Formal Problem Statement: STEM as a Discipline

Context: STEM (Science, Technology, Engineering, and Mathematics) disciplines play a critical role in the systematic creation and application of knowledge to solve real-world problems. As an individual with roots in the Biafra , I have observed that infrastructural solutions must be culturally and contextually tailored to the specific needs of local communities. In regions like Biafra, where the climate is hot and environmental conditions differ significantly from those in temperate zones like the United Kingdom, the design and implementation of infrastructure must reflect local realities. For instance, while the UK might prioritize heating solutions for cold weather, Biafra requires innovative cooling mechanisms suited to its predominantly hot climate, with nights that are only mildly cooler.

Problem Definition: The challenge lies in the current application of STEM principles, which often fails to account for cultural and environmental variations in different regions. Many infrastructural designs are developed with a one-size-fits-all mindset, ignoring the specific needs of diverse populations. In regions such as Biafra, applying STEM as a discipline requires not only the technical and scientific rigor of problem-solving but also a systematic integration of cultural and environmental considerations to ensure relevance, efficiency, and sustainability.

Objective: The objective is to develop a methodology within the STEM discipline that systematically incorporates local environmental factors, cultural values, and societal needs into the design process. This methodology will not only address the functional aspects of infrastructure but also align with the cultural and artistic expressions of the community, resulting in solutions that are both effective and culturally appropriate.

Solution Components:

1. **Contextual Design**: Develop infrastructure designs that account for local environmental conditions, such as climate and geography. For example, in regions like Biafra, emphasize cooling systems and materials suited to hot climates, while in the UK, prioritize heating and insulation solutions for cold environments.

2. **Cultural Integration**: Incorporate cultural elements, such as art, music, and local traditions, into the design and final revision stages of

infrastructure projects. This integration ensures that the infrastructure not only serves its practical purpose but also resonates with the cultural identity and values of the community.

3. **Iterative Design and Revision**: Apply a systematic problem-solving approach that follows the stages of concept development, proof of concept, prototyping, and final design. The revision phase will emphasize the adaptation of solutions to meet local cultural and environmental requirements, ensuring a balance between technological innovation and cultural appropriateness.

Outcome: The outcome of this approach will be the creation of infrastructural solutions that are not only scientifically sound and technologically advanced but also culturally sensitive and environmentally appropriate. By integrating STEM with cultural and contextual considerations, the methodology will foster more inclusive and effective problem-solving that respects the unique needs of different regions, such as Biafra, and aligns with their societal values. This approach will also promote innovation, enabling local communities to benefit from infrastructure that is both functional and reflective of their cultural heritage.