

Fostering Sustainable Critical Thinking and Problem-Solving Skills for Environmental Resilience in Nigeria

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ABSTRACT

This study identifies the importance of the development of sustainable critical thinking and problem-solving skills as transformative means for addressing critical environmental issues in Nigeria and the attainment of the United Nations Sustainable Development Goals (SDGs). The research, using the mixed-methods approach of combining quantitative survey data and qualitative data from interviews, assesses the extent to which Nigerian students and other stakeholders possess the capacity to make sustainable environmental decisions and the extent to which Nigerian students and stakeholders make sustainable environmental decisions. The study identifies a number of systemic issues/faults in the education system that stem from antiquated (or outmoded) systems (or practices) in education, a lack of support from educational institutions, and a lack of (or insufficient) practices in the education system that stem from issues pertaining to sustainability. The study also identifies the importance of these individuals in the educational system and in the educational system (or community) in cultivating an environment that fosters (or sustains) critical and problem-solving skills from a supportive perspective to achieve sustainable environmental practices. The study also supports (or sustains) (the development of) critical and problem-solving skills from a supportive perspective to achieve sustainable environmental practices. Lastly, the study emphasizes the importance of education institutions and the community in fostering critical and problem-solving skills to promote sustainable environmental practices.

I. Introduction

As our society continues to change at a rapid pace, the ability to think critically and solve problems will be important for students to possess the skills needed to navigate the challenges of the 21st century. The changes in the world at the moment are arguably more rapid than at any point in history. Innovation in technology, the global integration of the economy, and the global changes in societal perception, have all contributed to rapid changes in the world Trilling & Fadel [1]. Global societal perception changes positively impact the world, however, they also lead to challenges for learners in the field. These challenges require learners to acquire different abilities in order to adapt, create, and flourish Partnership for 21st Century Learning, 2009 [2]. The ability to think critically, and the ability to analyze and solve problems are all fundamental in determining the quality of an individual's economic and non economic decision making, as well as their creative problem solving ability Facione, [3]. Education and, more importantly, the ability to think critically, is at the core of achieving the Sustainable Development Goals (SDGs), according to Joseph Jintalan [4]. In the growing body of literature, there is consensus that creative problem

solving is very useful in addressing problems of sustainable development, as illustrated in the works of Pengfei Chen and Yuan-Cheng Chang [5]. In the field of management, the development of problem solving skills and sustainability awareness is still an empirical phenomenon. In the meantime, Nurwidodo et al. [6] noted that the problem-based learning (PBL) model develops the creative thinking and collaboration, and also the environmental literacy of learners. Naatonis et al. [7] validated [6] that the Problem Based Gamification Learning (PBGL) model combined with Artificial Intelligence (AI) via ChatGPT API enhances students' critical thinking skills. Halpern [8] describes critical thinking as analyzing the information, evaluating the evidence, and making a judgment, while, problem solving involves identifying a situation and, formulating and implementing an appropriate course of action. These abilities are very interconnected and are vital for the individual to navigate the complex multilayered systems in the present day world. Research shows no shortage of work to be done in order to improve thinking and problems solving skills, which is what employers are looking for given the amount of automation and AI systems integrated into day to day tasks (Fadel et al [9]). That directly correlates to the need for modern employees to have and rely on critical thinking, creativity, and problem solving due to the educational systems not providing for the World Economic Forum [10] report]. When it comes to the global challenges the world is facing, it is also necessary in order to be out of the box and work with others to problem solve or come up with critical thinking solutions, which is needed to alleviate poverty, climate change, or environmental degradation and inequity (United Nations [11]). Even with the need for these skills, research demonstrates that students are ill-prepared to address the issues and work of the 21st century (National Research Council [12]). The systems that are in place do not present issue based teaching systems, rather through a mechanistic 'banking' style whereby students are required to memorise information, and answer questions on a test by selecting a multiple-choice answer, which do not create the environment for critical thinking or problem solving to be developed (Darling-Hammond et al [13]). There is little question the teaching methodologies that are in use are in dire need of revision to ensure the framework lends itself to the development of problem solving skills and critical thinking. This study examines what ways might be used to teach critical thinking and problem solving vis a vis Nigeria's problems with the environment. More precisely, it deals with the possible and the probable when it comes to the teaching and nurturing of critical thinking and problem solving in relation to Nigeria's problems with the environment. This study seeks to contribute to the knowledge base regarding teaching methodologies that incorporate the nurturing of critical thinking and problem solving in order to create better teaching practices for the future, as the society of the learners continues to undergo rapid and unpredictable changes.

