

The Unboxing Tech Toolkit: Facilitator Guide for Toolkit on The Materiality of the Smartphone



A GUIDE FOR EDUCATORS, TEACHERS, PARENTS AND RESEARCHERS.

Built by:



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About this resource

This guide is meant for educators, teachers, parents, resource persons, HR, civil society members, or anyone trying to conduct the Unboxing Tech Toolkit series for youth aged between 13-18 years.

The toolkits are designed to give the facilitator and the user the freedom to use this in multiple settings. This can be part of a classroom, a course on science, a bigger project, a community space, your neighbourhood, or your home.

The toolkits can be done online or in print. These can be administered individually or in small groups. We urge you to choose the latter to facilitate better conversations among youth on technology.

Link to the toolkit: <https://www.unboxingtech.pranavainstitute.com/>

What is the Unboxing Tech Toolkit?

The Unboxing Tech Toolkit is a series of toolkits designed for youth to better understand smartphones and make technology work for us and our planet. The activities in the toolkit will help participants unbox what's inside their device, map the global journey their smartphone takes before meeting you and understand its afterlife once you say goodbye. By the end of this toolkit, they will have the power/ability to make better technology decisions and contribute to building the sustainable digital future we all dream of.

How to administer this toolkit?

The toolkits can be administered:

- in the classroom
- in a community space- libraries, parks etc.
- in neighbourhood spaces
- at the workplace (for adults)

- in a public hall
- in your home

The toolkits can be done as exercises individually, where each participant has a printed copy or a device where they can access the toolkit. Alternatively, it can be done in groups of 3-4 in a classroom where filling out the sheets and discussion can be given space.

If you want to focus on discussions in the classroom, you can give each student a take-home copy of the toolkit, which they bring back filled out. Participants can then discuss their responses in groups of 4 and compare notes. Teachers can facilitate discussions on important themes.

Once completed, students can be urged to take copies of their toolkits home and discuss it with their parents and the wider community.

Duration of the toolkit activities

- Individually done, each toolkit takes up to 60-70 minutes to complete.
- In groups, the toolkit can be covered in anywhere between 45-90 minutes, with 30 minutes of discussion and exchanging notes.

Why conduct this with youth around you

- Current school curriculums across the world do not address new issues which come with digital technologies. Understanding that our students spend most of their time outside school (and sometimes inside) on their phones where they learn, shop, make friends and learn important skills.
- Owing to the COVID-19 pandemic, we see a sharp rise in the dependence of digital technologies for education for students and teachers- often becoming a primary mode of learning. This has increased exposure to devices, as well as made devices essential to access education.
- Technology usage has become more pervasive across all age groups, with little control (parental or otherwise) and the normalisation of personal devices for students regardless of age. This also makes children early consumers of technology as an essential service.
- Schools need spaces where youth can discuss and bring up experiences they undergo online, both as means of learning and growth.
- While these topics do not fit squarely into the current subjects and topics covered at school- which is why we urge teachers and educators to use these resources in ways which suit them best.

The Unboxing Tech Toolkit: Facilitator’s Guide

The toolkit sheets follow these major themes, concepts and learning outcomes. These can be taken up in schools within subjects such as environmental sciences, climate and sustainability, technology and IT, digital empowerment and holistic development.

	Overview + Key Concepts	Learning Outcomes	Additional Resources
Sheet 1	<ul style="list-style-type: none"> • Introduction to the toolkit • Trace where <i>your</i> smartphone comes from • Personalising the toolkit to the participant’s smartphone, including details of ownership and smartphone buy and use patterns • Provides a quick overview of countries involved in smartphone production 	<ol style="list-style-type: none"> 1. Identify personal information about one’s smartphone buy and use patterns 2. Identify countries where smartphones are produced 3. Breaking down the idea of a singular geography of the production process 	<ol style="list-style-type: none"> 1. Mobile Cellular Subscriptions, World Bank Data (link) 2. International E-waste Day: Of ~16 Billion Mobile Phones Possessed Worldwide, ~5.3 Billion will Become Waste in 2022 (link)
Sheet 2	<ul style="list-style-type: none"> • Focuses on how the smartphone is produced across the world • Concepts introduced: Supply chains, rare earth minerals, mineral mining, conflict minerals, and responsible sourcing. 	<ol style="list-style-type: none"> 1. Explain what a supply chain is 2. Understand the harms of mineral mining 3. Identify rare earth minerals 4. Identify the supply chains of two major phone brands and understand complex interactions 5. Identify how sustainability can be ensured within supply chains 	<ol style="list-style-type: none"> 1. What is your Smartphone made up of? - Kim Preshoff, TED-Ed. (link) 2. Not So “Green” Technology: The Complicated Legacy of Rare Earth Mining (link) 3. Digital economy growth and mineral resources: Implications for developing countries (link) 4. Source map of the Apple Supply Chain (link)
Sheet 3	<ul style="list-style-type: none"> • Use a mapping exercise to plot supply chains, and identify 	<ol style="list-style-type: none"> 1. Establish links between geography, economic 	<ol style="list-style-type: none"> 1. Your Tech Stuff Is Getting Slightly More Repairable (link)

