematic and content analysis was made. This involved coding all the data before identifying and reviewing seven key themes. Each theme was examined to gain an understanding of participants' perceptions and motivations.

### III.3.3.1. Thematic Analysis

To be able to read the full interviews, is available in attachmentpp.x The First step to analyse the interviews was to identify five main themes to collect and examine the data, such as:

IEDUCATION I INTERNET REGULATIONS I TECH SOCIAL RESPONSIBILITY I IDESIGN SOLUTIONS WITH AND FOR CHILDREN I GENERATIONAL GAPI

**Luís Marrana Interview,** Children Tech Teacher.

Companies in general, even Microsoft itself, disinvested a lot in software quality by becoming auto explanatory, became pretty dumb. I always thought it funny to watch in my classes that when the kids would sit in front of the computer, they immediately placed their hands on the keyboard, embracing the computer. As for the adults, the approach was completely different, arms crossed, just waiting for instructions. When parents would notice that their children could obtain a result from and "work" with the computer, they'd assume that they didn't need to learn anything else. The building of software for autonomous users and the inexistence of education lead to children using computers by themselves without understanding the basics. For more intelligent use of the Internet, education is essential. Rather than having the European committee setting standards and imposing fines, is much more important to hold companies responsible for their actions digitally. It's much more complex for companies to perceive themselves online and discuss their behaviour. In the school, I had a student with down syndrome Firstly. The only thing that the student would

do was punch the computer, the student became amazed when noticing that by hitting the keyboard, the screen changed colour. Over time, it progressed to colour patterns, printing and games. It reached a point where negotiation was possible. To be able to play games, the student needed to do specific tasks. By the end, the student completed the standard program. This is  an example of the magic of co-creating, co-creation is essential, but there must be strategies and paths to follow. There is a fundamental rule a child is a child and should not be unaccompanied. If it is essential for parents that their child's digital environment is safe and healthy, they have to learn to teach. The lack of children protection has always been a significant issue in our society People today have this idea that tech has come to hurt children, but it's ultimately just a different form of practising an evil that has always happened. A teacher must help students build this new reality, receive and work with that information. Regulations are like a strainer, full of holes, human intelligence, from an adult or a kid will overcome these barriers. Creating obstacles to protect is limiting. We need to be creative, create unique goals that lead children to spend their time dismantling, achieving them.

Samanta Magalhães, Clinical Psychologist.

I just believe that integration must be thought out, there has to be a multi-disciplinary team that integrates technology into children's education so that there's a positive interaction in their mental health, and beyond. Technology should be mediated a little

by all the essential areas that are relevant in the development of a human being, I believe that there must be mediation that already existed in pre-technological times  and try to find a new protective logic in the digital world. Co- creation it's a more organic and respectful process of what's natural in the child, so there's no forcing of the child's psyche .This doesn't mean that adults cannot help children, but if there can be a conversation, the process is also more organic, creating a minor gap between the child's psyche and the adult's psyche. I advocate that adults should have a healthier relationship with technology. We're the closest to the child when she's using the latest technologies; we act as filters, and as integrators, we all have that responsibility. It's necessary to have clarity, transparency, rules, limits. Freedom is only possible when there is a structure when healthy boundaries exists. The teachers need help to integrate the technology, not only from the knowledge of use but also from the psychological and emotional perspective.

**Victoria Nash,** Director on Oxford Internet Institute.

I think here's a tendency to see digital skills and digital safety as a separate topic there is taught during personal or civic education classes. But since digital is part of so much of everyday life for children online, it should be building into that general schooling. For most of the activities that children engage in online, they are not really using spaces either designed for them or adjusted in the light of their age. In an ideal world, we will have much more responsive and choice-based environments. The most popular applications that children use and enjoy would perhaps have

features like safety or privacy by design built into them and those features that could only be unlocked if you were old enough to take the initial risks. For me, that's the first thing to ensure that online environments, applications, and websites are designed with young users in mind. It is not only about educating children is also about educating parents, carriers, teachers. I think a lot of the focus is on children, but additionally has to be an adult's responsibility for overseeing children and the one's responsible for designing for children and young users. Some of the most successful strategies for keeping children safe online are the ones that rely on communication. Improving communication and improving trust, those tactics are more successful than controlling strategies, which simply impose a clear expanse of children's rules online. I'm not convinced that it is always necessary or essential. Nonetheless, I think it is certainly worth trying, and in particular, I would say that good HCI research base-design.

Elena Marinoni, Strategic and visual Designer, Trend Forecasting

Education is critical. It is key for children to learn how to take advantage of the technologies while not being overwhelmed. Regardless of the target that the company is addressing. It is essential to create a safer environment and manage privacy issues that do not exploit people's data for secondary needs. New generations are growing without even perceiving the boundaries between online and offline. This incredible familiarity that they have with the online world eventually low barriers to sharing per-

sonal data. There is nothing sustainable in the business model of tech companies based on the creations of environments that are not sustainable from different points of view, such as cognitive, environmental, and behavioural. Techniques used by brands to maximise the people's engagement and the side effect is also something that needs to be considered. Maybe one of the aims of visual designer, is to design in a responsible way to relieve people's cognitive burdens. Simplify by making particular features evident and apparent, All the factors contributing to digital fatigue also Designers can have a role in helping people to distinguish from facts to fakes data.I think a co-design process can work even be better with the children because they are creatives and openmined. Their innocence, lack of bias, and non-existent politically correct attitude can bring more natural help to the design process.

## III.3.3.2. Content Analysis

In the content analysis, it was necessary to divide the interviews by the five themes chosen in the previous analysis: education, internet regulations, tech social responsibility, design solutions and generational gap. Secondly, analyse the interviewee words and compare the comments from the four different interviewees in each theme.

IEDUCATION I

### Luís Marrana.

Luís remembered us that not long ago, the software required our help to function. The building of software for autonomous was damaging on several fronts. Adult's and children do not understand the basics, is necessary education on the matter for more intelligent use of the internet for both.

### Samanta Magalhães.

Both the teachers and the students need help to integrate the technology into children's education, from knowledge to the psychological and emotional support.

### Victoria Nash.

Digital skills and safety should be taught during personal or civic education classes since digital is part of so much of our everyday life. A lot of the focus is on educating children but additionally has to be an adult's responsibility for overseeing children and the one's responsible for designing for children and young users.

### Elena Marinoni.

Education is essential. Children must learn how to cope and take advantage of the technologies and the internet without being overwhelmed.

**I INTERNET REGULATIONS I**

### Luís Marrana.

Regulations to protect is limiting. We need to be creative, create unique goals that lead children to spend their time dismantling, achieving them.

### Samanta Magalhães.

Samanta believes that there must be mediation that already existed in pre-technological times and try to find a new protective logic in the digital world.

### Victoria Nash.

Improving communication and improving trust those tactics are more successful than controlling strategies.

**I TECH SOCIAL RESPONSIBILITY I**

### Luís Marrana.

Rather than having the European committee setting standards and imposing fines, it is much more important to hold companies responsible for their behaviour online.

### Elena Marinoni.

There is nothing sustainable in the business model of tech companies. The side effects of the techniques used by brands to maximise the people's engagement need to be considered.

IDESIGN SOLUTIONS WITH AND FOR CHILDREN I

### Luís Marrana.

Luís shared his experience with a student with down syndrome, and how by co-designing, both were capable of creating the best program for the student.

### Samanta Magalhães.

A Co-creation project is a more organic and respectful process of what is natural in the child, so there is no forcing of the child's psyche. This does not mean that adults cannot help children, but if there can be a conversation, the process is also more organic, creating a minor generational gap.

### Victoria Nash.

The most popular applications that children use and enjoy would perhaps have features like safety or privacy by design built into them. Those features could only be unlocked if the user were old enough to take the initial risks.  I am not convinced that participatory design is always necessary or essential. Nonetheless, in particular, It could be a good HCI research base design.

### Elena Marinoni.

A visual designer can design in a responsible way to relieve people's cognitive burdens and designers can have a role in helping people to distinguish from facts to fakes data. I think a co-design process can work even be better with the children because they are creatives and open-minded.

I GENERATIONAL GAP I

### Luís Marrana.
Luís explains the difference of attitude between children and adults as his students. The kids embraced the computer, the adults just wait for instructions. This difference of approach to the digital world caused adults to assume that children already had domain in the area. A child is a child and should not be unaccompanied. It is essential for parents that their child's digital environment is safe and healthy, they have to learn to teach.

### Samanta Magalhães.
Advocate that adults should have a healthier relationship with technology. We're the closest to the child when she's using the latest technologies; we act as filters, and as integrators, we all have that responsibility.

### Victoria Nash.
For most of the activities that children engage in online, they are not really using spaces either designed for them or adjusted in the light of their age.

### Elena Marinoni.
Children are growing without even perceiving the boundaries between online and offline. This incredible familiarity that they have with the online world eventually low barriers to sharing personal data.

## III3.4 Main Findings

**1.** After analysing the interviews, one can conclude that it is necessary to normalise the new technologies and Internet into the educational system. It is urgent to go back to learn the basics of technology, how to cope and not be overwhelmed by it.

**2.** It is necessary to help teachers and parents, the ones sheltering the children. A willingness to mitigate a generational gap that adults at large are very confortable with is necessary. If adults can understand and take advantage of the digital world, children's digital lives would be inevitably safer. It's common ground that a foundation of rules for children's safety must be explored and improved, but the best way to protect children is by educating them and giving them a support system.

**3.** There is no simple solution for creating a better system. When dealing with tech companies, their rhythm and power is unmatched. The companies' profits are made based on this unsustainable business model that creates unsustainable digital environments. It is necessary to ask the companies for accountability.

**4.** As seen in the interviews, communication design skills can make a difference if used responsibly. There urgency for a more responsible design, as introduced in chapter 2, an effect-driven design that explores, understands, and ultimately decides the social impact that it wishes to achieve before elaborating any design project or intervention.

**IV** **DESIGN FOR EDUCATION**

c h a p t e r

# IV. DESIGN FOR EDUCATION

## IV.1. The importance of Education
### IV.1.1 Digital Environments

## IV.2. Case Study 1: Learning Apps
### IV.2.1 Research  Process
#### IV.2.1.1 Collected Data Diagram
### IV.2.2 Learning Apps Analyse
### IV.2.3. Learning Apps Results
#### IV.3.1.1 Main Findings

## IV.3. Case Study :  Forgotten Age Group
### IV.3.1 Apps Analyse
#### IV.3.1.1. Main Findings

**Figure 4.1**. Online Classroom.

# IV. DESIGN FOR EDUCATION

This chapter reflects the essential part that education plays in children's protection of online risks and the need for better e ducational digital environments. Research about the existing educational applications in Europe brings more comparative information, providing an analysis of the app's definitions and features to explore better design solutions to protect children's rights and plan better opportunities.

# IV.1 The Importance of Education.

Throughout the thesis research, an emphasis is given to the importance of education in children's lives. Several researchers, policymakers, professionals from different fields, and general population discourses concluded that a better understanding of the Internet and new technologies is always beneficial, reducing risks and adults' anxieties about children's digital lives.

As seen in chapter 1, even though regular European children can easily access the Internet and technologies in schools, they still lack navigation and creative skills (graphic 1.5). This lack of digital skills and knowledge inevitably narrows down the advantages of the Internet and increases the risks. Since there is insufficient information concerning the relationship between online risks and substantial harm to children, researchers worldwide defend that education is one of the most effective ways to reduce the harmful consequences of exposure to threats.