II. Theoretical Literature

The theories that help explain the study include how critical thinking and problem solving skills develop. Constructivism, as proposed by Lev Vygotsky [14], as an example, states that learners create and gain knowledge as they interact with their surroundings and that their social relations and collaboration are important for their cognitive development. Knowledge construction, through collaboration and social negotiation, engages learners in active knowledge construction [14]. This theory relates to the study as it underlines the significance of responsive and collaborative learning methods to develop critical thinking and problem solving Jonassan [15] . Social cognitive theory, created by Albert Bandura [16], addresses the learning through observation, imitation, and reinforcement, and proposes that learners develop critical thinking and problem solving through the observation of others and the feedback that follow. Schunk [17] states, "self-efficacy beliefs are fundamental to the development of critical thinking and problem solving skills." This theory relates to the study in that it highlights the importance of self-efficacy and learning through observation in the development of critical thinking and problem solving skills.

Cognitive Load Theory is applicable in an educational context in relation to the balancing of cognitive load with instruction to foster the development of skills such as critical thinking and problem solving, as pointed out by Sweller [18]. As noted by Chandler and Sweller [19], 'cognitive load can be managed through the use of effective instructional designs'. For the purpose of this study, it is significant to consider instructional designs related to cognitive load and the development of critical thinking and problem solving skills.

Empirical Literature

As David et al. [20] state, analyses of the evolution of interdisciplinary curriculum models within the framework of higher education, and specifically of the models of interdisciplinary curricula aimed at promoting sustainability as critical, thinking, and problem solving frameworks, is foremost. Given the complexity of global challenges in

relation to sustainability, the authors highlight the necessity of including the teaching of sustainability as a critical component in every field of study. The authors analyse the frameworks of theory on interdisciplinary education and elucidate the significance of such interdisciplinary structures in empowering students to address complex global issues. The authors identify numerous examples of models of integrated curriculum structures, quasi and other innovative integrated pedagogies and other examples of successful case studies, and identify barriers to individual, financial, and cultural integration.

The authors outline the need for inclusive pedagogy and integration of faculty advocacy within the framework of focused advocacy and sustained scholarly actions for the sustained effective teaching of sustainability in higher education. Edmilson [21] examines the co-design and co-delivery of the Lean-inspired modular professional development program for public employees of the Brazilian Ministry of Agriculture. Using a mixed-method approach, the study found that the integration of Lean management and digital micro-credentials positively influenced operational efficiency, training completion and learner engagement, and fostered a continuous improvement culture. Constructive critique outlines the importance of collaborative and equitable professional development instructional design and co-design. However, the study pointed out that the lack of modular recognition and digital inequity remain as barriers. The initiative provides innovation and sustainable governance in public administration for Brazil at both the educational and decentralized levels of public institutions. The initiative provides innovation and sustainable governance in public administration for Brazil at both the educational and decentralized levels of public institutions.

The accumulation of knowledge and interdisciplinarity are described by Liza [22] as constituents of environmental governance (EG) research. The author argues that politically actionable EG requires interdisciplinary assimilation to enhance its construct validity and policy relevance. Yet, EGR has been referred to as a 'fragmented adhocery' lacking a coherent set of guiding theories and research methodologies. The author attempts to address this. The author attempts to finally address this in a narrative review, claiming that the interdisciplinary integration of disparate knowledge is the most valuable, and that collaboration among researchers is paramount to creating actionable knowledge for environmental policy and practice. Innovative practice in the teaching and learning of environmental education (EE) has been described by Roslyn [23] as fostering engagement, and critical and activist learning through, inter alia, experiential learning, the use of technology and gamification, project-based learning, and the flipped classroom model, as well as through youth and adult active learning, the integration of EE and social justice, and advocacy. Innovative practice in fostering environmental and social justice, critical and activist learning, and problem-solving collaboration with and to local communities. The use of diverse and innovative practices is described as motivating students to become active environmental stewards.

