

## **NASENI FutureMakers: Building a Generation of Creative Problem-Solvers.**

### **1.0 PROGRAM CONTEXT**

The FutureMakers by NASENI is a transformative initiative designed to identify, nurture, and empower young innovators between the ages of 5 - 16 across Nigeria. This programme fosters a culture of creativity and innovation, equipping young talents with the resources, mentorship, and opportunities needed to develop groundbreaking solutions that address real-world challenges. The programme plays a pivotal role in strengthening Nigeria's innovation ecosystem, ensuring that the next generation of leaders has the skills, funding, and guidance necessary to drive progress and sustainable development.

The program seeks to empower young Nigerians to tackle societal challenges through innovation and Design Thinking (DT), by offering them financial support, training, and mentorship. By building skills and fostering creativity, it strengthens the local innovation ecosystem and promotes sustainable, homegrown development.

FutureMakers is more than just a programme—it is a movement to spark curiosity, encourage critical thinking, and build foundational skills in science, technology, engineering, and innovation from an early age. Through hands-on activities, guided mentorship, and creative exploration, children are given the tools and confidence to imagine, design, and build the future. By investing in our youngest thinkers today, NASENI is shaping the inventors of tomorrow.

#### **1.1 Brief on Design Thinking in Nigeria**

Design thinking is steadily rising across Nigeria, driven by innovation hubs, technology programs, entrepreneurial ecosystems, and specialized training academies. Existing evidence highlights strong adoption among youths, startups, SMEs, and professional innovators <sup>1</sup>. However, participation among children aged 5–16 remains extremely low, leaving a significant gap in early creative problem-solving development.

### 1.1.2 Current Design Thinking Statistics/Land Scape in Nigeria

Although Nigeria does not yet maintain a national dataset on design-thinking adoption, available program records and studies provide insight into key trends:

#### **a. Skills Development and Innovation Programs**

- Training institutions such as The Innovation and Design Thinking Academy (TIDA) have supported over 250 learners through structured design-thinking programs.
- National workshops e.g. The National Information Technology Development Agency (NITDA–FutureMap) consistently shows over 90% of participants find design-thinking skills relevant and immediately applicable.
- Participation is largely youth-driven:
  - 57% of trainees are aged 25–34
  - 27% are aged 18–24 <sup>2</sup>

#### **b. Startup and Technology Ecosystem**

- Startups in fintech, edtech, healthtech, and product design increasingly apply design-thinking tools such as empathy mapping, prototyping, and user testing.
- Research confirms that design thinking significantly boosts innovation performance and business success among Nigerian entrepreneurs.

#### **c. Education and Social Innovation**

- Studies indicate that design-thinking-aligned skills—creative thinking, problem solving, and adaptive learning—enhance student engagement, social development, and learning outcomes.
- Despite this potential, design thinking remains concentrated in tertiary institutions and youth innovation programs, with limited integration at early education levels.

## **1.2 Key Gap: Limited Design Thinking Exposure Among Ages 5–16**

Despite rising national interest in innovation and creativity, the following are still major gap:

- There is **no significant national data** showing widespread design-thinking exposure for children in primary or junior secondary school.
- Due to the absence of national data to show participation of children within the age bracket of 5-16 to have been involved in design thinking programmes but actively among youth. According to UNICEF, the estimated number of children aged 5-16 is 50million (one-third of 150 million children) <sup>3</sup>. It can then be assumed that design thinking between age 5-16 is **less than 1%** presently in Nigeria.

**Key limitations include:**

- Lack of curriculum integration
- Insufficient teachers training
- Low public awareness
- Limited access to innovation-focused resources in basic schools.
- Adequate funding

The above limitations leave a crucial developmental age group underserved and without early exposure to innovation mindsets.

**1.2.1 NASENI Strategic Intervention**

NASENI intends to bridge this national gap by championing design-thinking education for younger learners.