## IV.1.1 Digital Environments.

Children are not using spaces either designed for them or adjusted in light of their age. (Victoria Nash,Chap.3). Given that people spend most of their time online, the impact of graphic and web design is evident. Designers believe that, since users, specially children, deal with the consequences of technologies created for companies' financial gains, designers should recognise the responsibility to create designs that focus on pushing society towards a better future

**Graphic 1.5.** Measurements of children's digital skills. Chapter 1.

As seen in chapter 2 , policymakers and researchers reinforce the idea that restrictive policy-based is limited and discourages children and adults from looking into the possibilities of the Internet. However, better policy approaches are essential since the digital environments are constantly changing and lack good practices. It is urgent to build and re-design online environments with the behaviour and social change that the designer wished to accomplish- with young users in mind.

# IV.2. Case Study: Learning Apps

As a result of the information collected in the last chapters, the need for better knowledge and practices on coping with the Internet and creating child-focused digital spaces is unquestionable. This case study attempts to understand the existing online environments that focus on children and improve their education in European countries.

## IV.2.1 Research Process.

First, a search on Google search engine was conducted, with the sentence: "Educational apps for children". By changing the IP location definition on the web browser-Google Chrome, it was possible to repeat the same search sentence in five different IP locations in five languages. Accordingly, England, France, Italy, Portugal and Spain in English, French, Italian, Portuguese and Spanish.

**Graphic 4.1.**
Google Search Research: " Educational Apps for Children".

The aim of doing the same research sentence in different countries and languages was to provide a general view of the existing apps for children who spend time in learning digital environments. After introducing the search sentence in the google search engine, the three first websites that appeared on the first page of Google search were selected. (Graphic 4.2). In each chosen website, the first three learning apps presented (Graphic 4.3) are picked out for a deeper analysis. (Graphic 4.4)

**Graphic 4.2.**
First three Websites.



**Graphic 4.3**
First three Learning Apps.
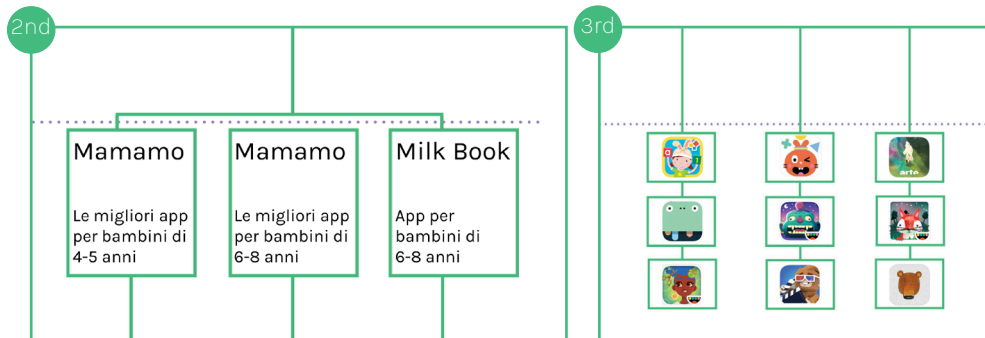


**Graphic 4.4**
Italy nine Learning Apps, Categorised.



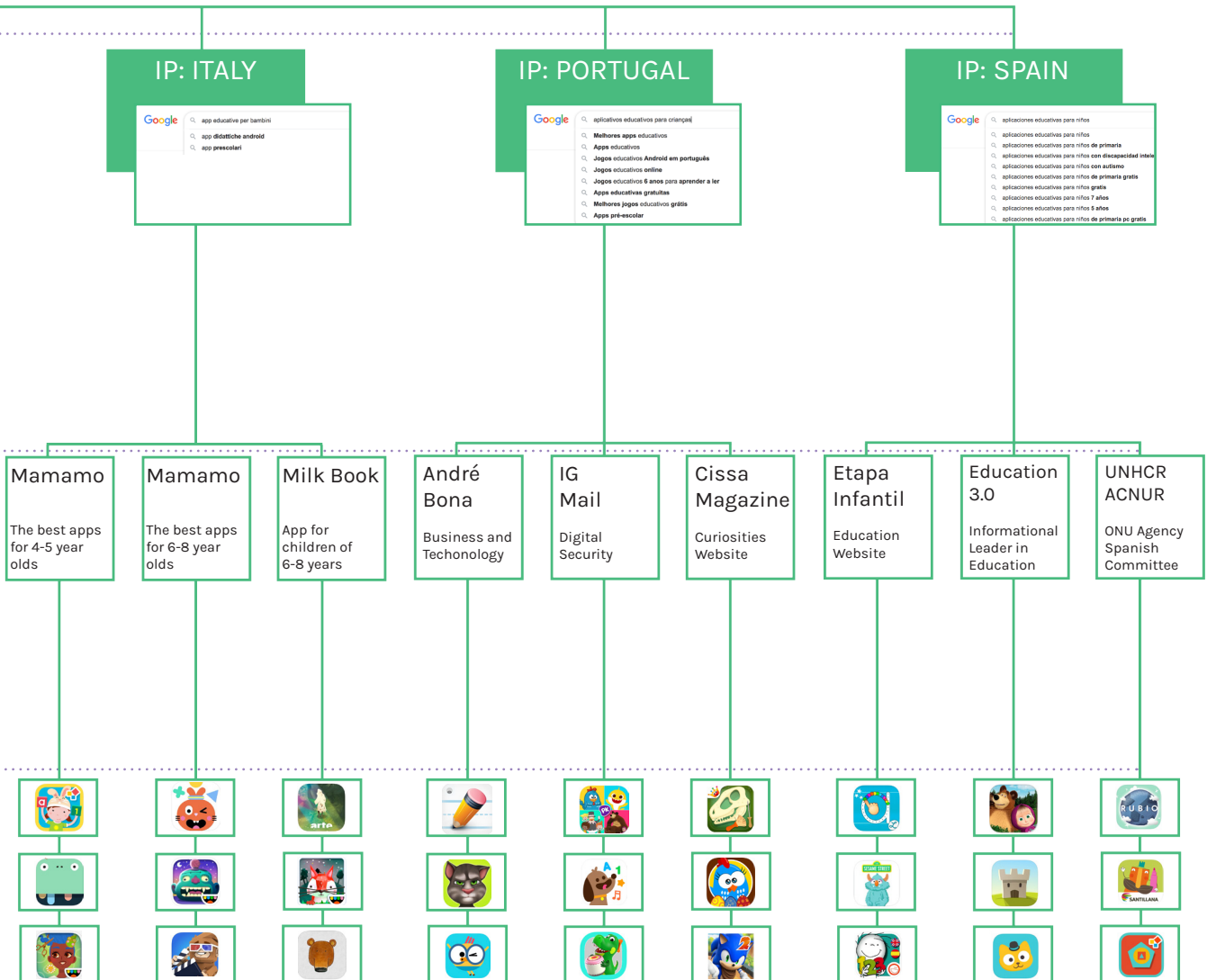| ITALY / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMA' |
|---|---|---|---|---|---|---|---|---|
| | Cellphone /tablet/ Apple Tv/ imessage | 6,99€/MONTH SUBSCRIPTION | KIDS | 3-7 | MATH / ARTS LANGUAGE | GAMES/ SONGS | REWARD SYSTEM | 9 |
| | Cellphone /tablet | 4,49€ NO SUBSCRIPTION | KIDS | 6-8 | MUSICAL COMPOSITION | INTERACTIVE GAME | INTERACTIVE BUDDY | ENGLISH |
| | Cellphone /tablet | FREE | KIDS | 9-11 | HAIR SALON | GAMES | AVATAR | 17 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 3-8 | LOGIC | GAME PUZZLE | INTERACTIVE BUDDYS | 15 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 6-8 | MYSTERY STORY | GAME STORYTELLING | INTERACTIVE BUDDY | 17 |
| | Cellphone /tablet | FREE | KIDS | 6-8 | CREATING A STORY | CO-CREATION CARTOONS | INTERACTIVE BUDDY/AVATAR | ENGLISH |
| | Cellphone /tablet/ Computer | 4,49 € NO SUBSCRIPTION | KIDS | 9-12 | ADVENTURE STORY | CO-CREATION GAME STORYTELLING | PAITINGS | 11 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 6-8 | NATURE | GAME | INTERACTIVE BUDDYS | 17 |
| | Cellphone /tablet/ Computer | 3,49 € NO SUBSCRIPTION | KIDS | 5-7 | ART AND ARTISTS | CO-CREATION CREATE ART | INTERACTIVE BUDDY | ENGLISH |

## IV.2.1.1 Diagram of Collected Data

**1st** *Google Search Research: " Educational Apps for Children".  Same question from five different IP localizations in five different languagues.*

| IP: ENGLAND | IP: FRANCE |
|---|---|



**2nd** *In the Result Page Search, was collected, the first three websites.*

| GH | eLearning Industry | Parents | Le Monde | App Enfant | Pèse Sur Star |
|---|---|---|---|---|---|
| Magazine | Newsletter | Meredith Corporations | Newspaper website | Supports playfull digital Education | Video games and cultural media |