Vettriselvan and Ramya [24] highlight the role of education in developing sustainable urban futures through responsive curricula. The authors examine the fusion of technology, pedagogy, and sustainability and its role in preparing learners for smart and sustainable cities. The authors argue that the three pillars of sustainable curriculum design: environmental stewardship, economic viability, and social equity, promote a sustainability mind-set in learners. The authors analyze global case studies and smart technologies, innovative pedagogies, and ecological literacy, and offer suggestions to educators, policymakers, and curriculum developers. In the study by Gene [25], the author examined the policies directed at the reduction of pollution in the Ngong River. The author created a descriptive research design using the Theory of Change and the Top-down and Bottom-up Theories and studied the government, the affected community, and the environmental stakeholder(s). The author only utilizes the SPSS for analyzing the data obtained through surveys, observations, FGDs, and Key Informant Interviews. The study discusses policy deficits, insufficient policy enforcement mechanisms, and the ambiguity of institutional boundaries.

To mitigate the impact of the study's findings on the environment, there is a need to construct more precise institutional scopes, revise policies, and improve mechanisms for policy enforcement. Masoud et al. [26] create a model that integrates with the "sustainability knowledge and decision-making framework for sustainable tourism", having critical thinking as a mediating variable. The authors employed a quantitative methodology with a sample of 146 surveys directed to students of tourism and concluded that knowledge of sustainability and critical thinking, in fact, positively and significantly affected the students' self-assessed competencies and sustainable decision-making. The findings of this study show that critical thinking is the channel through which actionable knowledge of sustainability is transformed into decision-making in tourism.

Nura and Mohamad [27] study Saudi women and the awareness of the environment and sustainable thinking. The research sample was 176 female teachers; employing a correlational predictive design, the authors reported a positive statistically significant relationship and thus, the authors suggested the level of environmental awareness could predict sustainable thinking. Nuria et al. [28] examine the fostering of critical thinking, the use of Artificial Intelligence (AI) inclusive educational systems. The study assesses 200 students using pre and post questionnaires, and employs student-centred methods including field trips, workshops, and seminars; she reports critical thinking was positively affected. AI tools, however, support critical thinking, and the ethical and transparent use of tools is necessary to support sustainable development. Lisnawati et al. [29] examine the need of critical thinking and

problem solving for 21st century education using a qualitative approach. Educators' awareness of such importance of the competencies, however, is insufficient; resource deficits, no or little training, ineffective assessment, and more, inhibits implementation. Such students, however, demonstrate higher levels of creativity, adaptability, and decisiveness.

Reddy and Lakshmi [30] examine exercising difficulties and mention insufficient training, lack of peer co-laboration, and structural barriers. The study suggests teaching structures that incorporate critical thinking. Technology, Lee [31] states, similarly encourages problem-solving, motivation, collaboration, and employability, while poorly incorporated tech still presents barriers. Problem-based learning, as Putra [32] explains, positively impacts critical thinking, motivation, and collaboration, and so does collaborative learning, as Zhang [33] confirms in a systematic review. The literature, in Nigeria, lacks the ability to develop critical thinking and problem-solving skills in a rapidly changing world. However, while some studies [20, 21, 22, 28, 31] offer some insights, Nigeria still lacks a comprehensive integrated framework for the prevailing environmental issues.

III. Research Method

This study used a quasi-experimental design with a mixed-methods approach. It involved both qualitative and quantitative techniques to analyze how digital technologies affect the environmental policy processes within the context of Nigeria. As mixed methods provide clarity to complex situations by bringing together both the qualitative and quantitative aspects of a research study (Creswell and Plano Clark [34]), the author chose to do the study this way. Out of the 200 participants who took part in a quasi-experimental study, 100 were assigned to the experimental and 100 to the control group. The experimental group participants were trained for 12 weeks on digital technology and environmental policy, while the control group participants were trained using the traditional approach. This approach is best for the study since it focuses on the differences in the two groups (Shadish, Cook, and Campbell [35]). The author has also used a stratified random sampling technique to allocate participants among the various groups, such as policymakers, environmentalists, and community leaders. This approach indicates that the sample is representative of the population, thus allowing the researcher to generalize the findings (Cochran, [36]). Participants completed questionnaires to obtain quantitative data regarding their perceptions of the digital technologies and the efficiency of the environmental policies. In-depth interviews with 20 participants from the experimental group provided qualitative data regarding their experiences and perceptions of the intervention. Participants' environmental policy-making tasks were analyzed to assess the intervention's impact. Quantitative data were summarized using mean, frequency, and standard deviation. Outcomes between the experimental and control groups were compared using T-tests. ANOVA was used for qualitative data and thematic analysis was performed to describe the participants' experiences and perceptions, and to determine the prevalent themes and patterns. Two theories, Diffusions of Innovations Theory (Rogers, [37]), and Technology Acceptance Model (Davis, [38]), guided the research. These theories framed the research study regarding the use of digital technologies in environmental policy-making. The study was carried out in some local government regions and one Nigerian university. The findings of this study will provide the advocacy framework for the development of responsive critical thinking and problem-solving skills for environmental issues in Nigeria.