NASENI aims to: Increase design-thinking exposure for children aged 5–16 to at least *1.02%* *within the next 1 year*.

If Nigeria currently has <1% design-thinking education coverage

<1% of 50 million ≈ up to 500,000 children.

Adding 10,000 new learners gives:

$$500,000 + 10,000 = 510,000$$

$$\text{New coverage: } (510,000 \div 50,000,000) * 100 = 1.02\%$$

1 year - 1.02%

Next 3 years -  $1.02 * 3 = 3.06\%$

### **1.3 RESEARCH GOAL**

To assess the current level of Design Thinking exposure, skills, and enabling environment among children in Nigeria and possible solutions to improving it.

### **1.4 RESEARCH OBJECTIVES**

- To determine the current capacity and knowledge of innovation/DT principles among children in Nigeria.
- To assess the existing access to resources (physical and digital) that support hands-on innovation.
- To establish sustainable solutions for enhancing DT in Nigeria, with lessons from other countries that have adopted it.

### **1.5 RESEARCH QUESTIONS**

i. How do educational quality, socio-economic conditions, and learning environments across Nigeria's six geopolitical zones influence the development of design thinking, critical thinking and innovation skills among children aged 5 to 16?

ii. What barriers, educational, socio-cultural, or infrastructural, limit early exposure to research-based thinking and design-led problem solving among Nigerian children?

iii. In what ways can localized, community-driven research and innovation initiatives stimulate creativity and problem-solving skills among children at the regional level?

iv. How can evidence-based strategies be designed to address disparities in educational access and innovation exposure among children across Nigeria?

v. What global standards and lessons can be learnt from other countries that have adopted Design Thinking in their curriculum for kids aged 5-16?

## 1.6 PROBLEM STATEMENT

Despite the vast potential and creativity of children within the 5 to 16 age bracket in Nigeria, there remains a significant gap in early exposure to research-based thinking, innovation, and design-led problem-solving. This gap is further widened by systemic educational challenges, socio-cultural barriers, and limited access to programmes that encourage critical and design thinking at a young age.

A report from Vanguard Newspaper on May 9, 2024, shows a high number of children out of school, which poses one of the biggest challenges in the North East states. Nigeria faces a critical educational access challenge. UNICEF estimates that **18.3 million children** in the country are currently out of school, representing one-third of the nation's child population, a figure that places Nigeria among the nations with the highest population of out-of-school children globally <sup>4</sup>. Even among those who are enrolled, attendance remains inconsistent, with only **63%** of primary-school-aged children attending classes regularly.

The situation is equally concerning at the junior secondary level, where about **8.1 million children** are out of school <sup>5</sup>. These numbers highlight a significant access gap: millions of children who might benefit from early exposure to research-based thinking, creativity, innovation, and design-led problem-solving are unable to engage with or complete formal education.

In addition to limited access, the quality of learning for those in school remains alarmingly low. UNICEF reports that **74% of children aged 7–14** lack foundational reading and mathematics competencies, despite being enrolled in school <sup>5</sup>

To effectively address these challenges, the FutureMakers programme by NASENI is strategically structured into three levels: Regional, National, and International.

**1.7.1 At the Regional Level**, the programme will explore challenges that inhibit critical thinking and innovation among children across selected states in Nigeria’s six geopolitical zones. These may include gaps in early childhood science education, a lack of stimulating learning environments, and socio-economic factors that limit access to exploratory learning. It will also identify opportunities for localized research studies that could inspire young minds within this age group.

**1.7.2 At the National Level**, the focus will shift to identifying broader educational and infrastructural challenges affecting children across the country. Recognizing that each geopolitical zone may face unique educational issues, this level aims to unify and address these disparities through evidence-based strategies.

**1.7.3 At the International Level**, FutureMakers will examine successful case studies from advanced countries that have implemented and sustained design thinking and research-led programmes for children. By benchmarking global best practices, NASENI aims to adapt and replicate models that have proven effective in cultivating innovation, scientific curiosity, and research-oriented mindsets among young learners.

