UGANDA NIB MANUFACTURING BRIEF

Uganda is well positioned to manufacture stylus nibs for the Freedom Classroom program using standard micro-injection molding equipment. Nibs contain no electronics and require only a precision mold, imported polymer pellets, and basic factory labour. The process is simple, stable, and compatible with Uganda's light-industrial capacity.

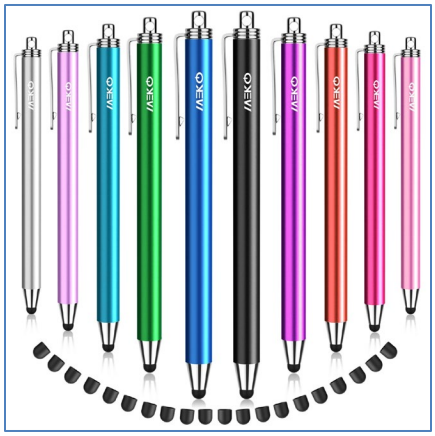
Nibs are essential consumables. Each student will typically use twenty nibs per year. Uganda's initial requirement of one hundred thousand nibs per year (for five thousand students) will increase proportionally as the program scales. A single small injection machine can easily support this volume while also supplying future regional demand.

Producing nibs locally reduces long-term costs, builds national ownership of the supply chain, and supports Uganda's industrialization goals. It also aligns with the country's employment priorities. African labour structures emphasize community participation and broader household support. Expanding the labour component of nib production is appropriate and responsible in this context. The operation can intentionally employ a larger workforce across packaging, storage, logistics, administration, reception, groundskeeping, and security without affecting production quality.

Nib manufacturing does not require advanced engineering or specialized technicians. Staff can be trained quickly, and all operational tasks, including quality checking, counting, sorting, packaging, labeling, and logistics preparation, can be performed by local workers. Uganda will own the manufacturing line, operate it, and manage distribution.

One mold with twenty-four cavities produces twenty-four nibs every forty-five seconds. This equals more than one million nibs per year on a single shift. This capacity is more than sufficient for national needs and provides room to supply neighbouring countries as the Classroom Package expands across Africa.

Nib production contributes to Uganda's mission to add value locally, create sustainable employment, and build industrial capacity that aligns with future educational technology programs. With modest equipment, predictable inputs, and a labour-rich structure, Uganda can become the regional supplier for stylus nibs across East and Central Africa.



Uganda Nib Manufacturing Unit - Cost Model

Capital Equipment

Injection molding machine (30–60 ton) 20,000–45,000 USD
Precision multi-cavity mold (24 cavities) 4,000–8,000 USD
Auxiliary equipment (dryer, grinder, safety gear) 2,000–5,000 USD
Initial resin pellet inventory (POM or PBT) 1,500–3,000 USD
Initial packaging materials 300–800 USD
Factory setup (local electrician, tables, shelving) 1,000–2,000 USD
Total estimated start-up cost 28,800–63,800 USD

Operating Costs (Annual)

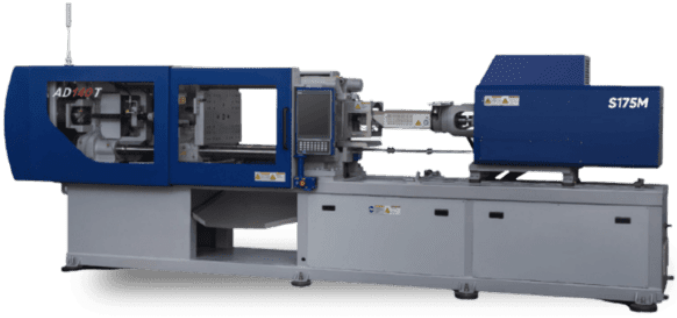
Labour – expanded workforce (12–18 workers) 12,000–24,000 USD
Electricity 1,200–2,000 USD
Resin pellets (for 1 million nibs) 8,000–12,000 USD
Packaging (sachets for 50,000–200,000 packs) 300–1,200 USD
Machine maintenance 500–1,000 USD
Quality control tools and consumables 150–300 USD
Total estimated annual operating cost 22,150–40,500 USD

Production Capacity

One mold, 24 cavities, cycle time 45 seconds
Per hour 1,920 nibs
Per 8-hour shift 15,360 nibs
Per year (260 shifts) ~4,000,000 nibs
Recommended educational capacity ~1,000,000 nibs per year
Cost Per Nib (Local Production)
At 1 million nibs per year 0.03–0.06 USD each

Staffing Requirements

Factory supervisor
Machine operator
Packaging team
Quality control staff
Warehouse and shipping clerks
Reception and admin support
Security personnel
Maintenance and cleaning staff



Space Requirements

100–200 square feet for machine and workspace

Timeline

Mold fabrication 4–6 weeks
Machine procurement and shipping 3–6 weeks
Factory setup and training 1–2 weeks
Operational start 8–12 weeks from approval