	<p>learnings from Sheet 2 on the Physical World Map.</p> <ul style="list-style-type: none"> ● Trace the Apple iPhone 11 supply chain ● Trace Fairphone's Tungsten supply chain ● Country-Mineral mapping 	<p>production and technology production</p> <ol style="list-style-type: none"> 2. Identify countries involved in the smartphone production process at various stages 3. Identify the role that various countries play across supply chains and what implications that may hold for people 	<ol style="list-style-type: none"> 2. Conflict Minerals: 101 (link) 3. Conflict minerals (3TG): Mining production, applications and recycling (link) 4. Fairphone establishes a transparent supply chain for all four conflict minerals (link)
Sheet 4	<ul style="list-style-type: none"> ● Provide a component-level view of the smartphone ● Uses three actions we do on the smartphone to illustrate how minerals give smartphone components the special ability to carry out complex tasks ● Help understand the engineering within the smartphone which makes it a multi-functional device 	<ol style="list-style-type: none"> 1. Knowledge of various sensors and what role they play in the smartphone 2. Knowledge of how minerals are used to power components, and what these components, in turn, do when we use various functionalities 	<ol style="list-style-type: none"> 1. What's Inside My Smartphone? — An In-Depth Look At Different Components Of A Smartphone (link) 2. The Brief History of Smartphones (link) 3. Smartphone history: A complete timeline (link) 4. Chemical elements of a smartphone (link)
Sheet 5	<ul style="list-style-type: none"> ● Introduce and understand how phone use has economic, time, energy and attention costs associated with it. ● Gives tools to holistically assess costs beyond the purchase. 	<ol style="list-style-type: none"> 1. Participants will be able to calculate the financial costs associated with their smartphone use 2. Become aware of energy as well as time and attention costs too which come with phone use. 	<ol style="list-style-type: none"> 1. The Unboxing TechToolkit: The Design Did it not me! (link) 2. Energy Use Calculator (link) 3. How to Recycle End-of-Life Electronics (link)
Sheet 6	<ul style="list-style-type: none"> ● Introduce the concept of disposal of technological devices and the larger problem of e-waste 	<ol style="list-style-type: none"> 1. Participants will be able to reflect on their own behaviour patterns regarding phone use 	<ol style="list-style-type: none"> 1. Life Cycle Assessment of a Smartphone- Research Paper (link)

	<ul style="list-style-type: none"> • Introduces the concept of repairability and recyclability, and their importance for sustainability • Introduces planned and perceived obsolescence as important concepts which shape our decisions about technology consumption and disposal • Introduce major ways in which e-waste is disposed at a large scale. 	<p>and disuse, how it impacts the environment</p> <ol style="list-style-type: none"> 2. Understand their personal decision-making process about phones vis-a-vis planned and perceived obsolescence 3. Can find out the repairability score of their personal smartphones. 	<ol style="list-style-type: none"> 2. How to Responsibly Dispose of Your Electronics (link) 3. Planned obsolescence: the outrage of our electronic waste mountain (link) 4. Repairing – not recycling – is the first step to tackling e-waste from smartphones. Here’s why. (link)
Sheet 7	<ul style="list-style-type: none"> • Introduces the concept of anthropocentrism and planetary futures • Touches upon the idea of geological time. 	<ol style="list-style-type: none"> 1. Reflect on how personal choices about technology impact the planet 2. How we can step out of our shoes and understand technology on a larger scale 3. Be able to understand the role that different people play in social and economic life which shapes the world we live in, and actively build it. 	<ol style="list-style-type: none"> 1. Exploring Planetary Thinking (link) 2. How to Buy Ethical and Eco-Friendly Electronics (link) 3. Planetary boundaries: Guiding human development on a changing planet (link)
Sheet 8	<ul style="list-style-type: none"> • Blue sky thinking: Exercise to imagine digital futures • Understand how their imagination is not just about humans in the present, but also the planet and people in the future. 	<ol style="list-style-type: none"> 1. Be able to articulate their own imagination of a digital world they would like to live in, through creative ways of expression. 2. Hone skills of sketching, drawing, poetry, etc. of their choosing. 	

Further engagement

How can you take this forward and enable discussion on digital topics in the classroom/community using the toolkit as a starting point?

- Hold a debate in the classroom
- Create art posters on key concepts
- Find ways to create awareness of these issues in your community
- Digital Corner: Create a small space in your classroom/ school where students can discuss personal and digital stories each week. Set aside time to do so in a continuous way
- Hands-on sessions where students try out repairing, working with tools, etc.
- Science fair based on key concepts
- Present/showcase student's artwork from the final sheet of the toolkit and display it for others to see
- Take a challenge: Ask students to encourage one more person to use the toolkit and create awareness.
- Reach out to us for more toolkits and resources. Email: titiksha@pranavainstitute.com

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