Designing Headphones Children Can Build

Most children's headphones are designed to be used, broken and thrown away. Kibu is designed to be built, repaired and kept. The headphones arrive as a kit that children assemble themselves, learning how everyday technology works in the process. If something breaks, they can fix it, with individual replacement parts available to buy for a fraction of the cost of a new pair. And everything is 3D printed from recycled post-consumer waste, proving that additive manufacturing can produce real products that real families buy and love, not just prototypes and figurines.

Most consumer electronics are designed to be sealed, compact and difficult to open. They arrive ready to use, but when something small breaks, the entire product is often thrown away. For children's technology, this problem is especially familiar. Things get dropped, pulled apart and worn out. Yet most children's devices are designed with no thought for repairability, and often end up in landfill after a single mishap. Kibu was created to offer a different answer. What if a pair of headphones could be built by the child, repaired when needed and adapted as they grow? Most electronic products hide their inner workings. Components are glued together, screws are concealed and the internal systems remain invisible to the user. While this makes for sleek products, it also means children never learn how the objects around them actually work.

Kibu takes the opposite approach. Rather than arriving as a finished product, the headphones come as a kit of parts that children assemble themselves, with a little help from an adult if needed. The build is designed to be simple, with no fiddly screws or wires, but also genuinely revealing. As the pieces click together, children can see exactly how the structure supports the speakers, how the headband connects and how the electronics sit inside the ear cups. This small moment of making changes how children relate to the product. When you build something yourself, you look after it, and if something goes wrong, you already know how to fix it.

THE IDEA SUCCESSFULLY APPEARED ON BBC DRAGONS' DEN EARLIER THIS YEAR AND HAS PICKED UP MULTIPLE AWARDS ALONG THE WAY

Founder Sam Beaney will be a guest speaker at the Big D&T Meet on the 10th July.

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The Value of Modular Design

To make this possible, the headphones needed to be fully modular. Every part had to connect securely but still be removed easily. Traditional electronics often rely on screws, adhesives or hidden clips that make disassembly difficult. Kibu uses snap-fit connections instead, so parts click together without any tools.

If a component becomes damaged, the idea is that it can simply be replaced rather than throwing the whole product away. Getting these systems right required careful attention to tolerances, durability and usability. The parts need to feel strong and reliable while still being simple enough for small hands to assemble.

Exploring New Ways to Manufacture

Kibu also challenges some assumptions about how consumer products are made. Most rely on traditional mass-production methods that require large runs and significant upfront tooling. Kibu uses 3D printing instead, and in doing so, makes a point that the design world has been slow to acknowledge.

3D printing is still widely associated with prototypes, hobbyist projects and novelty figurines. Kibu shows it can be something more: a genuine manufacturing method for real, commercial products that families actually buy. The structural parts are printed from a recycled bioplastic that comes from plants like corn, which keeps material waste low and makes smaller production runs viable.

It also means that when a single part breaks, it can be printed and replaced on its own, without discarding the rest of the product. Softer elements such as the ear cushions use TPU, a flexible material that provides comfort while remaining durable. Balancing these materials was a key part of the design process, ensuring the headphones feel robust and well-made while staying true to the sustainability goals of the project.

Thinking About the Full Lifecycle

From the beginning, Kibu was designed with the full lifecycle in mind. Most electronic products follow a straight line: manufactured, used briefly, then discarded. Kibu aims to break that pattern. The modular structure means components can be repaired or replaced rather than thrown away, and the materials can be separated more easily at the end of the product's life. In some cases, returned parts can even be processed and used to make new components, keeping materials in circulation for longer.

A Product That Encourages Curiosity

Perhaps the most lasting thing about building a pair of Kibu headphones is what it leaves behind. When children put them together themselves, they begin to understand how everyday technology is actually made. They can see how the components fit, how the structure supports the electronics and how the whole thing becomes a working object.

It is the kind of hands-on STEM learning that no worksheet can quite replicate. It sparks curiosity, and reinforces a simple but powerful idea: that the technology around us was designed and made by people, and that we can understand it, fix it and even improve it. The headphones become more than just something to listen to. They become a child's first real encounter with the designed world.

Challenging Throwaway Technology

Kibu sits within a broader conversation about the future of consumer electronics. Electronic waste is growing, repairability is declining and product lifespans are shortening. Designers have a real opportunity to push back against these trends. By prioritising repairability, modularity and sustainable materials, it is possible to create products that last longer, generate less waste and mean more to the people who use them. That this approach resonates beyond the design community is reflected in Kibu's reception: the headphones have won multiple awards and featured on BBC Dragons' Den, where the company attracted investment from the Dragons.

Looking Forward

Kibu began with a simple question: what would children's electronics look like if they were designed to last, to be understood and to be fixed? The answer turned out to be something that works equally well as a product and as a learning tool, proving that sustainability and education do not have to be compromises. They can be the whole point. For students and teachers of design and technology, Kibu is a useful reminder that conventions are worth questioning. Just because something has always been made a certain way does not mean it has to stay that way. Some of the most interesting design thinking starts with a simple question: what if we designed it differently?