

# Teaching Challenging Topics in English Language, Mathematics and Natural Science in Primary School Using Creative Arts Methods

Betty Essuman<sup>1</sup>, Akosua Tachie-Menson<sup>2</sup>, Harry Barton Essel<sup>3</sup>, Albert Essuman<sup>3</sup>

<sup>1</sup>*KNUST Basic School, Kwame Nkrumah University of Science and Technology*

<sup>2</sup>*Educational Innovations in Science and Technology, Kwame Nkrumah University of Science and Technology*

<sup>3</sup>*Department of Industrial Art, Kwame Nkrumah University of Science and Technology*

**Abstract : Purpose:** The integration of the creative arts into individual subjects in primary school education enhances the teaching of challenging topics in those subjects. However, teachers teach subjects individually without the integration of creatives hindering the understanding of students during lessons. This study focused on the teaching of "challenging to teach topics" in three subjects: English Language, Mathematics and Natural Science using creative art methods.

**Design/methodology/approach:** A sample of 261 respondents was purposively selected for the study. The sample involved basic school students from the Kwame Nkrumah University of Science and Technology Primary School. Besides, the study employed interviews and observation to gather qualitative data.

**Findings:** The study found that the teachers used textual materials without interactive activities during teaching. Also, the teachers employed the lecture method of teaching topics which made it difficult for students to understand the lessons. The introduction of creative arts to teach the "Challenging to teach topics" positively influenced class participation and engagement and subsequently, the academic performance of the students. The study recommended that the teachers should adopt child-centred teaching strategies such as hands-on activities and the use of visual aids to cater to students with different learning abilities. Finally, the School should organise professional development programmes for primary school teachers on the integration of creative arts to teach the "challenging to teach topics".

**Originality/value:** To the authors' knowledge, no study has been conducted to examine the teaching of English Language, Mathematics and Science with creative arts methods, especially using teacher-and-student made illustrations in Ghana. Therefore, this study explores the use of creative arts to enhance the teaching of challenging topics in English Language, Mathematics and Natural Sciences in a selected basic school in Ghana.

**Keywords:** Primary school Education, challenging to teach topics, English language, Mathematics, Natural Science, Creative arts, NaCCA.

## I. INTRODUCTION

In every country, teaching is one of the professions expected to educate its populace. Though this is certainly true for both those who have formal education and those without, a

well-trained teacher has the requisite skills and the patience to teach topics which appears to be 'difficult' for an unskilled teacher who has limited knowledge in handling such topics. Every educational system might have its challenges regarding teaching in general, but how does a teacher handle "challenging to teach topics" without the use of creative arts or an approach which requires more than one of the senses to drive home what the teacher taught?

Teaching may be viewed as a skill and also as a talent (Tachie-Menson et al., 2015); therefore, teachers provide opportunities to transform, notably, children's lives permanently for the better or worse (University of Kent, 2016). For instance, good teachers may change children's life for the better, whereas bad teachers may worsen the state of a child. It is worth noting that skills teachers should display in schools are enormous, and these include practical skills, mental skills, pedagogical skills, research skills, life skills, as well as leadership and management skills (Unicef, 2012). These skills help to distinguish between teachers as regards who may not be able to exhibit those skills in their delivery as teachers, which could be a worry to heads of School (Competency Profile for Primary School Teachers in Uganda, 2005.). According to Stigler and Hiebert (2009), school learning will not improve unless authorities give teachers the opportunity and support they need to advance their craft. Equipping teachers by increasing the effectiveness of the methods they use, such as employing practical skills and performances; since schools that fail to do so may be lacking in terms of their ability to ensure students understanding of what they are taught through effective teaching methods.

Consequently, the outcome of effective teaching could lead to continuous success in students' academic achievement. There is a gap in the teaching methods employed by teachers and not competency, and this gap refers to the kinds of teaching needed to achieve the educational dreams Stigler and Hiebert (2009). On the other hand, from the accounts of Iwai (2003), the introduction of arts education is not only to promote the implementation of creative arts education in schools but also to encourage art activities within formal and non-formal school settings as a way to improve the quality of education.