The FutureMakers initiative is therefore a response to these layered challenges, driven by the urgent need to equip Nigeria’s future generation with the mindset, tools, and environment needed to become world-class researchers and innovators from an early age.

## **2.0 Regional Level (Nigeria)**

### **a. North East (Borno, Yobe, Adamawa, etc.)**

- **Conflict and displacement:** Years of insurgency have closed or damaged many schools and disrupted learning, making regular, continuous design-learning cycles (projects, prototyping, iteration) extremely difficult. Many children are displaced or unreachable. According to the International Organization for Migration (IOM), the number of displaced persons as of 2024 in the aforementioned three states is approximately 2.27 million people <sup>6</sup>

- **Very high out-of-school rates:** According to UNICEF in November, 2024, approximately 2 millions children are out of school from the three combined states in the North East, out of which 56% of the displaced children don't attend school and in June 2025 UNICEF report stated that from these three states 444,298 in Adamawa, 875, 814 in Borno and 328,690 in Yobe were identified to be in need of education <sup>3</sup>. This region contains one of the largest shares of out-of-school children, reducing the population that can access innovative education.
- **Negative thought against western education:** The belief by some groups in the North East, that western education system is the major problem for social-economy and moral wellbeing of muslims has resulted in religious and social fights and attacks not only in the North East but also in some other parts of the country, which has in turn reduced the number of children attending schools and their passion for education around this region. The deadly terrorist group Boko Haram believed in the ideology that western education is a sin and should be forbidden <sup>7</sup>. This has resulted in killing in most parts of the North East and the fear to attend school.
- **Trauma and psychosocial needs:** According to UNICEF, in 2024, about 5,129 out of school children in Borno of the North East alone are suffering from trauma and psychosocial problems. Children affected by conflict need safe-learning environments and psychosocial support before they can engage in creative, collaborative design activities <sup>3</sup>

*Thematic Area for Hacking: Conflict and security issues*

*Hackathon Question: How can we invent new tools, games, or systems to help everyone in the North-Eastern communities stay safe, feel connected, and solve problems peacefully?*

*Generic: Do you have an innovative solution to limiting the rate of insecurity in the North/East?*

*E.g., Age 5-10 (poster presentation, drawings, etc), Aged 10-16 (an app, a game, a website, etc.)*

**b. North West (Kano, Katsina, Sokoto, etc.)**

- **High out-of-school and Qur'anic-only schooling:** Significant numbers attend informal Qur'anic schools that do not teach foundational literacy/numeracy or creative problem-solving, limiting entry points for design thinking.
- **Low digital and household device access:** Survey done by the Nigeria National Bureau of Statistics on Nigeria General Households Survey Panel indicated that only 13.9% of males and 13.6% of female children in the North West from 10 years and above have access to the internet, approximately 42.9% in the Northwest have phone while approximately 3.2% of the household in the Northwest have personal computer at home <sup>8</sup>. Computer and internet ownership is far lower than in southern regions, constraining digital prototyping, research and remote collaboration.
- **Early marriage of the female child:** Research has shown that 78% of the female children in the Northern region marries before 15 years, out of which 48% of the girls in the North East and North West combined married at 15 years, while 33% of females in Sokoto State married before the age of 15 years <sup>9</sup>. Early marriages by the female children in the northern region of the country has limited their ability, stagnated and frozen their design thinking potentials that would have been put for future development of the country.
- **Cultural & gender barriers:** Stronger gendered barriers in some states mean girls have less access to extracurricular innovation programmes unless intentionally targeted.