**3rd** *In each website was collected the first three Learning Applications.*

## IP: ITALY



## IP: PORTUGAL



## IP: SPAIN



### Mamamo
The best apps for 4-5 year olds

### Mamamo
The best apps for 6-8 year olds

### Milk Book
App for children of 6-8 years

### André Bona
Business and Techonology

### IG Mail
Digital Security

### Cissa Magazine
Curiosities Website

### Etapa Infantil
Education Website

### Education 3.0
Informational Leader in Education

### UNHCR ACNUR
ONU Agency Spanish Committee
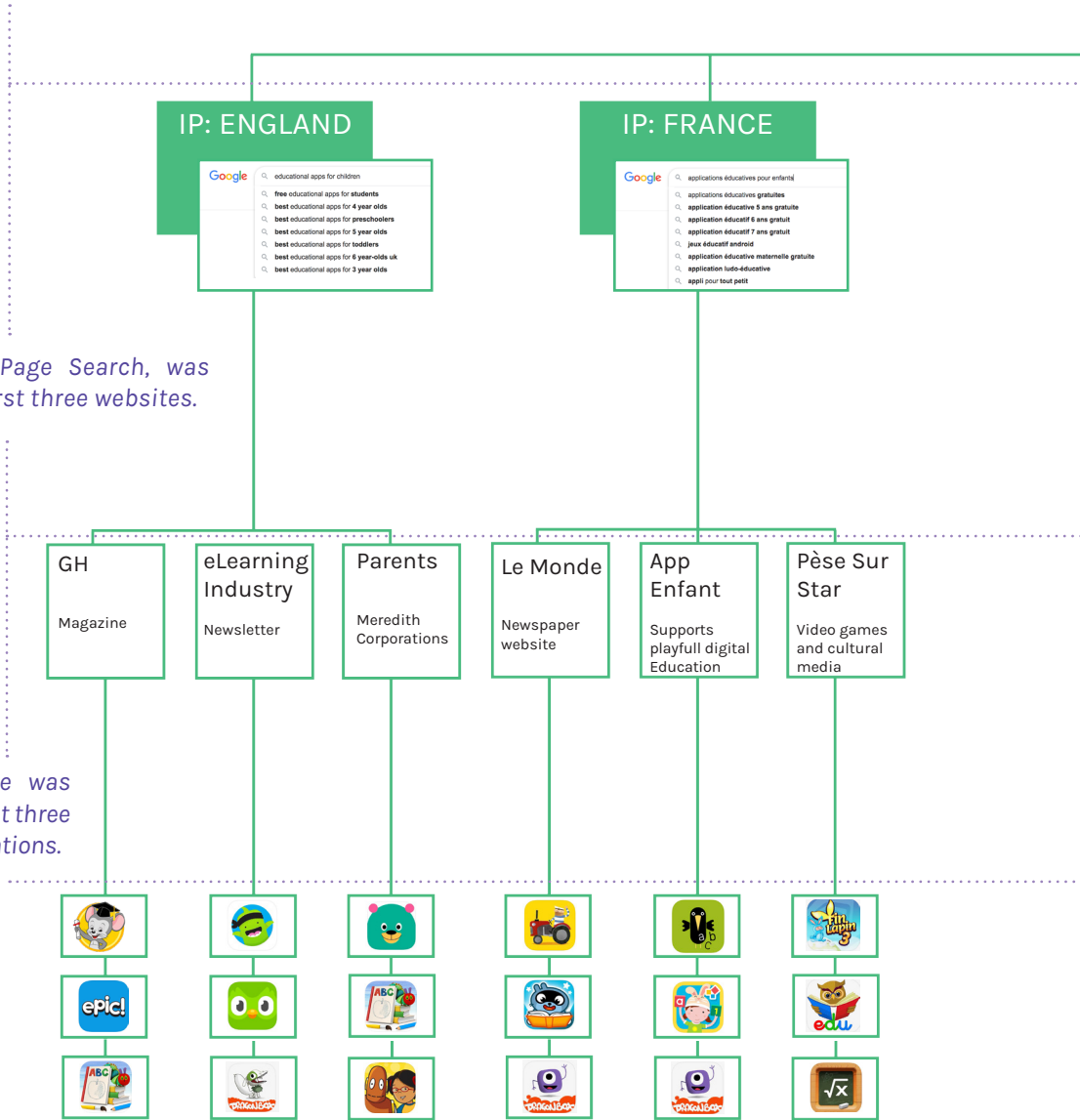
## IV.2.2. Learning Apps Analyse

After collecting the data from the five countries and the fifteen apps, an analysis of forty-five learning applications is made. Each application was categorised into eight parameters to bring accuracy to the study and a transparent comparative factor. Parameters such as compatibility devices, the cost, the target, age-appropriate group, learning subjects, activities and languagues available in the app.

| ENGLAND / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMAS |
|---|---|---|---|---|---|---|---|---|
| | Cellphone /tablet Computer | 9,99£/MONTH SUBSCRIPTION | KIDS | 2-8 | MATH LANGUAGE SCIENCE ART | BOOK PUZZLE GAMES SONGS | PROGRESS AVATAR | ENGLISH |
| epic! | Cellphone /tablet Computer | 9,99£/MONTH SUBSCRIPTION | KIDS/ EDUCATORS | 6-8 | LANGUAGE READING | E.BOOK LEARNING VIDEO AUDIO BOOK | PROGRESS REWARD SYSTEM | 6 |
| | Cellphone /tablet Imessage | 5,99€/MONTH SUBSCRIPTION | KIDS | 0-5 | MATH LANGUAGE SCIENCE ART | GAMES/ VIDEOS | INTERACTIVE BUDDY | 5 |
| | Cellphone /tablet Computer | FREE | EDUCATORS /KIDS PARENTS | 5-12 | ONLINE CLASSROOM | SHARE MOMENTS PORTEFOLIO KIDS | PROGRESS REWARD SYSTEM TEAM WORK | 25 |
| | Cellphone /tablet Computer | FREE | KIDS/ADULTS | 4+ | LANGUAGE | GAMES | REWARD SYSTEM | 23 |
| | Cellphone /tablet Computer | 5,49€ NO SUBSCRIPTION | KIDS | 6-8 | ALGEBRA | GAMES PUZZLE | PROGRESS | 25 |
| | Cellphone /tablet/ | FREE | KIDS EDUCATORS | 2-8 | MATH ART LANGUAGE | E.BOOK AUDIO BOOK VIDEO / GAMES | INTERACTIVE BUDDY | ENGLISH |
| | Cellphone /tablet Imessage | 5,99€/MONTH SUBSCRIPTION | KIDS | 0-5 | MATH LANGUAGE SCIENCE ART | GAMES/ VIDEOS | INTERACTIVE BUDDY | 5 |
| | Cellphone /tablet | FREE | KIDS | 6-8 | MATH/ ART/SCIENCE LANGUAGE | PUZZLES VIDEOS / GAMES QUIZZ | INTERACTIVE BUDDY/REWARD SYSTEM | ENGLISH |

| FRANCE / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMAS |
|---|---|---|---|---|---|---|---|---|
| | Cellphone /tablet | 3,99€ NO SUBSCRIPTION | KIDS | 0-5 | FARM LIFE ANIMALS | INTERACTIVE BOOK | REWARD SYSTEM | 19 |
| | Cellphone /tablet | 2,99€/MONTH SUBSCRIPTION | KIDS | 0-5 | FRIENDS LIFE | STORYTELLING GAMES | INTERACTIVE BUDDY | FRENCH |
| | Cellphone /tablet | 8,99€ NO SUBSCRIPTION | KIDS | 6-8 | MATH | GAMES/ PUZZLE | INTERACTIVE BUDDY | 9 |
| | Cellphone /tablet | 10€/MONTH SUBSCRIPTION | KIDS | 3-8 | FRENCH | READING/ WRITING | INTERACTIVE BUDDY | FRENCH |
| | Cellphone /tablet/ Apple Tv/ imessage | 6,99€/MONTH SUBSCRIPTION | KIDS | 3-7 | MATH / ARTS LANGUAGE | GAMES/ SONGS | REWARD SYSTEM | 9 |
| | Cellphone /tablet | 8,99€ NO SUBSCRIPTION | KIDS | 6-8 | MATH | GAMES/ PUZZLE | INTERACTIVE BUDDY | 9 |
| | Cellphone /tablet/ Computer | FREE | KIDS | 2-5 | MATH | GAMES | REWARD SYSTEM/buddy | FRENCH |
| | Cellphone /tablet | FREE | KIDS | 3-7 | LANGUAGE | GAMES | | FRENCH |
| √x | Cellphone /tablet | FREE | KIDS | 5-7 | MATH | INTERACTIVE TEST QUIZZ | PROGRESS | 8 |

| ITALY / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMAS |
|---|---|---|---|---|---|---|---|---|
| | Cellphone /tablet/ Apple Tv/ imessage | 6,99€/MONTH SUBSCRIPTION | KIDS | 3-7 | MATH / ARTS LANGUAGE | GAMES/ SONGS | REWARD SYSTEM | 9 |
| | Cellphone /tablet | 4,49€ NO SUBSCRIPTION | KIDS | 6-8 | MUSICAL COMPOSITION | INTERACTIVE GAME | INTERACTIVE BUDDY | ENGLISH |
| | Cellphone /tablet | FREE | KIDS | 9-11 | HAIR SALON | GAMES | AVATAR | 17 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 3-8 | LOGIC | GAME PUZZLE | INTERACTIVE BUDDYS | 15 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 6-8 | MYSTERY STORY | GAME STORYTELLING | INTERACTIVE BUDDY | 17 |
| | Cellphone /tablet | FREE | KIDS | 6-8 | CREATING A STORY | CO-CREATION CARTOONS | INTERACTIVE BUDDY/AVATAR | ENGLISH |
| | Cellphone /tablet/ Computer | 4,49 € NO SUBSCRIPTION | KIDS | 9-12 | ADVENTURE STORY | CO-CREATION GAME STORYTELLING | PAITINGS | 11 |
| | Cellphone /tablet | 4,49 € NO SUBSCRIPTION | KIDS | 6-8 | NATURE | GAME | INTERACTIVE BUDDYS | 17 |
| | Cellphone /tablet Computer | 3,49 € NO SUBSCRIPTION | KIDS | 5-7 | ART AND ARTISTS | CO-CREATION CREATE ART | INTERACTIVE BUDDY | ENGLISH |

| PORTUGAL / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMAS |
|---|---|---|---|---|---|---|---|---|
| | tablet/ipad only | 4,49€ NO SUBSCRIPTION | KIDS PARENTS SECTION | 0-5 | LANGUAGUE | INTERACTIVE GAMES | PROGRESS/ REWARD SYSTEM | ENGLISH |
| | Cellphone /tablet | 4,49€/ Month SUBSCRIPTION | KIDS | 5-12 | SKILLS FOR RESPONSABILITY | ANIMATION GAME | INTERACTIVE BUDDY | 13 |
| | Cellphone /tablet | FREE | KIDS / PARENTS | 2-8 | MATH LANGUAGES /ART SCIENCE | INTERACTIVE GAME AUDIO BOOKS | INTERACTIVE BUDDYS/ PROGRESS | 16 |
| | Cellphone /tablet Computer/ Apple TV Imessage | 6,99€/ Month SUBSCRIPTION | KIDS PARENTS | 2-6 | MATH LANGUAGUE /ART MUSIC | INTERACTIVE GAMES AUDIO BOOKS | INTERACTIVE BUDDYS | 32 |
| | Cellphone /tablet | 5,99€/Month SUBSCRIPTION | KIDS | 2-7 | LANGUAGE /MATH ART | INTERACTIVE GAMES | INTERACTIVE BUDDYS | ENGLISH |
| | Cellphone /tablet | 0,59€ NO SUBSCRIPTION | KIDS | 6-12 | MEMORY / MATH | INTERACTIVE GAMES | INTERACTIVE BUDDY | ENGLISH |
| | Cellphone /tablet | FREE | KIDS | 0-5 | SCIENCE | INTERACTIVE GAMES | INTERACTIVE BUDDY | 11 |
| | Cellphone /tablet Apple Tv / Imessage | FREE | KIDS | 3-8 | STORYS | INTERACTIVE GAMES/VIDEOS | Avatar/ Interactive Buddy | 5 |
| | Cellphone /tablet | FREE | KIDS | 4-8 | SONY GAME | INTERACTIVE GAMES | PROGRESS/ REWARD SYSTEM | 7 |

| SPAIN / APPS | DEVICE | COST | USERS | AGE | LEARNING SUBJECTS | ACTIVITIES | MOTIVATIONAL FEATURES | Nº IDIOMAS |
|---|---|---|---|---|---|---|---|---|
| | Cellphone /tablet | 5,49€ NO SUBSCRIPTION | KIDS | 0-5 | LANGUAGE | PUZZLE GAMES SONGS | PROGRESS | 7 |
| | Cellphone /tablet | FREE | KIDS PARENTS SECTION | 2-5 | SKILLS FOR RESILIENCE | ANIMATIONS GAMES | INTERACTIVE BUDDY | 2 |
| | Cellphone /tablet | 2,29€ NO SUBSCRIPTION | KIDS | 0-5 | MATH LANGUAGES | ILLUSTRATED BOOK GAMES NARRATIVE BOOK | INTERACTIVE BUDDYS | 2 |
| | Cellphone /tablet Computer | FREE | KIDS PARENTS | 0-6 | MATH LANGUAGUE /ART MUSIC | INTERACTIVE GAMES STORY | INTERACTIVE BUDDYS | 9 |
| | Cellphone /tablet Computer | 2,29€ NO SUBSCRIPTION | KIDS | 6-8 | CREATIVITY/ ART | PAITINGS PUZZLE | | ENGLISH |
| | Cellphone /tablet Computer | 10,99€/ Month SUBSCRIPTION | KIDS | 6-8 | LANGUAGE | GAMES PUZZLE | PROGRESS | 22 |
| | Cellphone /tablet | FREE | KIDS | 4-12 | MATH / LANGUAGE ART | GAMES | Avatar Reward System | 3 |
| | Cellphone /tablet | FREE | KIDS | 3-8 | MATH LANGUAGE SCIENCE ART | INTERACTIVE GAMES | Avatar Reward System | SPANISH |
| | Cellphone /tablet Computer | 4,49€ NO SUBSCRIPTION | KIDS | 6-8 | MATH/GEOMETRY | INTERACTIVE GAMES | INTERACTIVE BUDDY/REWARD SYSTEM | 19 |

# IV.2.3. Learning Apps Results.

When analysing the apps, it's interesting to note that tablets gain prominence as the primary devices for learning applications, followed right away by smathphones. As for computers, only 33% of the learning applications chose to have the material available on a website page.