Consequently, in September 2007, Creative Arts were introduced into Ghana's basic School's curriculum. Although, despite the inclusion of Creative Arts in the primary education, teachers still teach subjects separately promoting disintegration of the arts and the other subjects, though integration was part of the Ghanaian system of indigenous education. Creative Arts provides the opportunity for a learner to self-explore, self-express and build mental focus skilfully use hands to create, manage and reduce stress, achieve personal satisfaction and enjoyment. The skill acquired through the study of Creative Arts enables learners to improve their performance in other learning areas (NaCCa, 2020). Creative arts include drama or theatre, music, film, creative writing, graphic design, photography and visual arts (for instance, leatherwork, sculpture, jewellery, textiles, picture making).

Creative Arts is one of the subjects taught at the Primary School in addition to English Language, Mathematics, Science, French, Ghanaian Language, Information and Communication Technology, Religious and Moral Education, among others (Essel, Tachie-Menson & Ahiaklo, 2017). The importance of Creative Arts in primary education cannot be taken lightly. It is seen in the fact that Creative Arts play a crucial role in the formative years of a child's educational journey. Students who may not be able to perform well in subjects taught in class might be helped through the use of creative art activities to instil in them the assurance that they can also make it just like their peers. Art is a natural activity to support free play in children to employ diverse materials in an organic and unstructured way, permitting for exploration and experimentation. These artistic endeavours and self-directed explorations are not only fun but educational as well (Rymanowicz, 2015).

The relevance of Creative Arts in primary education is that it helps students to see, touch, feel, understand and perform some actions regarding what they are asked to do during a teaching session. Fiske (1999) says that students who are not easily reached otherwise in the classroom are catered for through the use of art techniques.

In the Kwame Nkrumah University of Science and Technology Primary School, popularly known as KNUST Primary School, the art teachers sought many ways to explore how creative arts could help students in learning difficult subjects at the primary level of education. This effort is to thoroughly propagate efficiency in teaching and learning of some challenging to teach (and learn) topics in subjects like English Language, Mathematics and Natural Science. Besides, some primary school teachers at the KNUST Primary School rely on Creative Arts teachers to demonstrate challenging topics as they are unable to explain clearly to students without the use of drawings, songs and drama. However, this may be due to the abstract nature of some topics in the three subjects, which makes it difficult for these teachers to explain to students effortlessly. The headmistress of the School confirmed a decline in the performance of students in English

Language, Mathematics and Natural Science. For the past years especially when they progress to write the Basic Education Certificate Examination (BECE) as a result of students' lack of interest in the subjects, usually a problem which begins at the lower primary level.

Besides, some of the primary school teachers attribute students' non-performance in the three subjects to the use of foreign materials for classroom instructions. The lack of local instructional materials makes learning unfamiliar and incomprehensible leading, to some students finding it difficult to connect with ideas being discussed in class as they appear to be from foreign sources.

#### *Purpose of the study*

To the authors' knowledge, no study has been conducted to examine the teaching of English Language, Mathematics and Science with creative arts methods, especially using teacher-and-student made illustrations in Ghana. Therefore, this study explores the use of creative arts to enhance the teaching of challenging topics in English Language, Mathematics and Natural Sciences in a selected basic school in Ghana.

*Research questions;* In making this research successful, three research questions were set to help answer the substantive issue of the study:

*RQ1:* What are the existing methods of teaching and learning "challenging to teach" topics in English Language, Mathematics and Natural Science at KNUST Primary School in Kumasi?

*RQ2:* How will Creative Arts activities be explored to teach "challenging to teach" topics in English Language, Mathematics and Natural Science at KNUST Primary School in Kumasi?

*RQ3:* What is the effectiveness of using Creative Arts to teach "challenging to teach" topics in English Language, Mathematics and Natural Science and how will they impact students' academic performance at KNUST Primary School in Kumasi?