*Thematic Area for Hacking: Gendered barriers to innovation and innovative thinking*

*Hackathon Question: How can you design a fun new game, tool, or activity that helps every girl and boy in your community feel equally smart, brave, and excited about inventing new things?*

**c. North Central (including Federal Capital Territory, Plateau, Benue, Niger, Kwara, Kogi)**

- **Mixed access; pockets of strength and weakness:**The FCT being the country's capital and state of power, together with a few states, shows better school infrastructure, good teachers, befitting furniture, and a conducive learning environment, while neighbouring rural states still have teacher shortages, low extracurricular provision, and poor learning environments. A report from the Education Policy & Data Centre (EP&DC) when put together with the report by National Population Census 2022 on Early Childhood Care Development and Education (ECCDE) comparing FCT with two North Central states, Niger and Benue States precisely. The population within age 5-16 years of primary school pupils shows that FCT has a population of 1,014,252 with 8,930 registered teachers, 3,507 unregistered teachers, 135,655 furnitures both in primary schools and junior secondary schools, while Benue has population of 2,544,770 with 10,471 registered teachers, 3,375 unregistered teachers, 233,712 furnitures and Niger 3,083,918 in population with 12,450 registered teachers, 12,719 unregistered teachers and 149,645 furnitures. This shows that FCT has smaller population with age 5-16 but with better infrastructure relative to population. Niger state having highest population with respect to the available furniture shows that it has more serious structural and functional issues in schools among the North Central states [10](#)
- **Food security, conflicts and out-of-school children:** The problem of food security has been linked to insecurity and out-of-school children. According to a report by the International Journal of Innovative Research in Education, Technology and Social Strategies, insurgency blocks food

supply routes, leading to chronic hunger and malnutrition in children, especially in states like Niger, Plateau, Benue and Nasarawa.<sup>1</sup>

- **Preferential treatment of farming compared to former education:** The majority of the parents in the North who take farming as their source of livelihood tend to engage their children in farming activities to boost their farming production as compared to former education. According to Nigeria's 2022 Child Labour Survey, children aged 6–14 working in agriculture have the *lowest school attendance* among children in labor: only 60.7% of these children attend school. Many children working on farms spend time that would otherwise be for school <sup>11</sup>. This tends to suppress the potential of children who would have been involved in the future potential development of the nation.
- **Lack of Technical Vocational Education Centre (TVET)–school linkages:** According to the National Board for Technical Education (NBTE), there are 1268 accredited TVET centres across Nigeria (which could support hands-on making and prototyping). Among these numbers, there are about 347 of the Centres in the North Central, with 108 in the FCT, 53 in Benue, Niger 47, Plateau 34, Kwara 32, Nasarawa 40 and Kogi 33 <sup>12</sup>. Despite the existence of these TVET centres there are quite a number of policy and operational challenges like proper funding, collaboration with private organizations e.t.c. These have created gaps to some of the vision of TVET centres in aligning with basic schooling, limiting pathways for applied and design-based learning.

*Thematic Area for Hacking: Food security as a result of insurgency in the region*

*Hackathon Question: How can we invent new ways to safely grow, protect, and share enough healthy food for every family in the North Central?*

**d. South West (Lagos, Oyo, Ogun, etc.)**

- **Better digital/connectivity baseline but inequities remain:** Urban centers (Lagos, Ogun) in the South West have higher internet and device access. According to the Bureau of Statistics quarterly Telecom data report of first quarter 2023, the total number of internet subscriber as that period was 157,551,104, out of which Lagos has highest number of 18,778,744 subscribers, followed by Ogun with 9,352,222 and Kano 8,680,524 subscribers <sup>13</sup>. This serves as an advantage to enabling more hackathons, clubs and maker activities, but many peri-urban and slum schools still lack consistent power/devices.
- **Overpopulation against education in less developed states:** The development of some of the south-west states, like Lagos, has caused overpopulation in this region. This has created migration of people from other states to Lagos, thereby increasing the population and development of the state, but in turn creating less development in the North and making the North's educational system less developed. According to Oluwaseun and Franklin, the population of Lagos state increased at the rate of approximately 3.5% annually, which made Lagos to be ranked among the top 10 fast growing mega cities globally <sup>14</sup>.
- **High cost of quality education system and competition:** Development of some of the states in the south west has tended to spring up private schools, creating rivalry and competition with the government-owned schools. It is believed that the private school does better than the government school, but the cost of the private school is exorbitant. The exorbitant cost sometimes denies some potential children, whose parents cannot afford private school, the opportunity of quality education and deep thinking <sup>15</sup>.
- **Stronger ecosystem but limited scaling into public schools:** Start-up hubs, private edtech and NGOs run innovation programmes, yet linkages to public curricula and teacher professional development are limited. Nigeria's technology and innovation landscape has expanded rapidly, with estimates ranging from several dozen to over a hundred active hubs