III. Data Analysis

Research objectives are evaluated against data which is analysed using standard deviation, SPSS software, and a Cronbach's Alpha of 0.80, which shall be presented in the following sections.

Table 1: Respondents' perceptions on the challenges in fostering critical thinking and problem-solving skills in environmental issues in Nigeria **Source:** Field Work, 2025

| S/N | Factors | Mean | Standard Deviation | Decision |
|-----|--|------|--------------------|---------------|
| 1 | The Nigerian education system is often criticized for being too theoretical and exam-focused, which hinder the development of critical thinking and problem-solving skills as students are often | 3.14 | 1.14 | Agreed |

| | | | | |
|-----------------------|--|-------------|-------------|---------------|
| | encouraged to memorize and regurgitate information rather than think critically and solve problems stand as a challenge in applying critical thinking and problem solving skill in solving environmental issues in Nigeria. | | | |
| 2 | Many citizens and schools in Nigeria lack adequate resources, including textbooks, technology, and qualified teachers which make it difficult for students and residents to develop critical thinking and problem-solving skills, as they don't have access to the tools and support they need in solving environmental issues. | 3.59 | 0.88 | Agreed |
| 3 | In some Nigerian cultures, critical thinking and questioning authority are seen as disrespectful which make it challenging for people to develop these skills, as they may be encouraged to conform to traditional ways of thinking rather than challenge them. | 3.59 | 0.93 | Agreed |
| 4 | Many people in Nigeria do not have access to quality education, which limit their opportunities to develop critical thinking and problem-solving skills towards environmental issues in Nigeria. | 3.89 | 1.15 | Agreed |
| 5 | Nigeria experiences a significant brain drain, with many of its most talented and educated citizens emigrating to other countries in search of better opportunities thereby depriving the country of the skilled professionals it needs to foster critical thinking and problem-solving skills in its youth that would have contributed in solving her environmental issues. | 3.11 | 0.82 | Agreed |
| 6 | Corruption is a major challenge in Nigeria which undermine efforts to promote critical thinking and problem-solving skills. | 3.46 | 0.89 | Agreed |
| 7 | Many Nigerian people do not have opportunities to apply their critical thinking and problem-solving skills in real-world settings as this make it difficult for them to develop these skills, as they may not have the chance to practice and reinforce them. | 3.53 | 0.85 | Agreed |
| Aggregate mean | | 3.47 | 0.95 | Agreed |

From table 1, item 1-7, the table aims to discuss the challenges in fostering critical thinking and problem-solving skills in solving environmental issues in Nigeria. As seen in the table above, the aggregate mean of the items is above the mean criterion of 3.0. Also, based on all responses, the standard deviation is 0.95 and the total mean is 3.47. Based on the findings above, the respondents unanimously agreed that the above listed items are the challenges in fostering critical thinking and problem-solving skills in solving environmental issues in Nigeria.

Table 2: Respondents Perceptions on the opportunities in fostering critical thinking and problem-solving skills in solving environmental issues Nigeria

| S/N | Factors | Mean | Standard Deviation | Decision |
|-----|--|------|--------------------|---------------|
| 1 | Those who have critical thinking and problem-solving skills like creative, recycling skills, innovation and invention specialist etc. provide better solutions to environmental issues which enable them to earn more salary per month in Nigeria. | 3.44 | 0.87 | Agreed |
| 2 | Critical thinking and problem-solving skills encourage creativity and innovation which reduce environmental pollution and drive economic growth and development in Nigeria. | 3.31 | 0.91 | Agreed |
| 3 | Problem-solving skills empowered individuals to start their own businesses thereby creating jobs and stimulating economic activity. | 3.63 | 1.04 | Agreed |
| 4 | Fostering critical thinking and problem-solving skills in solving environmental problems will help Nigeria become more competitive in the global economy. | 3.35 | 0.94 | Agreed |
| 5 | Individuals with these skills are more attractive to potential employers and have better job prospects. | 3.11 | 0.91 | Agreed |
| 6 | Critical thinking and problem-solving skills enable individuals to make informed decisions towards environmental problems thereby navigating complex situations. | 3.43 | 0.83 | Agreed |

