

Environmental Education and Creativity Development in Basic 9 Students: A Case Study of Two UBE Schools in Obio/Akpor LGA of Rivers State

Dr. Agwu, Christopher O.

Department of Curriculum Studies and Educational Technology, Faculty of Education, University of Port Harcourt.

Corresponding author: christopher.agwu@uniport.edu.ng

DOI: <https://doi.org/10.62154/qjhcer.2024.017.010534>

Abstract

This study examined the extent to which the Nigerian Basic 9 education programme is structured to facilitate the development of the creativity skills of students on the sanitation of the human environment. The study applied the lower and higher levels of Bloom's cognitive domain to analyse the aims of the Nigerian Basic Education Curriculum, the creativity content of teachers' lesson plans, instructional delivery activities and the approved textbooks for the subject. Whereas the Basic Education Curriculum was envisioned to achieve problem solving objectives, it was revealed that the instructional events and other curriculum implementation activities were undertaken at the lower levels of the Bloom's cognitive domain. Consequently, the teaching tasks only developed the students' knowledge and comprehension levels of understanding of the concept of environmental sanitation. The students were not schooled to apply the knowledge of environmental sanitation subject matter to solve environmental sanitation problems of the society. The study recommended that creativity skills development objectives should be infused into the delivery of environmental sanitation subject matter of the Basic 9 education programme so that the students can graduate to live environmentally conscious lifestyles and perform the associated tasks competently for their personal and societal wellbeing.

Keywords: Creativity, Creative Thinking, Problem-Solving Skills, Higher-Order Thinking, Environmental Sanitation.

Introduction

One major vision of the education industry, especially as specified in the United Nations (UN) Sustainable development goals is to equip citizens with the requisite knowledge and skills to perform the tasks of human endeavours and developmental activities for the wellbeing of the present and future generations of mankind. This is sustainable development. "Such responsible behaviour that will ensure the long-term exploitation of resources, without jeopardizing future generations is considered within the concept of sustainable development" (Klarin, 2018). Evidently, the behaviour incorporates elements of creative skillfulness in resource exploitation and considerations of the wellbeing of future generations.

An obvious implication of this perception is that, while exploring the resources of a nation, if the citizenry lacks the creative ability to make decisions for the wellbeing of future generations, then the educational system would have failed the nation. It therefore behooves on curriculum planners and designers to model the capacity for critical thinking and creativity (CTC) as a vision of the school system and also implement same measurably in the education and nurturing of the future leaders. Such curriculum designs would equip the students to make decisions with competence. But this can only be realized when creativity dispositions are evidenced in the elements of knowledge and skills that are measurably infused into the delivery of curriculum content. These abilities shall also be developed in the learner as subject matter knowledge and skills that can be applied in task performance in order to create societal structures, products and services that are valuable to current generations and also preserve the wellbeing of future generations. Obviously, it requires creative skillfulness for an individual to apply knowledge in task performance for societal sustainability. No wonder the Basic Education Curriculum (BEC) specified that the Basic 9 student should amongst other abilities, "acquire the basic rudiments of creative thinking" (BEC Teachers' guide, 2013).

Another evidence of the importance of creative thinking is the pervasive adoption of the concept of "thinking outside the box" as a strategy of success in every innovative performance task. This, according to the Organisation for Economic Co-operation and Development (OECD), is the outcome of the publication of "Thinking outside the box: PISA 2022 creative thinking Assessment" (OECD, 2022)

But such creative abilities can only be realized when appropriate instructional delivery strategies for its development are duly infused into subject matter lessons. It is not enough to specify the development of creativity as curriculum objective, especially for task performance dispositions. The mechanics of its realization through procedural tasks and instructional methods must be duly implemented for the student to develop the requisite abilities and dispositions to undertake the endeavours of life with the consciousness to preserve societal structures for the wellbeing of man.