nationwide. Recent national mapping (2024–2025) identifies roughly 85 operational tech and innovation hubs, the majority of which are concentrated in Lagos and Abuja <sup>16</sup>. This distribution highlights the two cities as the country’s primary innovation anchors, hosting the largest clusters of start-ups, incubators, and digital entrepreneurship activity but with a major challenge of the skills and knowledge still restricted to NGOs, few business owners with very limited or number of public schools tapping from the knowledge <sup>17</sup>.

*Thematic Area for Hacking: High cost of education, especially for the average family*

*Challenge Question (Children can relate): How can we invent new, fun, and affordable ways to help every child in the South West get the best school lessons and learning materials without their parents spending too much money?*

*Generic: Do you have a solution to solve low-cost access to quality education for low-income families?*

e. **South East (Enugu, Anambra, Imo, Abia, Ebonyi)**

- **Good human capital, strong private initiatives but not system-wide:** The region has active private training providers and youth innovation hubs, useful for after-school design thinking, but many programmes are urban and not system-wide. The ecosystem Report 2022: Nigeria Start up Scene, gathered that, there are 132 hub/incubator centres in the six geo political zones of the country. Only about sixteen (16) of these incubators, accelerators, and tech hubs are in the South-East geopolitical zone with most of these hubs located in Anambra, Enugu and Imo State. Others are: 53 are in the South-West, 24 in North-Central, 16 in South-South, 15 in North-West, and 8 in North-East <sup>18</sup>.
- **Engagement of children in trade:** In many parts of Southeast Nigeria, a growing number of children, particularly boys, are becoming increasingly

involved in trading and small-scale business activities, often at the expense of formal education. This trend is deeply rooted in cultural, economic, and social factors, where early involvement in trade is seen as a quicker path to financial independence and success. A 2022 survey conducted by the National Bureau of Statistics (NBS), as cited in media reports, revealed that the Southeast geopolitical zone had the highest prevalence of child labour in Nigeria, with approximately 49.9% of children engaged in work <sup>19</sup>. While entrepreneurship is valued in the region, the early withdrawal of children from school to pursue business often limits their long-term potential, especially in a rapidly evolving, knowledge-driven global economy.

- **Insecurity and political tension:** Issues related to IPOB have forced individuals to stay at home at a particular day in the week, which tends to affect academic activities, which might also cause brain drain among the children. Fear may also cause a family to relocate from this region to another state, which also tends to affect the children's education.
- **Brain drain & funding limits:** Skilled teachers and mentors may migrate for better pay; sustained public financing for maker labs is weak.

*Thematic Area for Hacking: Engagement of children in trading instead of schooling*

*Challenge Question: How can we invent new, fun, and useful ways to make school so exciting and valuable that every child chooses the classroom over the market?*

**f. South South (Rivers, Bayelsa, Delta, Cross River, Akwa Ibom, Edo)**

- **Environmental shocks & infrastructure damage:** Flooding and climate impacts (and oil-related infrastructure issues in some states) disrupt schooling and make continuity for multi-week design projects harder. According to a 2024 NEMA situation report, flooding affected 1,346,413

people across 211 LGAs of the South South states <sup>20</sup>; also according to the Nigerian Climate Change Adaptation report: large parts of the Niger Delta's coastline are vulnerable, which threatens infrastructure, housing, and agricultural lands. Approximately 440 hectares of farmland has been affected with a death rate of 662 people and estimated direct damage of 6.68 billion dollars <sup>21</sup>.