All five countries have a more considerable number of paid apps than free ones. The paid apps have two types of cost, the subscription with an average price of 7,6€ per month and the no subscription with an average price of 4,6€, which is paid only once to access app features. More than half of the applications are paid, with no subscription reported as the main available option, but with no significant lead, with subscription around.(Graphic 4.5)

**Graphic 4.5**
The cost of Learning Applications (45 apps).
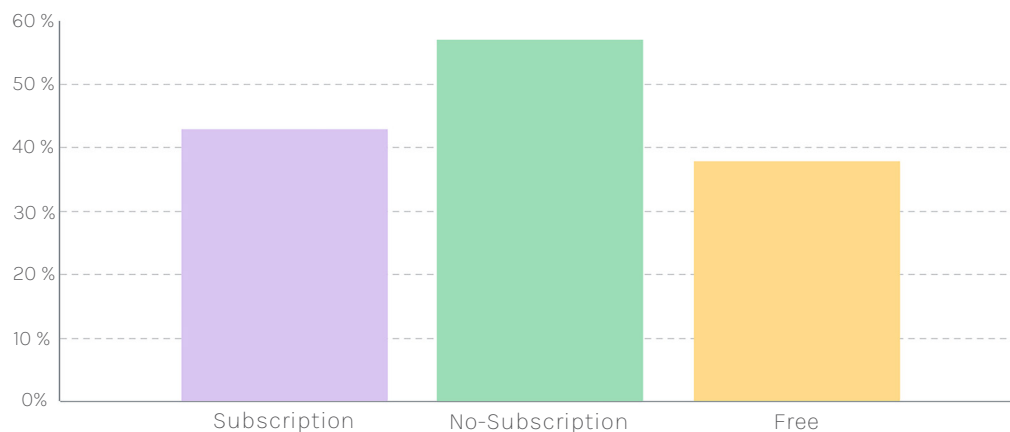
On average, almost every app is targetting children alone, with no parents or educators section. Only 9% had an educator section, and 7% had a parent section on the forty-five apps. Children between the ages of 6 and 7 years old are the ones with more opportunities. It is possible to report a constant growth of applications between the ages of zero and six years old; however, a drastic drop happens when children reach nine years old. The age group of 9 to 13 years old seems a forgotten target for learning applications since the age group report less than 20% of available options. (Graphic 4.6)

**Graphic 4.6**
The most common ages appropriate of the  Learning Applications (45 apps).



With almost half of the applications (48%), the primary learning subject of choice when creating a learning app is Math—followed by Language, Art and Science. Storytelling and Music have, respectively, a percentage of 13% and 7%. The topics of learning are very traditional, following the school's curriculum essential subjects.

**Graphic 4.7**
Motivational Features from Learning Applications (45 apps).
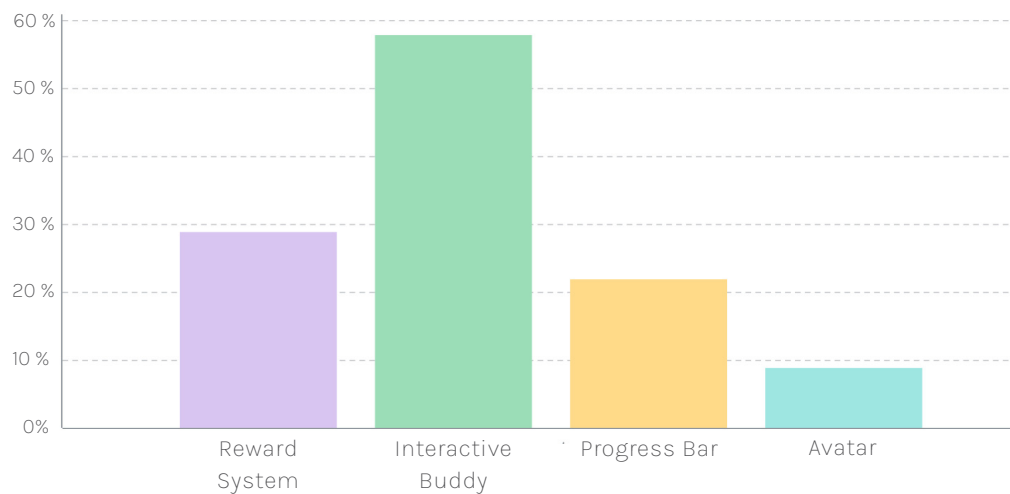


Most Learning applications focused on a learning subject and kept the user stimulated through motivational features. Others had a more traditional way of teaching but with interactive and fun activities such as interactive books (14%), music (7%), videos (7%), quizzes(5%), providing a feature to co-creation (7%) or sharing (2%). Most apps used an Interactive Buddy to keep users interest. Secondly, a reward system, when after reaching a specific goal, the user was presented with a video, game or song for the hard work. Lastly, some apps portrayed the user path and evolution and created an Avatar, where children can build a new digital identity. (Graphic 4.6) The average number of available languagues per app is nine, since in Europe there are twenty-four official languagues, with nine seeming quite narrow for such a diverse continente.

### IV.2.3.1. Main Findings

**Computer Devices & Support System.**
A low number of educational applications.
The lack of learning apps available for computer devices is present in almost all applications. Even though children mainly use their cellphone, the computer could help the family or friends participate in educational activities. Most applications lack parental, academic help and support sections.

**Lack of Diveristy.**
In Learning Subjects and Motivational Features.
There's a saturation of learning applications for the usual subjects such as Math or Language. The same is possible to report in the features and activities that are used to keep the user on board.

**Reduction of Opportunities.**
Based on paid applications and little idiomas variety.
With half of the applications being paid and with only nine languages available, the existing digital learning applications don't give every child the same opportunities.

**Forgotten Generation.**
Age group with less digital environments.
Children between nine and thirteen-years-old have a low number of available apps. As seen in chapter 1, this group, legally should not have access to social networks, but they are an incresing percentage of users. It's urgent to create more opportunities and engaging age-appropriate digital environments for this age group.

# IV.3 Case Study: Forgotten Age Group

One of the main findings of the research about learning apps is the lack of digital spaces for children between nine and thirteen years old. As seen in graphic 4.6, it is possible to see a critical reduction of apps available, a child of 8 years old has 56% of available apps, and a nine-year-old has 16%, following a thirteen-year-old with only 3% of options. As seen in chapter 1, children in the same age group, despite the General Data Protection Regulation (GDPR) applied in the European Union, are making a space for themselves in digital areas such as social networks.

The data shows the lack of digital places for this age group of children that don't fit into teenagers content but require more challenging digital spaces. This case study analyse the applications collected above, that are targetting children between the ages of nine and thirteen to understand what these digital spaces are doing to grab the users' attention, protect and consider users age in design features.

## IV.3.1 Apps Analyse.

It is possible to find seven learning applications that include children between the ages of nine and thirteen years old. Following the five countries present in the  research, (Diagram pp, 96) most countries report two learning apps available for this group age, except for Spain with only one application and France with none.

### 1.Class Dojo.
#### An online School platform.
ClassDojo is a school learning platform that enables teachers to share what was taught in the classroom at home, not only with their students but also with their families. Parents can see and like moments in the school, and students can display and share their learning experience into their "portfolios"—actively used in 95% of all "K-8" schools in the USA and 180 countries.

**What is it:** Remote Learning- Online Classroom.
**Target:** Schools/Educators that work with children.
**Goal:** Provide a way to share school learning moments and provide online interactions between teachers, students and caregivers.
**Main Features:** Student Portfolio, videos, pictures, presentations.

### 2. Duolingo.
#### Language-learning website..
Duolingo is a language-learning website and mobile app. It offers without charge, 106 different language courses in 38 languages. Duolingo provides interactive ways to learn a speech to a level between advanced beginner and early intermediate.

**What is it:** Remote Language-learning website.
**Target:** All people with a wish to learn a new language.
**Goal:** Provide a way to test and learn a language knowledge.
**Main Features:** Avatars, interactive text or voice and a forum.

### 3. Toca Hair
#### Criative Game.

Toca Hair is a game that belongs to Toca Boca, an award-winning game studio that makes digital toys for kids. Children explore the beauty industry with many creative tools to turn each character into a new creation.

**What is it:** Creative Game about the lives in a beauty salon.
**Target:** Children between the ages of nine and eleven.
**Goal:**Provide a playful space to stimulate the imagination.
**Main Features:** Avatars, interactive buddy, Games,Portfolio.

### 4. The Wanderer
#### A narrative adventure game.

The Wanderer: Frankenstein's Creature is a video game from La Belle Games, co-produced and published by ARTE, the European cultural TV and digital channel. The user experiences Mary Shelley's classic novel: "Frankenstein", through the innocent eyes of his Creature. The user's choices change the course of history.

**What is it:**It is a video narrative game.
**Target:** Starting for children of age 9 +
**Goal:** To rediscover Frankenstein's novel through eighteen paintings of the 19th century in a point and click narrative game.
**Main Features:** Co-creation, user's action shape the end of the story. Landscapes evolve according to the Creature's emotions and staggering soundtrack.

### 5. My Talking Tom.

An interactive pet buddy application.

It is a game where the users take care of the interactive buddy "Tom" and help him grow in different ways, such as feeding him, taking him to the bathroom, playing mini-games and more. In 2015, the app was reported for having advertised age-inappropriate advertisements for adult services.

**What is it:** It is a virtual pet application.
**Target:** For children between the ages of five and twelve.
**Goal:** Take care of a cat and help him grow through games.
**Main Features:** Interactive Buddy Tom, which can be customised and repeat words spoken into the device's microphone. Puzzle games, action games and adventure games.

### 6. Crocro Adventure.

Educative application.

Is a game that teaches kids logic and programming concepts by using a block coding interface to solve fun challenges. To help the character reach the goal, the user needs to use logic and abstraction to place the correct block in the proper slot.

**What is it:** An educational game, packing over forty logic puzzles.
**Target:** For children between the ages of six and twelve.
**Goal:** To teach children logic and programming concepts.
**Main Features:** Interactive Buddy, Reward system and "builder" option, where the user can create custom levels and play them.

### 7. Notebooks by RUBIO

An educational game.

Children will practice addition, subtraction, multiplication and division in a fun way and will be able to start writing and recognising the alphabet. In each notebook, user's will be able to solve more than 20 levels and unlock secret operations.

