

EARLY-STAGE EVIDENCE · DISCRETE CHOICE EXPERIMENT

Parental Preferences for AI-Powered Early Childhood Education Tools

Evidence from a discrete choice experiment with 451 Kenyan parents, quantifying what families want from AI learning tools and what they can actually afford.

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Kernel Institute generates evidence for reducing societal-scale risks from transformative technologies. kernelinstitute.org

As artificial intelligence enters early-childhood classrooms and living rooms across low- and middle-income countries, developers and policymakers have had little evidence on what families actually want or can afford. This snapshot summarizes a discrete choice experiment with 451 Kenyan parents of children aged 0–8, who evaluated 10,824 hypothetical AI learning-tool profiles that varied by interaction style, content focus, parental control, support, and price. Parents placed the highest value on comprehensive parental control and mathematics content, and penalized tools that require sustained parent-child co-use. Price sensitivity was severe, and most acute among the low-income, rural, and less-educated households who valued the tools most. The evidence points to a two-tier market: without deliberate pricing, safeguards, and design choices, AI-powered early-learning tools risk widening, not narrowing, educational inequality.

FINDINGS

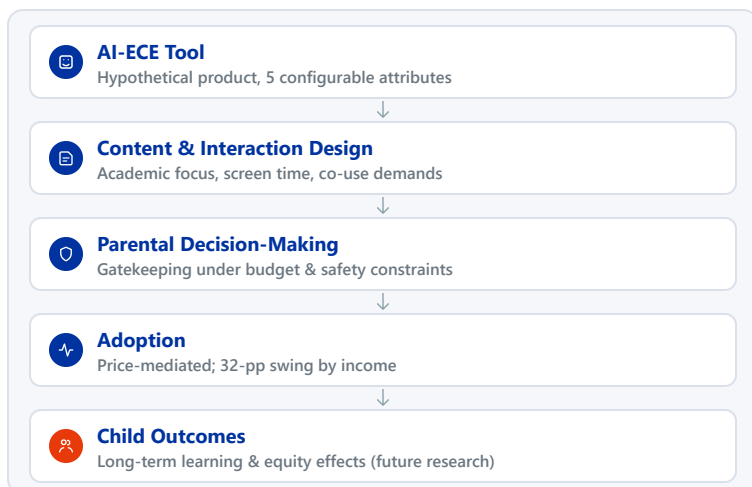
-  **Full parental control:** WTP KES 3,598/mo (≈USD 27.68)
The single most valued feature in the study, worth more than the premium subscription price itself.
-  **Math & problem-solving content:** WTP KES 3,185/mo (≈USD 24.50)
More than double the premium for reading/vocabulary content (KES 1,365), reflecting Kenya's exam-oriented system.
-  **Mixed (parent-assisted) interaction:** WTP –KES 1,776/mo (≈USD –13.66)
Parents require a discount to accept designs demanding sustained co-use, a 9.8-point drop in adoption probability.
-  **Cost is the strongest brake on adoption:** –5.6 pp per KES 1,000
Every ≈USD 7.70 added to the monthly fee cuts the probability a parent chooses the tool by 5.6 percentage points, on average.
-  **The equity paradox:** up to 32 pp gap by income
Low-income households value features 3–7× more than high-income peers, yet show far greater price sensitivity.
-  **Preferences are not one-size-fits-all:** up to 7× spread
WTP for full control ranges from KES 964 (highly educated) to KES 6,440/mo (urban parents) across sub-groups.

IMPLICATIONS

-  **Build strong parental controls by default**
Make data, content, and privacy controls a standard feature, not a paid upsell, with clear on/off modes rather than granular menus few parents will use.
-  **Prioritize mathematics & foundational content**
Lead product roadmaps with numeracy and literacy; position creativity and socio-emotional content as a complement, not the core offer.
-  **Avoid interaction models requiring heavy supervision**
Design tools as clearly child-led or clearly parent-led. Hybrid modes add supervision burden for time-constrained caregivers without a matching benefit.
-  **Use tiered pricing and subsidies**
Pair a genuinely usable free tier with cross-subsidized premium tiers, and route public subsidy toward the households most price-sensitive.
-  **Develop child-data protection standards**
Kenya's regulatory gap leaves families as the sole data guardians. National standards would back the safeguards parents are already paying a premium for.
-  **Design differentiated tools for different segments**
A single national product will under-serve someone. Offer control-forward and content-forward bundles tuned to income, geography, and education level.