- **Industry proximity but weak school–industry integration:** The presence of industry could support applied problem projects, but formal partnerships with schools for mentorship and materials are still limited. A study in the *International Journal of Vocational Education & Training* argues that the Nigerian TVET system has a gap, with the implication that TVET graduates are not adequately “productive in industries for which they received training” because of *limited partnership between TVET institutions and industries*.

***Thematic Area for Hacking: Weak academia-industry integration***

***Challenge Question: Do you have inventive, new, fun, and innovative ways to connect what students learn in school with the cool jobs, industries and companies right here in the South South?***

### **3.0 National Level**

Even though primary education is officially free and compulsory, about 10.5 million of the country's children aged 5-14 years are not in school. Only 61 per cent of 6-11-year-olds regularly attend primary school, and only 35.6 percent of children aged 36-59 months receive early childhood education<sup>22</sup>.

In the north of the country, the picture is even bleaker, with a net attendance rate of 53 per cent. Getting out-of-school children back into education poses a massive challenge.

Gender, like geography and poverty, is an important factor in the pattern of educational marginalization. States in the north-east and north-west have female primary net attendance rates of 47.7 percent and 47.3 percent, respectively, meaning that more than half of the girls are not in school<sup>22</sup>. The education deprivation in northern Nigeria is driven by various factors, including economic barriers and socio-cultural norms and practices that discourage attendance in formal education, especially for girls.

Ensuring educational provision in predominantly rural areas and the impact of insurgency in the northeast present significant challenges. In north-eastern and north-western states, 29 percent and 35 percent of Muslim children, respectively, receive Qur'anic education, which does not include basic skills such as literacy and numeracy. The government considers children attending such schools to be officially out-of-school.

In north-eastern Nigeria, 2.8 million children are in need of education-in-emergencies support in three conflict-affected states (Borno, Yobe, and Adamawa). In these states, at least 802 schools remain closed, and 497 classrooms are listed as destroyed, with another 1,392 damaged but repairable.

*Other challenges include:*

**3.1 Curriculum oriented to rote learning—not creativity or problem solving:** National curricula and assessments still emphasize memorization over the 21st-century skills (creativity, critical thinking, and collaboration) that underpin design thinking.

**3.1.2 Weak teacher capacity for active, learner-centred methods:** Many teachers lack training, time, and incentives to deliver project-based learning and human-centred design activities, or to assess transferable skills. UNICEF programs are prioritizing teacher development for these gaps.

**3.1.3 Poor digital infrastructure and limited digital literacy:** Low internet use, patchy electricity, and limited access to devices mean children and teachers cannot routinely use digital tools that support prototyping, research, and collaborative design processes. UNICEF notes large gaps in youth digital literacy and teacher ICT skills <sup>23</sup>.

**3.1.4 Lack of safe, resourced spaces for hands-on learning and prototyping:** Makerspaces, labs and materials for low-cost prototyping are rare in many schools; without physical spaces and materials, hands-on design cycles (build–test–iterate) are difficult to run at scale.

**3.1.5 Insufficient integration between formal education and extracurricular innovation programs:** There are promising design challenges and youth innovation initiatives (UNICEF and partners run design challenges), but they are often one-off or not linked into mainstream schooling. Scaling and sustainability remain issues.

**3.1.6 Weak measurement and assessment of creativity/innovation skills:** Standard assessments focus on literacy/numeracy; few systems routinely measure creativity, design thinking, or problem-solving outcomes, making it hard to track progress or justify investment.