One aspect of the Nigerian society where this creative application of knowledge is evidently doubtful is in sanitation of the human environment. The need to keep our environment clean has remained a concern to the state and federal governments such that a day of environmental sanitation is declared in order to compel citizens to engage in cleaning of the environment. However, reflections on the activities of this day of sanitation and the dispositions of the participants fail to reveal substantial relationship with the knowledge of the subject matter on the sanitation of the human environment and creative application of the knowledge gains as envisaged in the requisite subjects of the Basic 9 curriculum. This variance is evidenced in:

1. Lack of the consciousness for a clean environment
2. Indiscriminate dumping of refuse
3. Intentional discharge of refuse into gullies and water ways and attendant blockage of the gullies

These extraneous activities obviously reveal the fact that the knowledge gained from the said Basic 9 subjects are not evidenced in the environmental sanitation activities of the Nigerian citizenry.

And as Williams (1967) observed, "Creativity may be developed during the very early life of the child through attitudes of both parents and teachers". The Basic 9 education programme is therefore a worthy initiative. The Basic education programme provides basic skills to learners to sustain themselves in the society. In this vein, Orubite (2022), noted, "Basic education sees education in the broadest sense in that it covers the formal, the none formal, the informal approaches to learning aimed at stimulating an all-round human potential and thereby laying the foundation for life-long learning, self-awareness, learning to learn and life skills. And specifically, the need to develop innovation and creativity skills of learners is one of the major reasons for revision of the 9-year Basic education BST curriculum".

The development of the basic skills to sustain the individual and the society however demands the implementation of appropriate curriculum delivery strategies. This is especially as it relates to the critical thinking and creativity skills that facilitate environmental sanitation. It is therefore in this vein that this study purposes to ascertain the extent to which the innovation and creativity goal specifications of the Basic 9 education curriculum are evidenced at the curriculum implementation stage. This study seeks to ascertain the extent to which the classroom curriculum delivery activities on the sanitation of the human environment aspect of the Basic 9 education curriculum are designed to facilitate the development of the consciousness of environmental sanitation amongst the Nigerian citizenry.

Development and Assessment of Creativity

Creativity has been defined as "a tangible competence, grounded in knowledge and practice, that supports individuals in achieving better outcomes, often in constrained and challenging environments" (Foster and Schleicher, 2022). This definition highlights the need for possession of relevant knowledge and the application of same in creative task performance scenarios. The implication is that in developing the creative skills of learners, instructional activity should not only aim at acquisition of knowledge of subject matter. The learner should be duly exposed to experiential application of the knowledge in solving challenging tasks. To Zambrano (2019), "creativity is an inherent attribute of man that develops from the kindergarten age to higher education". It is usually enhanced by how effectively teacher activities promote it as well as the quality of experiences that the individual encounters".

And to develop creative thinking skills, Beghetto, Bear and Kaufmann (2015) opine that "creative thinking can be developed while promoting the acquisition of content knowledge and skills through approaches that encourage exploration and discovery rather than rote learning and automation". This is in alignment with Swartz (1992) infusion approach to development of creativity skills. The approach holds that creativity skills development

objectives should be infused into the delivery of disciplinary subject matter. By this approach, the learner would be duly engaged in experiential thought processes and eventual discovery of avenues of valuable application of knowledge for the wellbeing of man and the society.

But since the creative skill lies at the higher levels of the Bloom's cognitive domain, successful implementation of the infusion approach to creativity skills development derives from performance oriented instructional activities. Such instructions and the associated learning activities aim at the application of knowledge into problem solving tasks. The learner is thereby tasked to apply knowledge into decision making processes and to venture into problem solving tasks. The instructional objectives of the disciplinary subject matter under study would be specified at the higher levels of the cognitive domain where knowledge application upholds. Consequently, the content of learning matter and the media objects utilized to elucidate the content would all be aligned to engage the learner for competence-based level of mastery of subject matter. A scaffolded learning activity shall also be presented as formative test of learner ability to practice the criterion tasks. Then the overall assessment of learner achievement would be implemented using relevant real life task performance scenarios. It is in this vein that Torre and Violant (2003) observed that "from a didactic point of view, creativity is a concept that should be addressed curricularly in the objectives, as formative content, as a strategy, in learning activities and in assessment. If not, it is reduced to a mere aspiration for a good social reception".

But one common challenge encountered by teachers in the implementation of creativity - oriented instructions is the constraint imposed by regulatory policies. Examples of this policy include the duration of classroom lesson. Most secondary school timetables are too short and therefore not conducive to the development of creativity skills (Davies et al., 2013). The specification of the instructional activities of the teacher and the learner in schemes of work also constitute constraint to teacher freedom to implementation of creativity-oriented learning activities.