## II. MATERIALS AND METHODS

### *2.1 Study Design*

The research design was a case study, and as many authors have written about case study research. Yin (2014) describes it as a detailed description of a phenomenon in its natural context. In my case, this study is a description of how challenging topics are handled in School at the lower primary level. By using KNUST Primary School as a case study, a similar approach could be adopted in other primary schools as replication studies.

KNUST Primary School is perceived as a government-assisted institution with the best teachers handling different students. This perception may be held by either private or public schools or both. The choice of a case study was appropriate to understand the nature of the study and its

outcome. Moreover, since qualitative research deals with the underlying qualities that pertain to a phenomenon, it was decided that this approach would help develop a theory, which is one of the theoretical aims for qualitative research designs.

## 2.2 Population and Sampling

The population for the study comprised primary two students (n = 254), class teachers (n = 6) who teach English Language and Mathematics, and a teacher who teaches Natural Science on the whole class two-block (2A-2F classes). Primary two students were chosen because primary two students were more matured to have acquired knowledge and skills in reading and writing. They were also seen to have the ability to think to some extent more than primary one students, hence, the choice of primary two.

Table 1: Target population of students and teachers at KNUST Lower Primary Two

Class Blocks						Teachers	Total
2A	2B	2C	2D	2E	2F		
43	42	42	44	41	42	7	261
Total for classes: 254							

The target population for the study is 261 students. The researcher chose class 2E, which has similar characteristics to the other classes in this category. In KNUST primary, there is a careful distribution of students in each class based on their performance as a way of creating a good competition amongst students. For this reason, the accessible population for the study was made up of primary 2E students who were 41 in addition to 6 class teachers plus a natural science teacher totalling 48.

The study employed a purposive sampling technique, and the choice of participants was determined by how relevant those in the wider population would benefit from the study in question. It reflected not only the true characteristics of the participants but also enriched the study. Two teachers taught the three subjects: one teacher taught both English Language and Mathematics, and the other teacher taught Natural Science. Purposive sampling was used to select primary two students from class 2E at KNUST Lower Primary School to participate in this study. This class was chosen because it has the characteristics of all the other classes from 2A to 2F. These characteristics include one class teacher teaching both English Language and Mathematics, and a Natural Science teacher that teaches on the block that is from Class 2A up to 2F. Students were seen to possess the same qualities as that of the other classes, which will help them understand and participate fully in the study.

## 2.3 Procedure

Based on the chosen research approach, it was relevant to use interview and observation for collecting data for the study. A study by Asare-Forjour (2009) claims that observing behaviour is a sure way of evaluating the works of a teacher

and a school. Through the field of education, observation could be made in determining a particular teacher's skill and assessment of a practical skill. This method of collecting data ensures that the research questions are answered and makes the provision of the full documents of observation by recording and also making field notes on the place or persons observed (Ruane, 2005). The researcher made use of an observation guide, which also relied on the field notes gathered while lessons were underway. Photographs of teachers and students actively engaged in the creative arts activities were captured during the lessons.

Permission was then granted enabling, the researcher to begin the study through observation. The researcher visited the participants on the agreed dates and times for the scheduled observation sessions which happened on every Monday to Wednesday, lasting for 30 minutes in each session. The follow-up observation had its basis on the observation checklist needed to collect data necessary to help guide the design of an intervention to resolve the shortfall of the teaching and learning of selected challenging topics in English Language, Mathematics and Natural Science. The researcher used reflexivity to maintain a neutral position during observation while watching classroom activities. The results of the observation and the interviews conducted follows in the next section.

## III. RESULTS

The results section is broken into three parts, with each part focusing on each research question for the study.

### 3.1 What are the existing methods of teaching and learning "challenging to teach" topics in English Language, Mathematics and Natural Science at KNUST Primary School in Kumasi?