**What is it:** It is a Math and language educational game.
**Target:** For children between the ages of four and twelve.
**Goal:** To help children reinforce their Learning in primary contents on mathematics and language.
**Main Features:** Avatar, Coloring Books, Notebook, Interactive Games.

## IV.3.1.1. Main Findings

### To Children of 9-12 years old.

Lack of age-appropriate content.

Even though the apps include the age group between the ages of nine and thirteen in their target, there is no one specific for such period since most applications start targetting children of age five. From this data, one can conclude that the content may be childish and not a challenging digital environment for older children as seen in "My talking Tom" and "Crocro Adventures". It is interesting to notice the reverse position, as seen in the Duolingo application, where the age range is so vast that children encounter topics not appropriate for them.

### Lack of Diveristy.
#### In Learning Subjects.

There is a continuous lack of diversity in educational apps. The Learning applications focus on primary subjects such as Math or Language, present in "Notebooks by RUBIO", "Crocro Adventures", and "Duolingo". Other apps bring a fun way to follow the life of the interactive buddy, being more entertaining than educational, as "Toca Hair" and "My talking Tom" exploring lifestyles and creativity.

### Co-Creation.
#### The wanderer, narrative adventure game.

It is possible to notice a co-creation feature in "The Wanderer" game. It's the only application that teaches a diverse topic, teaching older children and young people to rediscover Frankenstein's novel and making the user part of the story by deciding different creature actions that lead to separate finals

### Participatory Design.
#### Remote learning.

ClassDojo is the only app where a section for a support system is available. However, the app is made primarily for portraying the classroom environment into the digital world, meaning the teacher and the school have more considerable power over the contents that are shared, just like a standard classroom. So children do indeed get the advantage of this educational learning app but are not made for them to have control.

# V DESIGN SOLUTION: MIC ON !

chapter

**V. DESIGN SOLUTION: MIC ON!**

**Figure 5.1**. MIC ON, Design Solution Project.

# V. DESIGN SOLUTION: MIC ON!

Mic On is a design solution for a problem explored in all chapters above: The lack of children's digital literacy skills and quantity of age-appropriate digital environments. This chapter presents a new challenging, digital educational environment for children between the ages of nine and thirteen, exploring the concept behind the project, the user's goals and aims when experiencing the application. Secondly, it shows the design process, the user path and main activities when using the app.

# V.1 Project: Filling the Gaps

Throughout the thesis research, four primary outcomes are presented in the chapters: The importance of education to reduce online risks (chapter 1), the designer's responsibility to create fun, challenging, age-appropriate digital environments (chapter2), the generational gap (chapter 1), where a lack of knowledge from adults on the basics of children's digital life activities and rights is visible (chapter 3) and the unavailability of digital educational apps , specif for children between the ages of nine and thirteen(chapter 4).

## V.1.1 Project Mission

The forgotten generation explored in chapter four reports an age group that lacks suitable digital environments. This same group of older children are making room for themselves and being present users in digital environments such as social networks that are not made for such an age group and can potentially cause harm to the child.

As seen in chapter one, it is challenging to evaluate when risks translate into harm. However, one of the best ways to reduce the probability of harm is to educate children on coping and protecting themselves from the risks they encounter when online.  Children lack navigation, operational and creative skills, making it essential to improve digital skills. In order to protect themselves, children need to know how the technologies work, the features on online platforms, privacy settings and how to cope with feelings and encounters with fellow internet friends.

The primary project mission is to educate children between the ages of 9 and thirteen since this age group is the most likely to take part in online spaces not built for them. To provide a  digital environment where children have access to information about the digital risks and ways to protect themselves and take advantage of the digital world by exploring content risks, contact risks and conduct risks. (chapter 1 pp.33)

Secondly, a space that is challenging and fun, where children feel that their voice matters, allowing the creation of content where they can share with friends and trusty adults doubts, online experiences and give their help and opinion to the platform community. Giving them a sense of responsibility and friendship, a bigger goal for a safer and happy digital life for everyone.

Lastly, throughout the thesis, it is possible to conclude that adults' anxieties surrounding children's digital lives can be reduced with better education and inclusion in their online experiences. The project aims to create a better digital relationship between children and adults, a way for parents, teachers and interested adults to be present in their digital lives by listening to and seeing children's content and opinions.

## V.1.2 Concept.

It is crucial to notice that education is the key to a better digital life for everyone. By being more aware of the subject, children and adult's can better protect themselves and others by knowing which privacy features or how to handle a lousy encounter but, it also creates room to explore possibilities of the digital world. When having digital skills and know-how to use online tools, the internet gives endless opportunities such as creativity, emerge in a different culture, languages and easy access to information.

Children will always have the possibility to encounter online risks. However, with the platform's help, children will have a better support system and knowledge, reducing the possibility of harmful experiences.

The online application is going to be available for smartphones, tablets and computers. As proven in chapter one, older, uneducated children face digital risks on a bigger scale since they are more curious, independent and interested in exploring the digital world and what it has to offer.

By creating a challenging and fun digital environment, this age group will undoubtedly take advantage of having such digital spaces implemented in their daily life. The goal of the digital spaces is to make users feel empowered, knowing that their voice and experiences are valid and contribute to a safer digital world.

### V.1.2.1. Main Goals

**1. A  better Education for everyone.**
Children and adults.
The application aims to provide presentations, lectures and workshops on digital safety, citizenship, skills and literacy, made for a team of interdisciplinary teachers.

**2. Support System.**
Parents and Caregivers.
The application seeks to build a trustworthy online community with the help of a forum conversation.  providing a tool to share opinions and experiences. The platform aims to incentivise parents to communicate better, exchange thoughts and experiences instead of having the role of rule creator.

**3. Responsibility and Accountability.**
Empowering children.
To give children an environment that leads to a behaviour change, forcing a sense of community and responsibility to help others have a better and safer digital life.

**4. Teacher space to help and grow.**
Professors of children between the ages of 9 and thirteen.
Teachers have access to the educational content, where they can take inputs of new teaching material and have the opportunities to share inputs and content suggestions with the platform team.

## V.1.3 Project Features

In order to have appropriate features for the platform it's necessary to evaluate each user's goals, habits and needs when opening the educational platform. An analysis of each persona enables a better understanding of what features will be highly crucial to the platform to bring a more rewarding, fun, easy and overall happy experience to the users.

### V.1.3.1. Personas.

#### Users A
A child between the ages of nine and thirteen.
This user knew the application through a platform that he usually goes to. Since he already had or knew someone that faced some difficulty within the digital world, he wants to make sure that he has the skills to be prepared when facing online risks and wants to know some cool and safe online places to visit.  An online place where he can feel that his voice is valuable, learn and know digital places to improve his skills, have fun, and share with friends.

#### User B
A Teacher.
This user had knowledge about the application through a digital citizenship teaching program. Since the online world and new technologies are very much present inside the classroom, this teacher wants to cause awareness of internet risks and give

better bits of advice. Since the platform is going to be used for professional goals, this user puts great importance on the privacy features, along with easy access and a straightforward path to be able to share the material in the class presentations.

### User C
A parent or a caregiver.

These users know about the app through the children's school. They thought it was an excellent idea to learn more about the digital world, learn ways to protect their children, and find websites that can improve their quality time together. These users want something easy and quick and have the undemanding reading of the information, categorised topics and a group chat for parents to exchange information.

### V.1.3.2. Main Tasks.

In order to create the main features for the platform is necessary to evaluate which main tasks the users want to perform when using the application.

**Graphic 5.1**
Main Tasks.

| Tasks & Personas | Learn | Share | Speak | Support | Privacy | Simple Reading |
|---|---|---|---|---|---|---|
| Users A | ✓ | ✓ | ✓ | | | ✓ |
| Users B | | ✓ | | | ✓ | ✓ |
| Users C | ✓ | | | ✓ | | ✓ |

Graphic 5.1. Main Tasks.

### V.1.3.3. Main Features.

#### Educational Material & Search Bar

A feature that provides presentations, lectures and workshops dates on digital safety, citizenship, skills and literacy, made by a team of interdisciplinary researchers. Topics are categorised to bring a simple layout for searching and understanding information. A search bar brings a fast and easy way for users to search for the information they pretend.

#### Speak & Share

Users can publish their online experiences on the Mic on! section, being able to introduce the information on text and pictures and share with family and friends inside the app or download in the device in use.

#### Community & Privacy Mode

The users can participate in the community feed, comment and explore and exchange experiences, materials and opinions. It is also possible to publish in private mode. The users choose when to share their publications or not with the community.

## V.1.4 Name & Identity.

The Name Mic On was chosen to bring the concept idea of a platform where children's voice matter. Empowering the users to share their online experiences and opinions, their voices are valuable to create awareness and help others.

Regarding the graphic identity, the colour scheme chosen is based on the complementary colours purple and yellow, bringing a sense of seriousness and calm to the project, with the intermediate colour green for highlights and essential information. The blend of the sans-serif typography and the colours scheme brings a clean and simple design yet playful that attracts younger and older users.

Karla   Light

Karla   Regular

**Karla   Bold**

**Figure 5.2**. Graphic Identity, Mic On!

# V.2 Design Process

Mic On aims to provide a support system, empowering users to share experiences and explore educational materials. For that reason, it is essential to design the user's path with immediate recognition of each step.