While adhering to the dictates of these policies, innovative teachers devise and adapt flexible teaching strategies like the flipped classroom teaching method to accommodate the demands of creativity skills development within the confines of administrative requirements. The teacher factor actually remains a challenge in creativity development. In a comprehensive study on creative thinking, Patston et al. (2021) noted that even in countries where policy initiatives have made creativity and creative thinking a curriculum priority, teacher confidence and capability is still inadequate. The implication is that institutions may openly acknowledge the importance of creativity but lacking in the structures for systematic and purposeful implementation of same in classroom instructional activities.

Therefore, appropriate leadership strides, management support and adequate structural provisions that guarantee teacher commitment to the demands of competency-based teaching strategies are essential success factors for development of the creativity skills of students. Such management support must reflect in the structure of learning spaces, mode

of assessment and collaborative project - based learning on real life contexts of task performance that fits students' interest and abilities (Kampylis and Berki, 2014)

Discussing the view of human capital in education, Craft (2007) opined that "policy makers should recognize the importance of creative thinking as an investment in the future of the country and thereby accord due consideration to the teaching function which constitutes the bedrock of success of every human development investment. The policies should guarantee teacher professional development and commitment to the demands of creativity-oriented instructions.

The assessment of creativity skills development instructions remains a challenge. And "though some teachers make noble attempts at assessing creativity, there is no widely used and credible method of assessing creativity in schools yet" (Beghetto and Kaufman, 2010). In the effort to assess creativity, this study adopted a Likert – scaled, weighted rating of the level of higher – order content of the lesson as modelled by the Bloom's cognitive taxonomy and evidenced in the objective of instruction, level of teaching/learning of content of subject matter as well as the level of performance in the learning activity and the overall assessment of learner achievement.

Objectives of the Study

The study seeks to:

1. Ascertain the level of provisions for creativity skills development in the curriculum of the environmental education component of the Basic science subject of the Basic 9 education curriculum.
2. Ascertain the extent to which the teachers' lesson plans and lesson delivery activities in environmental education component of the Basic science subject of the Basic 9 education curriculum promote the comprehension and application of knowledge of environmental education subject matter in the real - life affairs of citizens.
3. Ascertain the extent to which the presentation of subject matter on environmental sanitation in the recommended textbook for Basic Science is structured to promote students' comprehension and creative application of knowledge of environmental education subject matter in their real - life affairs.

Research Questions

1. To what extent can the provision for the development of the creativity skills of students in the environmental education components of Basic Science subject of the Basic 9 education system facilitate the development of the creativity skills of students?
2. To what extent are teachers' lesson plans and lesson delivery activities in environmental education components of the Basic Science subject of the Basic 9 education curriculum structured to promote the comprehension and application of

knowledge of environmental education subject matter in the real - life affairs of students?

3. To what extent is the presentation of subject matter on environmental education in the recommended textbook for Basic Science structured to promote students' comprehension and creative application of knowledge of environmental education subject matter in their real - life affairs.

Scope and Limitation of the Study

Although environmental sanitation subject matter features in the Home Economics and the Basic Science subjects of the Basic 9 education curriculum, this study was undertaken on the Basic science subject. Secondly, the observatory information of the creativity content of the teachers' instructional activities correlated highly with the creativity ratings of the lesson plans. This is obviously an outcome of the regulatory policy that required teachers to abide by the curriculum delivery specifications of teacher/student activities. Hence, we have a single data of the creativity ratings of teachers' lesson plans/instructional delivery activities.

Another major limitation of the study borders on the teachers' lesson plans which constitutes the main object of analysis. Actually, the Universal Basic Education (UBE) Board approved only two schools for this study. But the major constraint is that the teachers' lesson plans on the subject matter of environmental sanitation is the same. The lesson plan and instructional delivery activities were also guided by rigid policies on teacher/student activities. Evidently, the same content of lesson plan and classroom activities were experienced in all the schools in the local government. Hence, the population or sample size of schools and/or lesson plans became immaterial for consideration in the analysis of the creativity content of the environmental sanitation subject matter.