| | | | | |
|-----------------------|--|-------------|-------------|---------------|
| 7 | Cultivating these skills lead to increased confidence, independence, and a growth mind-set. | 3.53 | 0.97 | Agreed |
| 8 | Citizens and students who develop these skills tend to mitigate environmental problems in Nigeria, perform better academically and are more engaged in the learning process. | 3.14 | 0.91 | Agreed |
| 9 | Equipping citizens and students with critical thinking and problem-solving skills help them navigate an increasingly complex and rapidly changing world. | 3.27 | 0.80 | Agreed |
| 10 | Fostering these skills promote teamwork, discussion, and effective communication among citizens which enable them to solve environmental issues collectively. | 3.48 | 0.82 | Agreed |
| Aggregate mean | | 3.37 | 0.90 | Agreed |

In table 1, item 1-10, the table aims to discuss the opportunities in fostering critical thinking and problem-solving skills in solving environmental issues in Nigeria. As seen in the table above, the aggregate mean of the items is above the mean criterion of 3.0. Also, based on all responses, the standard deviation is 0.90 and the total mean is 3.37. Based on the findings above, the respondents unanimously agreed that the above listed items are the opportunities in fostering critical thinking and problem-solving skills in solving environmental issues in Nigeria.

IV.I. Figures and Discussion of Findings

Figure 1: Challenges in Fostering Critical Thinking and Problem-Solving Skills in Solving Environmental Issues in Nigeria.

| Challenge | Mean Score |
|---|------------|
| Faulty Educational System | 3.14 |
| Lack of Adequate Resources | 3.59 |
| Cultural Factors | 3.59 |
| Limited Access to Quality Education | 3.89 |
| Brain Drain | 3.11 |
| Corruption | 3.46 |
| Limited Opportunities for Practical Application | 3.53 |

The figure shows that limited access to quality education is the most significant challenge, with a mean score of 3.89. This is followed by lack of adequate resources and cultural factors, with mean scores of 3.59 each.

Figure 2: Opportunities in Fostering Critical Thinking and Problem-Solving Skills in solving environmental issues in Nigeria

| Opportunity | Mean Score |
|--|------------|
| Provision of Solutions to Environmental Issues | 3.44 |
| Encouraging Creativity and Innovation | 3.31 |
| Entrepreneurial Spirit | 3.63 |
| Global Competitiveness | 3.35 |
| Enhanced Employability | 3.11 |
| Improved Decision-Making | 3.43 |
| Personal Growth | 3.53 |
| Mitigation of Environmental Problems | 3.14 |
| Preparation for the Future | 3.27 |
| Enhanced Collaboration and Communication | 3.48 |

The figure shows that entrepreneurial spirit is the most significant opportunity, with a mean score of 3.63. This is followed by enhanced collaboration and communication, with a mean score of 3.48.

IV.II Discussion of Findings

Fulfilling research objective one outlines obstacles concerning lack of cultivation of critical thinking and problem solving skills in relation to the environmental issues of Nigeria. Research evidence outlines the hurdles associated with lack of educational system, teaching staff, unqualified personnel, cultural and economic issues, brain drain,

and corruption. As evidenced in the empirical literature, the findings agree with studies [23, 28, 29, & 30] outlining unqualified personnel, absence of training, and assessment techniques, organizational issues of the instructor, and absence of parallel learning as some of the issues in Nigeria regarding lack of cultivation of critical thinking and problem solving skills. As justified and shown in Table 1, this research study has been able to accomplish the first objective of the research.

Once more referring to the result in Table 2, which the Study concentrates the problem on the potential to enhance the problem and critical thinking skills, especially on Nigeria's environmental issues, the Study stated that the providers, the solutions to the environmental issues, and the problems that are financially rewarding could stimulate and sustain, create, and develop a positive, entrepreneurial, and globally competitive Nigeria, improved employability and problem solving, personal development, decision making, and mitigate the environmental issues and problems and academically improve, prepare, and in the future break the record, stimulate collaboration and communication among people to solve the environmental issues and problems, are the means to develop the problem and critical thinking skills and, competence in problem solving, especially in Nigeria. The findings of the Study corroborate the empirical literature of [20, 21, 22, 24, 25, 29, 30, 31, and 33] that students, are from the curricula that focus on fostering critical thinking and problem solving have the ability to address real-life problems, are creative, adaptable, make sound decisions, the problems motivate and engage students, and improve collaboration and communication, and through real-life uns authentic learning experiences, improve critical thinking, and the better, paying job opportunities in Nigeria.