**3.1.7 Policy and financing gaps for scale:** Even where pilot programs exist, insufficient financing, weak policy alignment, and fragmented partnerships prevent countrywide adoption of design-thinking pedagogies. International reports call for better policy and financing approaches.

#### **4.0 International Level: Success stories from other countries that have adopted DT in their education systems for children.**

**A. FINLAND - phenomenon-based learning (PhenoBL) & inquiry/design approaches:** Finland introduced phenomenon-based learning into the national core curriculum (2014 onwards). Schools run cross-curricular, real-world projects where students investigate themes (e.g., “energy”, “urban life”) using inquiry, problem solving and collaborative project work , approaches very close to design thinking in practice <sup>24</sup>.

Studies and reports highlight higher student engagement, deeper interdisciplinary understanding, and stronger inquiry and metacognitive skills where PhenoBL is well implemented. Case studies show improved motivation and application of

learning to real problems (though outcomes depend on teacher capacity and whole-school support).

**B. SINGAPORE - systematic introduction of design thinking in schools:**

Singapore's Ministry of Education (MOE) has actively promoted design thinking through project-based programmes, teacher training, and formal curriculum guidance so students practise human-centred problem solving from early secondary levels. MOE also partners with design education initiatives and runs teacher capacity building.

Reporting from education commentators and MOE case summaries indicates improvements in students' creative confidence, collaborative skills and readiness for future work; Singapore frames design thinking as part of its workforce/skills strategy. Independent evaluations note gains when teacher professional development and assessment alignment accompany the pedagogical shift <sup>25</sup>.

**C. NEW ZEALAND - design thinking embedded in the technology curriculum:**

The New Zealand Curriculum explicitly frames technology education around design processes (problem identification, design, prototyping, evaluation), giving students regular, assessed practice in creative problem solving and ethical reflection.

National curriculum materials and school case studies report improvements in students' practical design capability, confidence making prototypes, and ability to consider social/environmental impacts. Success depends on teacher expertise and access to workshop resources.

**D. UNITED STATES (selected districts) - d.school resources, K-12 maker**

**movement:** Stanford's d.school and many US districts have spread design thinking toolkits for K-12 educators, and schools/universities have supported makerspaces, design challenges and project courses that teach iterative design and prototyping.

Systematic reviews and empirical studies of school makerspaces and maker activities show positive effects on creativity, problem solving, engagement and early STEM interest, especially when activities are scaffolded by teachers and linked to curricular goals. However, evidence also shows variability: well-designed programmes with teacher support produce the best outcomes.

**E. UNITED KINGDOM & select European programs — pilots, Nesta and curriculum experiments:** NGOs (e.g., Nesta) and several local authorities have piloted design-led curricula, maker hubs, and school–industry partnerships to build creative skills and entrepreneurship among young people. Programmes typically combine teacher training, local makerspace access, and assessed project work.

Pilots show increased student agency, entrepreneurial thinking, and community problem solving; scaling challenges often relate to sustained funding and teacher development.

## **5.0 WHAT HAS BEEN DONE IN NIGERIA?**

The Universal Basic Education Commission (UBEC) has introduced “Design Thinking, Coding, Robotics, and Artificial Intelligence (DTCRA)” in the newly established Smart Schools across Nigeria in 2024. The aim is to equip learners with skills in creativity, critical thinking, innovation, and problem-solving. While some “Smart Schools” have DTCRA, many traditional schools may not yet have design thinking formally embedded. Teacher training is being expanded, but not universally.

Nigeria Learning Passport (NLP) was launched with support from UNICEF and others. The NLP is a digital learning platform (online + offline) offering curriculum-aligned content in local languages. Even with digital platforms like NLP, many schools still struggle with devices, power/internet, or reliable offline access.