METHODOLOGY AT A GLANCE				
SAMPLE	METHOD	OBSERVATIONS	ETHICS REVIEW	FIVE ATTRIBUTES TESTED
451 Kenyan parents, children 0–8	Discrete Choice Conditional & mixed logit	10,824 choice tasks · 12 per parent	NACOSTI Permit P/25/4178956	InteractionContentControlSupportCost

1 CONTEXT: AI IN EARLY CHILDHOOD EDUCATION



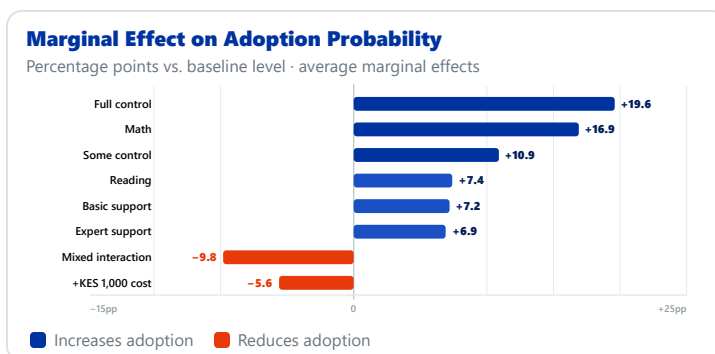
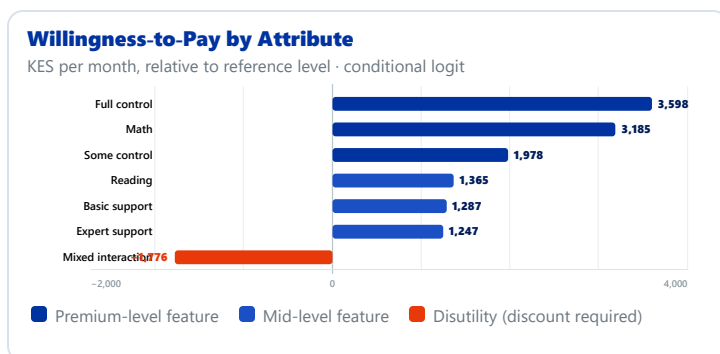
- Opportunity**
Personalized instruction can extend quality ECE where teacher shortages and school closures limit access.
- Privacy concern**
AI tools capture continuous behavioral & developmental data with little regulatory oversight in most LMICs.
- Equity concern**
Income shapes not just whether families can pay, but which features they can even afford to prioritize.
- Access barrier**
Connectivity, data cost, and digital literacy decide whether an "available" tool is actually usable.

2 RESEARCH DESIGN: FIVE ATTRIBUTES, THREE LEVELS EACH

ATTRIBUTE	LEVEL 1	LEVEL 2	LEVEL 3
Interaction	Fully interactive, child-led	Mixed, child and parent	Passive, video or audio
Content	Reading, language & vocabulary	Math & problem-solving	Creativity & imagination
Control	Tool-managed, minimal input	Some parent-adjustable settings	Full control of data, content and privacy
Support	None provided	Simple tips, setup, FAQs	Step-by-step guides + expert help
Cost	Free (KES 0/month)	Standard (KES 2,500/month)	Premium (KES 6,000/month)

Full factorial = $3^5 = 243$ possible profiles. A D-efficient fractional factorial design (Stata DCREATE) generated 12 orthogonal, unlabeled paired comparisons per respondent, yielding 10,824 choice observations in total.

3 KEY QUANTITATIVE RESULTS



4 EQUITY INSIGHTS

“The families who value AI educational tools most are also the families least able to afford them.”

INCOME

–32.0 pp

Adoption drop per KES 1,000 for low-income households, compared with a statistically insignificant effect for high-income households, who value most features near zero.

GEOGRAPHY

–29.8 pp

Non-urban households' price sensitivity, compared with –17.9 pp in urban areas. Non-urban parents also show the strongest aversion to mixed interaction (–KES 3,882).

EDUCATION

–47.3 pp

The single largest gap in the study: price sensitivity among lower-education parents, versus –7.3 pp for highly educated parents.

5 BOTTOM LINE

TAKE-AWAY FOR DEVELOPERS, POLICYMAKERS & FUNDERS

AI can expand educational opportunity, but without affordability measures and strong parental safeguards it may reinforce existing inequalities.