## V.2.1. Navigation Map

**Graphic 5.2**
Information Architecture.
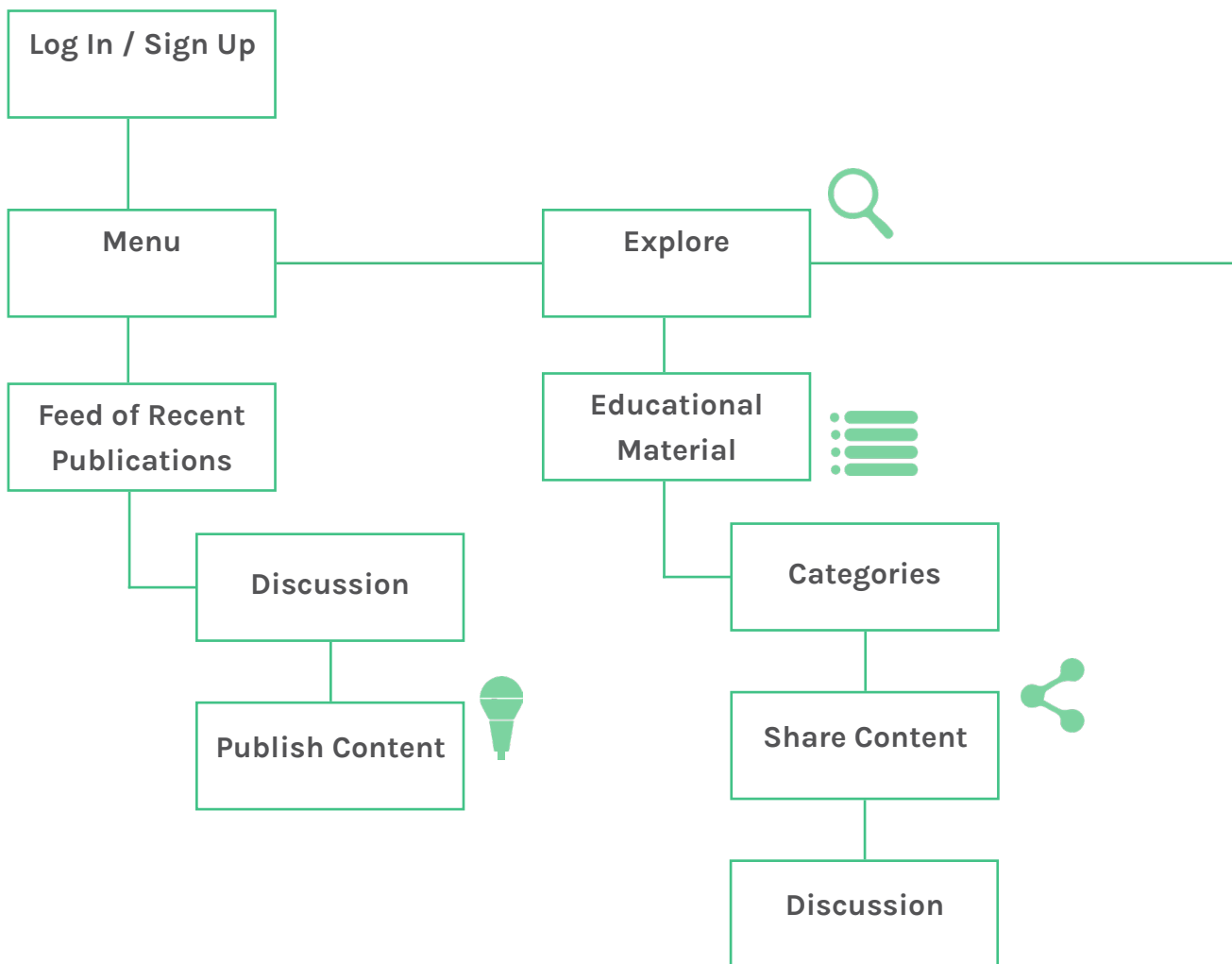


Graphic 5.2. Information Architecture Map.

After researching the different possibilities for the platform architecture of information, a navigation map is concluded to contribute to the application's full advantage in users' digital lives.

| Community | User Profile |
| --- | --- |
| Groups Activity | Personal Activity |
| Discussion | Portfolio |
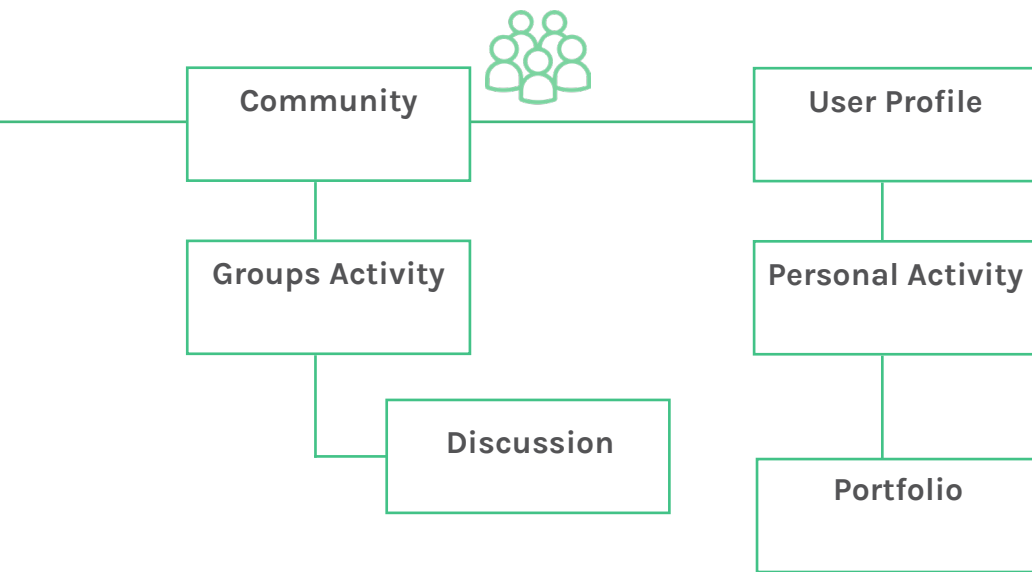
## V.2.2. Mic On Prototype

To better illustrate the functioning of the Mic On! platform and the main app features, examples of concrete use case are shown with a description of the user activity. It is possible to notice the opening of the application (Figure 5.3) following the home page, explaining the tools and features necessary for the user to have a simple and rewarding experience(Figure5.4).

### V.2.2.1. Application Main Steps

On the first part of the users' journey, the user must choose between the three categories: educator, caregiver or young voice. After signing up, the users' encounter the home page, where they found the main features and tools.

**Figure 5.3**
The start of the user's journey.
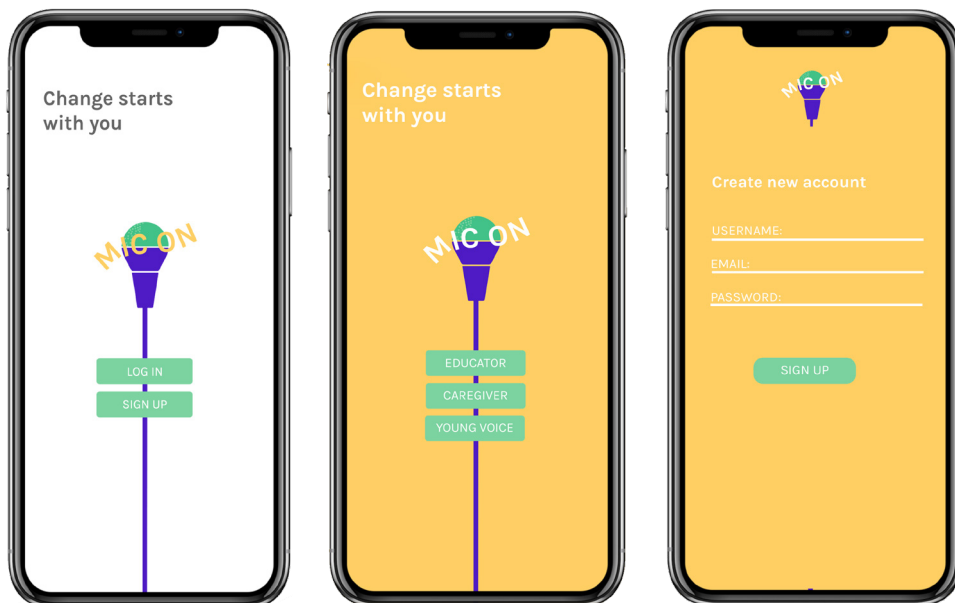


**Figure 5.3.** First application pages, Mic On.

**Figure 5.4**
Home Page.

Menu

Share

User

Comments

Publication

Search Bar

To Post

Information

Community
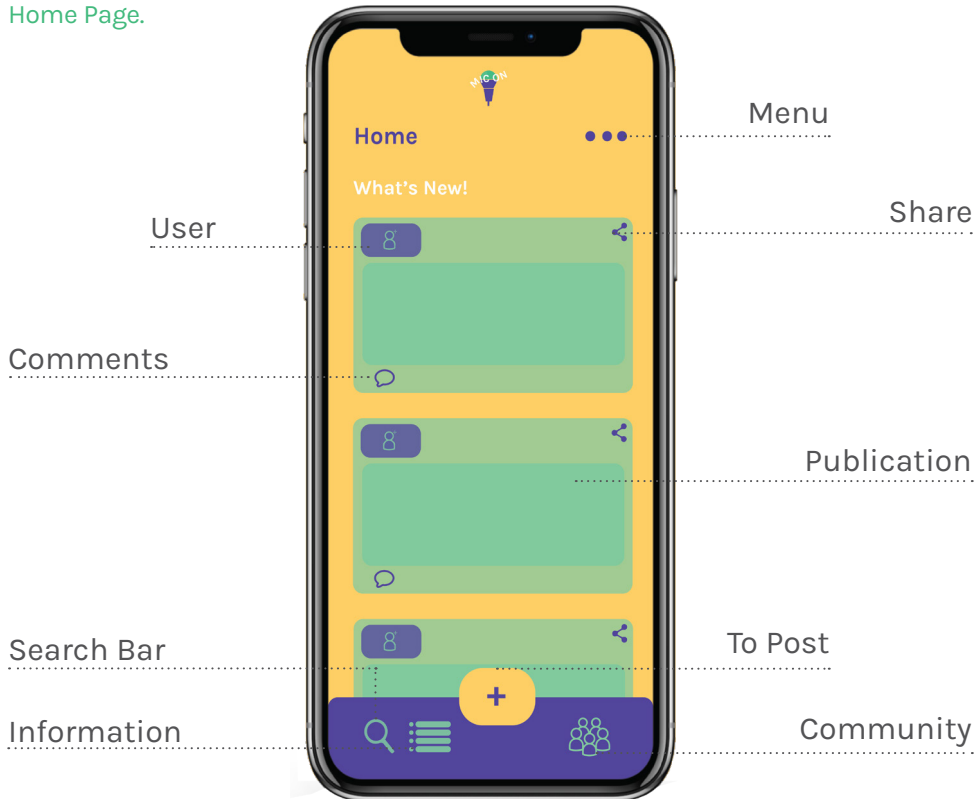
On the upper right corner of the page, the user can easily access the menu that brings more detailed information on the features available. It presents the recent publications of the platform, giving the possibility to share those publications and ask for a friend request from the author. On the page dow, the user finds a bar with the main features that the app offers. The search bar, giving instant information, the educational materials, categorized in themes and the community, provides the users' the support system more suitable for each user. Lastly, users' can share with the community their experiences and doubts.

**Figure 5.4.** Home Page and Main Features that the app provides.

# CONCLUSION

To demystify children as internet users is a complex task. This thesis explored several areas of children's digital lives, their preferences, their main activities, and more importantly, what they may encounter. A balance between risks and opportunities was made, putting education and the educational system at the center of the solution to create a safer digital life for children.

Design contributes to much of what we see and experience in our daily lives, influencing and affecting how people behave and think. This thesis sought to investigate the designer's responsibility on the hidden influence that design solutions create, exploring designers as agents for change and presenting new design approaches that focus on improving society.

In order to gain a broader understanding of the issues raised in the first two chapters, quantitative and qualitative research method processes were used in the form of an online survey and interviews with multiple disciplinary professionals, analyzing the collected data and comparing information to deliver a complete overview of the relationship between children and the Internet.

Furthermore, a reflection on the essential part that education plays in children's protection of online risks and the necessity for better educational digital environments was undergone. Research about the existing educational applications in Europe brought

more comparative information, providing an analysis of the apps' design features to explore better design solutions to protect children's rights and plan better opportunities.

In light of the findings acquired through extensive literature review, as well as quantitative and qualitative research, the question 'can design and designers have a better role in crafting a better online experience for children' was answered through the creation of Mic On, a design solution that tackles the lack of children's digital literacy skills and quantity of age-appropriate digital environments.

Designers both can and should take responsibility for their roles in ensuring children are protected and make the most out of their online experiences, and Mic On! should serve as an example of how this can be widely achieved. The future and safety of our children rests in our hands, and everone, in particular, adults can play a significant role in how the younger demographic can enjoy the perks of online life without jeopardizing their well-being.

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**In your opinion, how important it is for children to have a digital education?**

It's tremendously essential. Judging from my experience in the Future Kids. Between the start of school and its end, companies in general, even Microsoft itself, disinvested a lot in software quality by becoming auto explanatory, became pretty dumb. The educational software we had at the start (of Future Kids School ) was way better than the one we had at the end. An example: Robotics was a software created by Lego. Lego's robots had electronic engines connected to the computer, where you could carry out a command language in which the kids could build lines of programming code to learn to interact with the robots. Later on, for commercial reasons and to simplify things, Lego built pre-made code lines, so the children only had to click and drag a bar, which was already the command itself.