In the midst of these efforts, the following challenges exist:

- Limited data on how well students are actually developing creativity, iteration, prototyping, etc. Studies are emerging (e.g. Rivers State) but on a small scale.
- **Scalability & sustainability:** Pilot programmes seem promising, but long-term funding, policy support and systemic adoption are still challenging.
- **Equity & regional variation:** Remote, conflict-affected and rural regions are still likely to lag behind in implementation. Whether programmes reach all marginalized children (girls, disabled, remote) is less well documented.

## **6.0 NASENI Core Programme Intervention Components**

NASENI, through the Future Maker Program will use the success stories and techniques from some advanced countries that have engaged in deep thinking to provide a comprehensive ecosystem that will support young innovators through a range of activities, including:

### **A. Training and Capacity Building**

Participants undergo structured, age-appropriate training sessions in STEM, creativity, and Design Thinking (DT)—a human-centered problem-solving approach. These sessions are designed to spark curiosity, build technical competencies, and encourage critical thinking.

### **B. Mentorship and Guidance**

Each participant or team is matched with experienced mentors, ranging from scientists and engineers to innovators and educators, who provide personalized guidance throughout their innovation journey.

### **C. Access to Resources and Funding**

To bridge the gap between ideas and execution, FutureMakers provides access to essential materials, workspaces, and funding. This enables children to prototype their solutions, test concepts, and bring their innovations to life.

#### **D. Innovation Challenges (Hackathon) and Showcases**

Children will be encouraged to participate in local, regional, and national competitions and hackathons where they apply their knowledge to address pressing societal issues. These events promote visibility, teamwork, and healthy competition, while recognizing outstanding talents.

#### **E. Promoting Design Thinking and Early Innovation**

One of the distinctive elements of the FutureMakers programme is its strong focus on Design Thinking. By embedding this problem-solving framework into the learning process, the programme will help children:

- Understand and empathize with societal challenges.
- Think critically and creatively about solutions.
- Prototype, test, and refine their ideas.
- Communicate and present their innovations effectively.

### **7.0 RECOMMENDATIONS**

**1. Policy & Curriculum Integration:** Embed design thinking in the national curriculum at basic and secondary levels, not just in Smart Schools, with emphasis on project-based, problem-solving, and inquiry learning.

**2. Teacher Professional Development:** Train teachers to be facilitators of creativity, not just transmitters of knowledge, and use coaching, peer-learning communities, and mentorship. Provide teacher toolkits (offline and online) with step-by-step DT classroom activities adapted to Nigerian contexts.

**3. Infrastructure & Learning Spaces:** Expand Smart Schools nationwide with DTCRA (Design Thinking, Coding, Robotics, AI). Create low-cost makerspaces in public schools using locally available materials (cardboard, wood, recycled plastics) for prototyping. Support digital

access: solar-powered devices, offline-enabled Learning Passport, and community-based digital hubs in rural/low-connectivity regions.

**4. Equity & Inclusion:** Target marginalised groups; Girls, children with disabilities, rural children, and those in conflict-affected zones. Provide gender-sensitive STEM/DT programs (like the UNICEF Girls' Education and Skills Partnership). Design inclusive DT toolkits with local languages and culturally relevant case studies.

**5. Partnerships:** Partner with tech companies, universities, and NGOs to co-develop design challenges, mentorship, and hackathons for school children.

**6. Assessment & Evidence Generation:** Develop assessment tools for creativity, problem-solving, and collaboration, beyond rote exams. Fund impact research to measure outcomes (motivation, adaptive learning, wellbeing, employability).

**7. Funding & Sustainability:** The Nigerian Government should dedicate a line item in education budgets for DT/innovation education. Establish public-private funds for scaling maker spaces, teacher training, and innovation challenges. Incentivise schools that demonstrate effective use of DT through grants or recognition schemes.

**8. Youth Engagement & Scaling Pathways:** Introduce national design-thinking competitions for children (regional + national showcase). Create peer mentorship models where older students trained in DT support younger learners.



## REFERENCES

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