And amidst current "lack of widely used and credible method of assessing creativity in schools" (Beghetto and Kaufman, 2010). This study relied on the established hierarchy of the Bloom's cognitive domain to develop a Likert – scaled weighted rating of creativity scores of the relevant elements of a lesson plan to assess the creativity content of instructional delivery activities.

Methodology

The study adopted the descriptive study approach to analyse:

1. Relevant aspects of the teachers' guide for the Revised 9 - year Basic Education Curriculum (BEC)
2. The Basic Science teachers' lesson plans of the subject teachers in two UBE schools in Obio/Akpor LGA of Rivers State for one academic session.
3. The relevant aspects of the recommended textbooks for Basic Science.

Measurement of Creativity

The study analysed and attached weighted rating of creativity content to the subject matter provisions of the text books and the different stages of teachers' lesson plans/instructional delivery activities, vis a vis the standard ratings of a creativity - oriented lesson. This Likert scaled, Very Low to Very High (1 to 5) weighted scores of creativities, relied on the lower and higher levels of Bloom's cognitive domain to attach a range of the least creativity score of (1) to highest creativity score of (5) to the following creativity prone aspects of the lesson plan and the relevant content of the text book respectively:

Creativity prone aspects of lesson plan

1. Set induction
2. Instructional objective
3. Lesson notes
4. Media object
5. Learning activity
6. Assessment

Creativity prone aspects of subject matter in the text book

1. Chapter objective
2. Content presentation and media objects
3. Learning activities
4. Assessment

Analysis

Research Question 1

To what extent can the provision for the development of the creativity skills of students in the environmental education components of Basic Science subject of the Basic 9 education system facilitate the development of the creativity skills of students?

Answer:

The Basic Science and Technology (BST) education curriculum is made up of the following subject components:

1. The Basic Science,
2. Basic Technology,
3. Health and Physical Education and
4. Information and Communication Technology (ICT)

The concern for creativity and innovation in the Basic 9 education system is explicitly stated as follows; "The reason for revision of the 9 - year Basic education BST curriculum include:

- The need for entrepreneurship development
- The need to develop innovation and creativity skills of learners
- Etc". (Teachers' guide for BST, 2013, p3).

The objectives of these curricula goals of the Basic Science and Technology especially as it relates to the development of the creativity skills of students include:

- 1) The acquisition of basic knowledge and skills in science and technology
- 2) Application of scientific and technological knowledge and skills to meet societal and personal needs (Teachers' guide for BST, 2013, p3)

Evidently, the development of innovation and creativity skills of Nigerians is a major objective of the Basic 9 education curriculum. It only then requires the establishment of the enabling structures and provisions for programme implementation for the gains of creativity skills development to be realized. One major evidence of this gain is that Nigerians would imbibe the consciousness of environmental sanitation and thereby refrain from dumping refuse in unauthorized places. The lifestyle of majority of Nigerian citizenry would be devoid of indiscriminate dumping of refuse. Consequently, ground water gullies would be free of debris and the problem of flooding of residential areas would have been solved.

Research Question 2

To what extent are teachers' lesson plans, and lesson delivery activities in environmental education components of the Basic Science subject of the Basic 9 Education curriculum structured to promote the comprehension and application of knowledge of environmental sanitation subject matter in the real - life affairs of students?

Table 1. Table of descriptive assessment of the standard and observed creativity ratings of critical phases of teachers' lesson plans and observed instructional activities in Basic science