Meaning, we went from a moment where you needed to think which are the words I'm going to use, what letters, how do I write this, where I write this, and how can I build it? To where everything is pre-made, and you only need to heat it up in the microwave.

I always thought it funny to watch in my classes that when the kids would sit in front of the computer, they immediately placed their hands on the keyboard, embracing the computer. As for the adults, the approach was completely different, arms crossed, just waiting for instructions. This observation leads

to an extraordinary thing: adults, who refuse to touch a computer with fear of breaking it, when seeing a child do just that and watching the result of that interaction, not necessarily the result that the child wants but only by there being a result makes adults believe that children know how to work with and take advantage of the computer.

The Future Kids Schools suffered tremendously with this way of thinking. When parents would notice that their childrencould obtain a result from and "work" with the computer, they'd assume that they didn't need to learn anything else. Therefore,"Future Kids" stopped making sense. The building of software for autonomous users and the inexistence of education lead to children using computers by themselves without understanding the basics. Therefore children tend to have an elementary use of the Internet and new technologies. For more intelligent use of the Internet, education is essential.

**When providing an unsafe digital space for children, should companies take social responsibility?**

The companies that operate and create digital environments have teams monitoring and studying what's going on in that world, and that gives us an idea of the perception that companies have of the importance that the digital world has for good and bad in our society. I believe that companies feel responsible and look to answer, but their business is the digital world. Sometimes, companies onlytake action when things reach an extreme level, changing bhaviour because they realise that it's essential and harmful for them if things escalate at a certain point. Rather than having the European committee setting standards and imposing fines, it would be wiser to have

a surveillance committee that influences decisions by using social media. The digital world creates such wealth that paying a fine isn't complicated. It's much more complex for companies to perceive themselves online and discuss their behaviour that endangers their stand in the digital world. Companies are aware of the digital world that they created and the importance of their survival. For these reasons, my stand is that it is much more important to hold companies responsible for their actions digitally than criminally or civically.

For example, Twitter made a lot of money having Donald Trump as a user because of its controversy. Only very near the end did they decide to close his account. It is far more essential to have the agility to work in the digital field than to create standards. There's an expression: The right only exists after the reality. The legislation will only ever live in the digital world after the problem arises, and when regulations finally come, the digital companies will have come so far reach that they'll pay a fine, and that's it. The key is to be agile in the digital world and make companies taste their own medicine, and then, without a doubt, they'll start acting quickly.

**When designing for children, Do you think it is possible to co-design with them and not only for them?**

Without a doubt, In the Future Kids School, I had a student with down syndrome. I arranged moments, times of the day when we could be alone in the room to teach him. Firstly, the only thing that the student would do was punch the computer. Once by mere chance, the monitor was on, and the student was amazed when noticing that by hitting the keyboard, the screen changed colour. So, I tried to find a way to make the screen change colour every time someone touched the keyboard. Over time, it progressed to colour patterns, and my student slowly started getting used to simply touching the keyboard to see the changes on the screen instead of hitting it.

The next step was printing, and It was extraordinary to see the student enthusiasm when realising that the paper print resulted from the interaction with the computer. It was so revolutionary that the student started wanting more and more, progressing to computer games. It reached a point where negotiation was possible. To be able to play games, the student needed to do specific tasks. By the end, the student completed the standard program even faster than the other kids, with the willingness to play.

The student realising that he could play with the computer, and I, as a teacher, learning that there was a way we could explore and together create a program for the student. If it works with him, it works with everyone. This an example of the magic of co-creating, co-creation is essential, but there must be strategies and paths to follow.

**To provide a happier and safer digital life for children. In your opinion, what are the main changes that need to happen?**

Adults' mindset. As a tech teacher, there's irresponsible behaviour in adults with minimal knowledge that doesn't solve basic computer problems. There is a fundamental rule a child is a child and should not be unaccompanied. If it is essential for parents that their child's digital environment is safe and healthy, they have to learn to teach. Computer science is so developed, and there are so many different areas where children need the training to understand it.

The lack of children protection has always been a significant issue in our society. It's the reason for the existence of so many orphanages in Porto. Vulnerable children were and are a big target of abuse. People today have this idea that tech has come to hurt children, but it's ultimately just a different form of practising an evil that has always happened.

**Are citizenship and digital citizenship the same, or does the digital term add topics and different norms that need to be explored?**

The assumption of what it means to teach children is wrong. Being a teacher today comes from an inaccurate and outdated concept. In antiquity, the master, the scholar, had an accumulated knowledge that allowed him to be a professor. Nowadays, teaching no longer works that way; there's a need for exploring. When knowledge is hugely divided, and the volume of information is so large and so dense, we have to abandon this idea that a professor teaches citizenship. The teacher must be the motivator, a strength that's there to guide, co-help to explore, and computer science is a tool.

The digital world, where most teachers don't master so well in consequence of more traditional training, is part of that idea of citizenship. Teachers have always been essential to bring and complete thoughts, ideas. Today there is no exemption; a teacher must help students build this new reality, receive and work with that information. Technology allows children to contribute with all the access and ease they have. That's why I say that the assumption is wrong. The digital world is part of citizenship, of being a citizen. If there's a part of the population that's more interested in tech, we need to respect and avail them. It's evident that computer science is a part of all of this, and we need to accept it.

**Do you believe in policy/ regulations based on restrictions or choice? Should the parent make their childrens' digital choices for them?**

With the restrictions in place today, children continue to enter into security systems belonging to banks, companies, even the police. Children are exploring worlds that were not built for them because they're children and have a different way of thinking. They're free and intelligent.

Regulations are like a strainer, full of holes, human intelligence, from an adult or a kid will overcome these barriers. Creating obstacles to protect is limiting. It is far more advantageous to create ambitious goals to be the examples of a leader that I want to reach, the reason I want to be in informatics.

If I create, design a goal, and make that available to children, with a distant objective that takes up a lot of time, it's needless to worry about what they might be doing. The child will be entertained trying to reach the goal that I drew for them, a pure objective, which will help them grow. It may involve mathematics, physics, languages, ethics. We need to be creative, create unique goals that lead children to spend their time dismantling, achieving them.

**Would the relationship between children and parents/ teachers prosper with more open conversations about digital experiences?**

Indeed, digital experiences need to have support as in everything in life. A few years ago, parents didn't let children be in environments that were not appropriate for them. Nowadays, nobody cares about forbidding kids to be on TikTok, for example, without knowing what they're sharing or whoever sees it. If people aren't aware of what children do and share online, they don't know anything about a part of their lives.

The Internet is not to blame. The lack of culture we have concerning it is and perhaps how alienated we are with our children, with lives and schedules more fulfilled than ever before is to blame, but the truth is nowadays we have other tools, and we need to start learning how to use them.

**Samanta Magalhães,** Clinical Psychologist.

**In your opinion, how important it is for children to have digital education?**

It's inevitable, it's inherent to the evolution of humanity. And because it's part of our evolution, we must adjust to reality - and that's the reality. So if a child's mental health is tied to their suitability to the context and conditions surrounding them, everything that has to do with accepting and working towards the integration of those condições into the child's internal world with harmony is a positive thing.

I'm not a fundamentalist, I'm not against technological mediums. Technology can be integrated in a very positive way. I just believe that integration must be thought out, there has to be a multi-disciplinary team that integrates technology into children's education so that there's a positive interaction in their mental health, and beyond. In order to develop the child's potential, health is also developing our own potential. And growing isn't just having harmony, it's also growing - at least in my definition of mental health. So, if the technology supports efforts of internal development and social interaction as a whole, I'm in favor.

**When providing an unsafe digital space for children, should companies take social responsibility?**

Yes,In my opinion, technology should be mediated a little by all the essential areas that are relevant in the development of a human being, from teachers, psychologists, IT professionals, people connected with the law, doctors, sociologists, the very creators of platforms and websites.There must always be a dialogue. I believe that there must be mediation that already existed in pre-technological times that protected or tried to preserve our integrity and try to find a new protective logic in the digital world.

**When designing for children, do you think it is possible to co-design with them and not only for them?**

Absolutely. It's a more organic and respectful process of what's natural in the child, so there's no forcing of the child's psyche; the child is the one who's giving the clues to what she may need. This doesn't mean that adults cannot help children, but if there can be a conversation, the process is also more organic, creating a minor gap between the child's psyche and the adult's psyche. Therefore, yes, a dialogue is always constructive; we should listen to and involve the children.

**To provide a happier and safer digital life for children. In your opinion, what are the main changes that need to happen?**

I advocate that adults should have a healthier relationship with technology; they should be involved, not critically, excluding themselves in an unconnected way. Adults must learn more about technology, be more informed, and become more involved in knowing how to use technology in a healthy way because we are the role models for children. It comes down to the willingness and the goodwill of adults because it's easier to criticize and say that children spend too much time online or with a technological gadget.

I stand for adults spending time with a child and getting involved whenever possible. In my view, the engagement, the presence, and the wanting to know of all the adults, not just the parents, all the adults involved in a child's life, is an obligation. We're the closest to the child when she's using the latest technologies; we act as filters, and as integrators, we all have that responsibility.

**Are citizenship and digital citizenship the same, or the digital term add topics and different norms that need to be explored?**

Personally, I believe there is a difference between a non-digital world and a digital world; they are not exact equivalents. The digital world's impact on a child's psyche is not yet adequately documented. The technology revolution had a tremendous impact on communication, in relationships, in psychology that we don't yet understand the full scope of. A proper study hasn't yet been done. It's a path that many of us need to make, study and investigate further.

In digital citizenship, there is a change because the boundaries are entirely different, the physical limitations are much easier to control, and everything is much more widely accepted and established. In contrast, it's all a great sea and faceless information in the digital world, without identity. How can we exercise citizenship if we cannot access that identity and face? We need to know what we're dealing with.It's necessary to have clarity, transparency, rules, limits. Freedom is only possible when there is a structure when healthy boundaries exist. Online citizenship is still very unregulated. It is always a very controversial topic, raising questions about democracy and freedom of speech. It is indeed a very delicate subject.

**Would the relationship between children and parents / teachers prosper with more open conversations about digital experiences?**

No doubt, but before that, the teachers themselves must be informed. Many teachers use technology and learn to use it because they have to use it. Still, it doesn't mean that it's emotionally or psychologically integrated, making it contradictory models for the children because they are in a contradiction. There has to be an acceptance of this technological revolution, and an endorsement means knowing in more depth and understanding what is positive and what is harmful.

The teachers need help to integrate the technology, not only from the knowledge of use but also from the psychological and emotional perspective. Although it is changing, since teachers from other generations exist, almost all the teachers were from a pre-digital era, and therefore, there is this inevitable sizable generational gap. First, it is necessary to have this integration into teachers' minds and hearts. When we're at peace with innovation and change, we transmit that in our verbal and non-verbal language; if we're using technology and fighting it all the time, we're sending an aggressive and contradictory message to children.

**Do you believe in policy/ regulations based on restrictions or choice? Should the parent make the child's digital choices?**

When there's maturity, involvement, information, follow-up, it doesn't take so much restriction. Consequently, kids will already know how to make choices differently, or they'll be supported in their choices. Now, taking the first steps into this digital revolution, I would say that there must be riot police to prevent too many "deaths" and "serious injuries". It takes great care not to fall into a dictatorship. There has to be experimentation, trying to see what's working and what's not, a dialogue about what people can and cannot do on their own.