The above table illustrates the findings of this study that substantiates the second of the research objectives. For the policymakers, educators, and stakeholders in Nigeria, the findings of the study emphasize the need to remove the obstacles that employ the issues of critical thinking and problem-solving concerning the environmental crises in Nigeria. This calls for the need to set up quality education systems, sufficiently funded initiatives, and social systems that value and practice critical problem-solving. Additionally, the findings of the study emphasize the need to enhance the skills for problem-solving forums concerning the environment and other pressing issues in Nigeria by establishing sufficient problem-solving skills, value and practice forums, an entrepreneurial and innovative spirit, and improved social interactivity and collaboration among stakeholders.

V. Conclusion

This study focused on the benefits of training critical thinking and problem solving skills in relation to the world's changing environmental issues. Most results found during the study reinforce the importance of continuing the development of critical thinking and problem solving skills especially due to rapid global changes. The study showed that the participants who received training in the above skills attained the most training on problem analysis and problem solving at all levels. The findings of the study are in agreement with most of the studies that have been done. The study positively supports its hypotheses. It may be concluded that the participants demonstrated the ability to apply systematic and analytical thinking to problem solving. These skills are often described as critical thinking skills.

The study's findings are consistent with the analyzed literature which details the importance of critical thinking and problem solving. For the most part, the study affirms the importance of honing critical thinking and problem solving. The findings of the study suggest that these skills are particularly pivotal for the numerous challenges that the 21st Century poses, and they remind educators and policy makers of the importance of incorporating these skills into the educational framework. Presently, the world is rapidly evolving and is highly multifaceted. In order for students to be equipped to face these challenges, educational systems must prioritize the nurturing of students' critical thinking and problem-solving skills.

The ensuing suggestions are directed toward educators, policy makers, and government on the importance of critical thinking and problem-solving skills as a transformative tool for addressing Nigeria's pressing environmental challenges.

For the Educators

- I. Integrate the activities, projects and assessment that encourage critical thinking, analysis and problem-solving into a range of subjects.
- II. Employ real-life situations and illustrations to teach critical thinking and problem solving.
- III. Provide pupils with the sort of feedback that fosters their critical thinking abilities so that pupils can independently arrive at their own answers.
- IV. Encourage interdisciplinary problem analysis and thinking by assigning students to one another across different backgrounds and disciplines.
- V. Utilize digital tools and resources to further research, problem analysis, and critical thinking.
- VI. Advocate for participation in extracurricular activities that foster critical thinking and problem solving, such as debating, quizzing, and science fairs.

VII. Engage parents and the community in fostering problem-solving and thinking.

For Policymakers

- I. Foster the development of necessary skills and competencies in problem-solving and critical thinking.
- II. Create channels for professional development of educators and civilians to enhance their own problem-solving and critical thinking skills.
- III. Integrate the skills and competencies in problem-solving and critical thinking into assessments and examinations to emphasize their value.
- IV. Strengthen educational institutions and industries to form collaborative partnerships to assist students and the community in acquiring real-life problems.
- V. Enhance Community and School initiatives that foster problem-solving and critical thinking.

For Government

- I. Devise strategies that foster problem solving, critical thinking, and innovation in the education sector and beyond.
 - ii. Instruct educators on using various tools and systems to foster students' skills in critical thinking and problem-solving.
 - iii. Allocate financial resources to support STEM (Science, Technology, Engineering, and Mathematics) Education to enhance students' critical thinking and problem-solving skills.
 - iv. Instruct educators on fostering innovation, entrepreneurship, and creativity, especially in teaching.
 - v. Develop and execute plans to evaluate and communicate the results of initiatives to foster students' critical thinking and problem-solving skills.
 - vi. Address the cultural and social issues, such as barriers stemming from a focus on rote learning, that may impede critical thinking and problem solving.
 - vii. Provide internet based resources, services, and personnel to foster students' critical thinking and problem-solving skills.

The recommendations focus on nurturing a culture of critical thinking and problem solving in Nigeria, fostering the skills necessary to address complex, adaptive challenges in order to sustain growth.

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