SN	Critical Elements of the teachers' lesson plans	Expected performance		Observed performance	
		Description	Rating	Description	Rating
1	Set induction	Teacher presents familiar real - life story to capture and retain the attention of students	5	Teacher described the experience of house cleaning and disposal of refuse	3
2	Instructional objectives	The instructional objective stipulates the level of task performance expected of the learner at the end of the lesson. Creativity oriented lessons incorporate both the lower and higher order instructional objectives to facilitate the possession of factual and conceptual knowledge as well as ability to apply the knowledge to solve problems.	5	The instructional objectives were generally aimed at development of knowledge and comprehension levels of understanding of the concept of sanitation of human environment	2
3	Content/Lesson Note	The major tasks at the content presentation stage include the choice and skillful application of appropriate instructional strategies, for effective delivery of content. The chosen instructional strategies communicate the content at the appropriate level of the cognitive domain. And also equips the learner to perform the tasks specified in the instructional objectives.	5	The lesson note provided content to enable students to comprehend the concept of environmental sanitation and to identify objects associated with environmental sanitation activities.	2
4	Media object	These are mediated contextual activities infused into the instruction to engage the learner and to elucidate the content at the level specified in the instructional objectives. Media objects also facilitate the understanding of subject matter and the ability to perform criterion instructional tasks.	5	Photographs of filthy environment and sanitation activities like sweeping and refuse disposal were presented by teacher and book authors to explain sanitation activities.	2
5	Learning activities	Learning activities provide opportunity to reinforce understanding and to practice the tasks specified in the learning objectives. It enables the learner to practice creativity tasks	5	Students were required to list the type of wastes generated in their homes, and to suggest solution to waste disposal problems	2
6	Assessment	In creativity instructions, assessment is a learning strategy. Collaborative task performance and multiple solution pathways to problem-solving is a norm.	5	Tested students' ability to recall elements of knowledge and explain the concept of environmental sanitation	2
7	Overall creativity		5.0		2.17

Researcher designed creativity ratings of lesson plans

Answer:

The information in Table 1; the table of the standard and observed creativity ratings of a creativity - oriented lesson plan and the teachers' lesson plans/instructional delivery activities of Basic science teachers in this study respectively, reveals as follows:

1. The lessons were all planned to achieve knowledge and comprehension levels of understanding of the subject matter. These objectives were also reflected in the treatment of environmental sanitation subject matter in the classroom instructional activities by the teachers.
2. The limitation imposed by the instructional objectives also regulated the content of the lesson notes that were delivered to the students.
3. The learning activities and assessment were generally keyed to the knowledge and comprehension level specifications of the instructional objectives.
4. The students also imbibed the knowledge and comprehension level subject matter (creativity rating of 2), as evidenced in their ability to define the concept of sanitation, explain the concept of environmental sanitation, list environmental sanitation tools, etc.
5. The overall observed mean creativity index of 2.0 is below the expected mean creativity index of 2.50.

The implication of the foregoing revelations is that the teaching and learning of environmental sanitation as provided in the Basic Science subjects of the Basic 9 education curriculum does not equip the students with the creative capacity to perform environmental sanitation tasks for societal wellbeing and sustainability.

Research Question 3

To what extent is the presentation of subject matter on environmental sanitation in the recommended textbook for Basic Science structured to promote students' comprehension and creative application of knowledge of environmental education subject matter in their real - life affairs.

Answer:

The information in Table 2, the table of descriptive analysis of observed creativity ratings of the provisions of the textbooks for teaching of environmental sanitation subject matter in Basic science reveals that, in the treatment of environmental sanitation subject matter, the recommended textbook for Basic science; titled: Basic science for junior secondary schools; authored by Ndu, F. O. C., Ndu, I. O., Olarewaju, U. O. A and Somoye, E. O. in 2017, presented the content of subject matter (knowledge content), learning activities and assessment tasks to suit the specifications of the objectives of the learning matter. The book also specified the said learning objectives at the knowledge and comprehension levels of the cognitive domain (creativity index 2).

Table 2. Table of descriptive analysis of observed creativity ratings of the provisions of the textbooks for teaching of environmental sanitation subject matter in Basic science

S/N	Elements of subject matter	Description	Creativity Rating
1	Learning objectives	The learning objectives are specifically for the achievement of knowledge and comprehension levels of mastery of the concept of environmental ² sanitation and its associated activities	2
2	Content of subject matter	The scope of presentation of content is the elements of knowledge that the student requires to be able to define and explain the concept of environmental sanitation and associated activities. Photographic objects of sanitation tools, and refuse disposal facilities are presented to elucidate the subject matter.	2
3	Learning activities	The textbook presented learning activities as tasks that the student would perform to strengthen the ability to recall the elements of knowledge presented as the content of subject matter.	2
4	Assessment tasks	The assessment tasks were guided by the specifications of the instructional objectives. It centered on certifying the extent to which students have imbibed knowledge of a) Definition of environmental sanitation. b) The tools used in sanitation activities. It also tested the students' level of comprehension of environmental sanitation and associated concepts especially in relation to appropriate disposal of refuse.	2
5	Overall creativity index		2.0

Researcher developed creativity ratings of Basic science textbook

The implication is that, by learning the concept of environmental sanitation with this textbook, the students shall imbibe knowledge of environmental sanitation and associated concepts. The students shall be able to define and explain the concept of environmental sanitation and also identify the tools used in sanitation activities. However, they would find it difficult to make appropriate decisions to solve environmental sanitation problems when faced with such challenges. This is because they were not so exposed during curriculum implementation. The absence of this creative dimension of environmental sanitation instruction in the objectives of the learning matter would obviously mean a void of the requisite knowledge and skills to perform environmental sanitation tasks with societal sustainability disposition.