As a collective, we still have many discrepancies. Some people can self regulate themselves and their children very well, yet many children are left alone with screens. It is necessary to analyze the contexts and cases, experimenting and learning from the experiences. I don't think we're mature enough to use everything freely without restriction. I believe that knowledge about culture and education is the most extraordinary therapist in the world. Art, writing, painting, everything that is an expression of being a human is also the study of science. Therefore, I'm in favor of education and culture.

**Victoria Nash ,** Director on Oxford Internet Institute.

**In your opinion, how important it is for children to have a digital education?**

It's extremely important, but I believe that should be part of the general education, as opposed to a separate class. I think here's a tendency to see digital skills and digital safety as a separate topic there is taught during personal or civic education classes. But since digital is part of so much of everyday life for children online, I think it should be building into that general schooling.

**Are citizenship and digital citizenship the same, or do the digital term add topics and different norms that need to be explored?**

The digital context does change some of the content that we will be teaching to children on these types of issues. But as I said before, I suppose I think that could be embedded in all general education. For example, teaching children and teenagers how to handle dating relationships and friendships online should be part of that general education about relationships and friendships and deliver it in that part of the curriculum rather than deliver it as a separate section.

Similarly, a lot of the focus, particularly for children about bullying and online behaviours, behaving in inappropriate ways, the digital element should just be part of the discussions about bullying, whether that comes in school assemblies or with form teachers in separate lectures. There is a real risk that by calling it just digital education and having a separate slot in the curriculum, children don't associate it with all these other daily activities.

**To provide a happier and safer digital life for children. In your opinion, what are the main changes that need to happen?**

For me, it is at least a couple of things. First, for most of the activities that children engage in online, they are not really using spaces either d signed for them or adjusted in the light of their age. In an ideal world, we will have much more responsive and choice-based environments. I'm not thinking of the idea; for example, that you simply age-gape the internet, so if you're under thirteen, you can't access 90% of it. The most popular applications that children use and enjoy would perhaps have features like safety or privacy by design built into them and those features that could only be unlocked if you were old enough to take the initial risks. For me, that's the first thing to ensure that online environments, applications, and websites are designed with young users in mind.

The second thing would be education, but it is not only about educating children is also about educating parents, carriers, teachers. I think a lot of the focus is on children, but additionally has to be an adult's responsibility for overseeing children but equally, given what you're asking about, the one's responsible for designing for children and young users. Education for adults as well as Children is my second main change.

**Would the relationship between children and parents/ teachers prosper with more open conversations about digital experiences?**

Yes. There are not vast amounts, but some evidence emerged over the last few years that some of the most successful strategies for keeping children safe online are the ones that rely on communication. Improving communication and improving trust, whether that be between children, carriers, parents or educators. Those tactics are more successful than controlling strategies, which simply impose a clear expanse of children's rules online.

Whereas if you're focusing on trusting communication, as you said, a more open communication, then there's a possibility that you can gradually develop children's confidence and resilience so when they face new risks, they are happy to talk to other people about it and get feedback and advice. Yes, I think the conversation between children and parents/ teachers is incredibly important and is also quite my research base funding.

**Do you believe in policy/ regulations based on restrictions or choice? Should the parent make children's digital choices?**

The last one, actually. It is often much easier just to say that you cut certain types of users access off completely for children. I read that course as well, and I think the majority of the cases, well-being, human rights, are better promoted by either making use more transparent so be clear about the risks and opportunities that are and implementing and encouraging more stay safety design features. Restrictive policy- based only gets you so far; what they don't do is encourage positive use to children and young people. One of the things that would make a significant difference to children's well being will be to have a greater variety of apps, tools and platforms available for their use.

A particular one is to look outside the fears of the most privileged children. The possibilities of the internet for things like education, communication, and self-identity development are so huge, so finding ways to enable that and encouraging that rather than mainly focusing on policies that shut those things down, I think globally would make a huge difference.

**When designing for children, Do you think it is possible to co-design with them and not only for them?**

I think it is possible, and I'm not convinced that it is always necessary or essential. It's possible to do it in a very responsive way by looking at existing research on child development and cognitive development. Nonetheless, I think it is certainly worth trying, and in particular, good HCI research base design, so design that really tries to understand how children engage with content or information on the screen is bound to better results than design that does not take this principle into account.

## Elena Marinoni, Strategic and visual Designer.

**In your opinion, how important it is for children to have a digital education?**

Well, I think that is extremely important. Education is critical. The more we go on, the more it becomes key for children to learn how to take advantage of the technologies while not being overwhelmed. It's a matter of education and Regulation to improve children digital lives.

**When providing an unsafe digital space for children, Should companies take social responsibility?**

Sure. From the ethical point of view, this is imperative, regardless of the target that the company is addressing. It is essential to create a safer environment and manage privacy issues that do not exploit people's data for secondary needs. Of course, when children are involved is a more critical issue, significantly, because new generations are growing without even perceiving the boundaries between online and offline. This incredible familiarity that they have with the online world eventually low barriers to sharing personal data.

**To provide a happier and safer digital life for children. In your opinion, what are the main changes that need to happen?**

Education is key. At the same time, the business model of tech companies is based on disinformation and on creating an addition to users. All the implications of tech addictions are apparent in all generations. There is nothing sustainable in the business model of tech companies based on the creations of environments that are not sustainable from different points of view, such as cognitive, environmental, and behavioural.

There is no simple solution; this is what I would define as an intractable problem because there is a clashing of interests. The companies' profits are made based on this unsustainable business model, creating incredibly engaging and compelling digital environments based on misinformation, the proliferation of visual stigma, and extreme gamification. Techniques used by brands to maximise the people's engagement and the side effect is also something that needs to be considered. How to cope with this? Good Education and Regulation.

**How can graphic design have a social impact on children's digital environments?**

Recently I've been exploring the topic of cognitive sustainability. In digital environments, people's attention is continuously overwhelmed by a plate of options and given this scenario; people are more and more developing digital fatigue. Maybe one of the aims of designers, especially visual designer, is to design in a  responsible way to relieve people's cognitive burdens. Simplify by making particular features evident and apparent, favouring limit colours pallet, clean shapes and reducing visual background noise. All these factors contribute to digital fatigue.

From another perspective, unfortunately, our world is filled with bias and misinformation, where facts from fake are challenging to distinguish, and people are demanding more accuracy, which creates continuous cognitive stress. Designers specialised in communication, and data visualisation can have a role in helping people to distinguish from facts to fakes data. For example, graphic designer or packaging designers have interesting implications for clean labelling. Clean labelling is the practice of being very crystal clear about the ingredients in use, elements now only clear but also recognisable, written so that you can read and trust the brand and the product. It is about transparency and simplicity, and designers directly reduce the visual complexity and add a transparency method based on transparency data.

**In your opinion, how can design promote better social behaviour online?**

I think it is not design; only people can change social behaviour, designers can gently push people into certain directions. But this a cultural revolution; we need awareness, education, development of a different sensibility, starting virtual circles, and little by little. For example, think about hate speech in digital environments. A designer can implement a solution to remove some keywords accordingly, but it only limits the access; actual behaviour changes only happens from a cultural point of view.

**When designing for children, Do you think it is possible to co-design with them and not only for them?**

Sure. I think a co-designing process can work even better with the children because they are creatives and open-minded. Their innocence, lack of bias, and non-existent politically correct attitude can bring more natural help to the design process.

# ATTACHMENTS

## SURVEY QUESTIONS

### PARTE A
### A.1 Children's digital lives

1. Your Age ( Multiple Choice)
X 18-24
X 25-30
X 31-40
X 41-50
X 51-60
X 61-70
X 71-80

**2.** Where do you live ?

**3.** What do you do for work ?

**4.** Are you a parent or legal guardian ?( Multiple Choice)
X YES
X NO

**5.**How much time per day do your children spend online ? ( Multiple Choice)
X 2 hours
X 4 hours
X 6 hours
X 8 hours

**6.**Through which device do children access the Internet more frequently ? ( Multiple Choice)

X Mobile Phone

X Computer

X Tablet

**7.** In your opinion, does children's digital life have an impact on family/ school environment? ( Multiple Choice)

X YES

X NO

## A.2 Education

**8.**Do you think that the Internet and the use of new technologies play a fundamental role in children's education ? ( Multiple Choice)

X YES

X NO

**9.** Enumerate from 1 to 5, in order of importance ,a positive aspect that the Internet has brought to children's lives.

X 1      X 2      X 3      X 4      X5

Unlimited Access to Information

The Globalization of toughs and cultures

Ability to speak with people far away from them

Entretainer Role

Social Networks, that deliver a way to chat with friends and share interests

**10.** Enumerate from 1 to 5 the risks that the Internet has brought to Children's lives in order of importance.

X 1      X 2      X 3      X 4      X5

Fake News
Cyberbullying
Privacy
Sexting
Exposure to harmful or disturbing content
Grooming

**11.** As an adult, do you think you're well informed about the Internet risks and benefits of the Internet ?( Multiple Choice)
X YES
X NO

**12.** In your opinion, has the Internet brought more opportunities or more dangers to children's lives? ( Multiple Choice)
X More Opportunities
X More Dangers

**13.** Do you think schools offer proper education to children on how to cope with and take advantage of the internet?( Multiple Choice)
X YES
X NO

**14.** In your opinion does a professor need to have good digital literacy and skills in new technologies ?( Multiple Choice)
X YES
X NO

**15.** From 1 to 5, how important is it to teach children the benefits and the dangers of the Internet ?

Not Important  X 1　　　X 2　　　X 3　　　X 4　　　X5  Very Important

**16.** Do you feel qualified to educate children on how to cope with the Internet?
( Multiple Choice)
X YES
X NO

**17.** Are you aware of what your child does online ?( Multiple Choice)
X YES
X NO

**18.** From what age do you think that it is ok for children to be autonomous online?

**19.** Can you think of any websites/platforms that are great for children?
X YES
X NO

**A.3 Internet regulations**

**20.** Are you aware of the policies / regulations adopted by your country related to child digital safety ? ( Multiple Choice)
X YES
X NO

**21.** Are workers in the Tech area, who take part in creating digital environments, responsible for creating a safer place for children ?
X YES
X NO

## A.4 Covid-19 Digital Consequences
Only for parents or legal guardians,

**22.** During this past year, did your child screen time increase?
 X YES, about 2 hours
X YES, about 3 hours
X YES, about 4 hours
X NO

**23.** During quarantine, Were you aware of your child's activities online?
X YES
X YES, but less than usual
X NO

**24.** During this time, did you and your child have moments together in online activities? ( Multiple Choice)
X YES
X NO

**25.** Do you think you were more concerned or relieved about the presence of the Internet in your child's life during this past year?( Multiple Choice)
X Concerned
X Relieved
X I didn't think about it

**PARTE B**

**B.1 Children's voices matter.**
Only to be answered by children between the ages of 9-13 years old.

**26.** Do you share with your friends what you do and see online?
( Multiple Choice)
X YES
X NO

**27.** Do you understand all the content that you read and see online ?
X YES
X NO

**28.** Would you like to learn more about the risks you may face online to be prepared and help your friends?
X YES
X NO

**29.** With whom do you feel more comfortable sharing your experiences online?
X Friends
X Parents
X Teachers