Results and Discussion

In response to research question one, which sought to ascertain whether the provisions for achievement of creativity skills objectives in environmental education component of Basic Science actually facilitates the development of creativity skills of students, the study proved that mission accomplishment depends on the implementation of appropriate strategy. The vision for creativity specified the need for development of entrepreneurship, innovation and creativity skills of students. It also sought the acquisition and application of scientific and technological knowledge/skills to meet societal and personal needs. But it is meaningless to envision a project and specify its objectives without establishing due structure for goal achievement.

The implementation of the Basic education curricula for Basic Science is not structured to realise the stated objectives of the programme. The administrative policies that guide teaching and learning of environmental sanitation concepts do not give room for the teacher to apply the teaching strategies that could make the students “think outside the box”. And the specification of teacher/student activities and the time - duration of classroom activities rather constrain the freedom required for creativity development to flourish. Moreso, the specified teacher/student activities are limited to knowledge level objectives of the Bloom’s taxonomy. The activities do not present learning tasks that expose students to performance based instructional tasks where creativity skills can be facilitated. Hence the provisions for teaching/learning of environmental sanitation in the Basic Science subject of the Basic 9 education curriculum cannot facilitate the development of the creativity skills of the students

The second research question sought to ascertain the extent to which teachers’ lesson plans and lesson delivery activities in the environmental education component of Basic Science promotes the comprehension and application of knowledge of environmental education subject matter in the real – life affairs of the students. This study counts on Torre and Violant (2003) recommendation, that creativity objectives of lessons be addressed in the objectives, formative content, strategy, learning activity and assessment. Using the performance levels of the Bloom’s taxonomy, the study adopted a creativity assessment instrument that attached weighted ordinal ratings of creativity score of one (1) for the least evidence of creativity to memory level factual information. The highest level of creativity with weighted creativity score of five (5) is for the creative level of the cognitive domain in the revised Bloom’s taxonomy. Aside from the set induction whereby the teacher introduced the environmental sanitation lesson by describing a context of the application of knowledge of environmental sanitation in cleaning the house and appropriate dumping of refuse, The objectives of instruction were stated in the memory and comprehension levels of the cognitive domain. The content of learning matter, instructional materials and the learning activities were all structured to enable the students to memorize factual information, to comprehend and be able to explain the concept of sanitation. The final assessment also sought to ascertain students’ ability to explain the concept of

environmental sanitation and to recall memories of the tools used in cleaning the human environment.

Consequently, teachers' lesson plans and lesson delivery activities in the environmental sanitation component of Basic Science do not promote the application of knowledge of environmental sanitation subject matter in the real-life affairs of the students. The recommended textbook also failed to present the application of knowledge of environmental sanitation in performance of sanitation tasks. The textbook presented the subject matter of environmental sanitation at the knowledge and comprehension levels of the Bloom's cognitive domain. The textbook specified the learning objectives of environmental sanitation subject matter, presented the content of the subject matter, the learning activities and assessment tasks all at the knowledge level (creativity index 2) of the cognitive domain. The book does not expose students to the application of knowledge into the performance of environmental sanitation tasks. Hence, by learning environmental sanitation subject matter with the recommended text book, the students are able to define and explain concepts associated with the subject matter of environmental sanitation. But they lack the capacity to apply such knowledge in solving environmental sanitation problems when confronted with such challenges. This is revealed in the overall creativity index of 2.0 in Table 2.

Conclusion

The vision for innovation and creativity in education and the specification of same as the goals and objectives of the Basic 9 Education curriculum is laudable. However, the structural provisions for goal achievement must be duly established for the benefits of the curriculum to be adequately realized. This is the mechanics of appropriate design and development of instructional activities that infuse creativity objectives into subject matter (Swartz (1992) at the appropriate levels of the Bloom's cognitive domain. Consequently, the content of learning matter in form of lesson notes, textbooks and mediated contexts of subject matter that elucidate content and expose learners to competent performance of problem - solving tasks, and the performance of same as learning activities, would all reveal elements of task performance.

The lesson structure would also present activity - oriented learning tasks to assess the extent to which the learner had developed the capacity to undertake problem solving tasks as to enable him evidence same sustainably in life time activities. Implementation of this model of creativity - oriented instruction in the environmental sanitation education component of the Basic Science subject of the Basic 9 Education system would facilitate the achievement of the innovation and creativity skills development objectives of the Basic 9 education system and thereby guarantee Nigerians the capacity to undertake life - time activities in accord with environmental consciousness for societal wellbeing and sustainability.

Recommendation

The study hereby recommends that creativity skills development tasks should be infused into the lesson plans, instructional delivery processes and the recommended text books for teaching/learning of environmental sanitation concepts in the Basic Science subject of the Basic 9 Education curriculum. This would guarantee Nigerians the capacity to undertake life time activities with environmentally conscious lifestyles for their personal wellbeing and the wellbeing of future generations.

References

- Basic Education Curriculum (BEC) *Teachers guide for the Revised 9 – Year education curriculum* (2013). Nigerian Educational Research and Development Council. BHS printers, Malaysia.
- Beghetto, R., & Kaufman, J. (2010). *Nurturing Creativity in the Classroom*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511781629>
- Beghetto, R., Baer, J., & Kaufman, J. (2015). *Teaching for Creativity in the Common Core Classroom*. Teachers College Press.
- Craft, A. (2007). Possibility Thinking in the Early Years and Primary Classroom. *Creativity*, 231–249. https://doi.org/10.1142/9789812770868_0013
- Davies, D., Jindal-Snape, D., Collier, C., Digby, R., Hay, P. and Howe, A. (2013). Creative learning environments in education: A systematic literature review. *Thinking Skills and Creativity*, 8: 80–91.
- Foster, N. and Schleicher, A. (2022) Assessing Creative Skills. *Creative Education*, 13, 1–29.
- Kampylis, P. and Berki, E. (2014) *Nurturing creative thinking*. GonnetImprimeur, Belley, France
- Klarin, T. (2018) *The Concept of Sustainable Development: From its Beginning to the Contemporary Issues*. Zagreb International Review of Economics & Business, 21(1), pp. 67-94.
- Ndu, F. O. C., Ndu, I. O., Olarewaju, U. O. A and Somoye, E. O. (2017) *Basic science for junior secondary Schools*.
- OECD (2022). *Thinking outside the box: The PISA 2022 Creative Thinking Assessment*. Paris: OECD Publishing. Retrieved from: <https://issuu.com/oecd.publishing/docs/thinking-outside-the-box>
- Ogeh, O. W. and Abe, E. (2023) Digitalized curriculum in basic education: Towards education for sustainable development in Nigeria. *International Journal of Education Humanities and Social Science*. 6(02) <http://ijehss.com/> Page 108
- Orubite, A.K. O (2022). *The Universal Basic Education (UBE) Programme: Matters Arising in Education and Development in Nigeria: Historical Trends Over the Centuries*. (ed). Port Harcourt. Pi Africana Press
- Patston, T., Kaufman, J. C., Cropley, A., Marrone, R. (2021) What is creativity in education? A qualitative study of international Curricula. *Journal of Advanced Academia*. 32(2)
- Williams, F. E. (1967) "The Search for the Creative Teacher" in J.C. Gowan, G.E. Demos, & E.P. Torrenance (eds.) *Creativity. Its Educational Implications*, New York: John Wiley & Sons, Inc, 1967, p279.
- Swartz, R. (1992) Critical thinking, the curriculum and the problem of transfer. In D. Perkins, J. Bishop and J. Lockhead (Eds.) *Thinking: The Second International Conference* (pp261 – 284). Hillsdale, NJ: Erlbaum
- Torre, S. de la, & Violant, V. (2003). *Applied creativity*. Barcelona: PPU
- Zambrano, N.I. (2019). [The development of creativity in university students. *Revista Conrado*, 15(67), 355-359