Observation and interview played a significant role in collecting data to answer the first research question. The investigator observed six lessons, two different topics under the three subjects. A lesson on nouns and an essay about my family was observed under the English Language. In Mathematics, students were observed during a lesson on money and also multiplication. For the Natural Science class, students learnt about personal hygiene and parts of the human body. In-depth qualitative interviews were conducted with two teachers handling both English Language, Mathematics, and a Natural Science teacher. The topics observed were seen as challenging to teach topics in English language, Mathematics and Natural Science. The teachers nominated the earlier mentioned topics as challenging to teach.

#### 3.1.1 Observation of Lesson on Noun under the English Language

On 13 June 2016 at 8:00 am class session began at KNUST Class' 2E' classroom. A total number of 41 pupils with an average age of 7 years and a female teacher were present. The lesson lasted for 30 minutes. The objective of the lesson was for pupils to know about Nouns as naming words and use

them correctly in sentences. The class began with the teacher asking what the date was and upon the response from the pupils, she wrote the topic Nouns and the present date on the board. The teacher began teaching by asking pupils to show by hand if they could mention objects in the classroom. She then defines what a noun is and asked pupils to repeat the definition after her. It went on till pupils could define noun on their own. She wrote names of animals as the sub-topic and explained as she walked through the rows and called pupils by their names to get their attention. She mentioned some of the names of animals and described them as well. According to the teacher, she had already taught pupils nouns as names of people, places, food and objects.



Plate 1: English teacher teaching Nouns as names of animals to Class 2E pupils at KNUST Primary School

### 3.1.2 Observation of Lesson on Essay Writing of 'My Family' under English Composition

Another observation of an English Language lesson on the topic 'my family' under Composition was observed on Monday, 14 June 2016. The class began at 10:30 in the morning, which is the time when pupils return from the morning break. The objective of the lesson was for pupils to be able to express themselves freely, describe things, especially their family accurately and also to be able to write about their families. The teacher introduced the topic by explaining how to write about the family. She told the class about her family and pupils seemed interested in the story she said about her family. After that, she wrote about her family on the board for pupils to repeat after her as she read. She then asked pupils to write about their family as a form of class exercise looking on hers on the board for guidance. As pupils were busily writing, the researcher went round to read as they wrote about their family. Thirty per cent of the pupils could write to express their families as their teacher had taught them. Still, the majority representing 70% of the pupils copied the exact Composition that the teacher had written on the

board since they forgot to make changes to fit their own family.

### 3.1.3 Observation of Lesson on Human Body Parts under Natural Science

On 15 June 2016, a class begun at 9:30 am on the topic Human Body Parts. The objectives of the lesson were for pupils to learn the vocabulary associated with the body parts and also to explore the critical functions of the body parts. The lesson was introduced as pupils were asked to mention the names of parts of their body. The teacher tried to draw a human figure on the board, but he could not do it. Eventually, he called the Creative Arts master to draw the human figure on the board for teaching the Human Body Parts. During the time that the teacher was out of the classroom, pupils talked and laughed about their Natural Science teacher's drawing of the full human figure on the board. Pupils were clapping as the art master was finishing the sketch. The Natural Science teacher then labelled the parts of the body and explained the functions of each part. He then asked pupils to draw the labelled human body into their exercise books. During this period pupils move about borrowing colours from friends to complete their exercise.

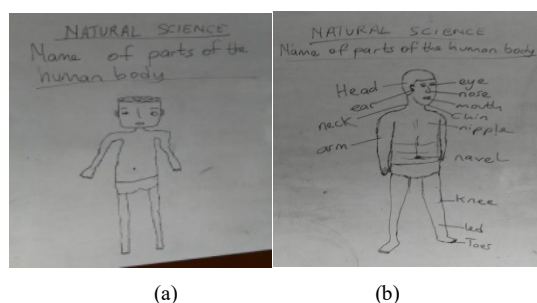


Fig (a): Natural Science teachers drawing of a human figure on the board for teaching and learning (b): The drawing of a labeled teachers drawing of a human figure on board by Creative Arts teacher for teaching and learning

### 3.1.4 Observation of Lessons on Personal Hygiene under Natural Science

The lesson in class 2E utilised illustration in the Natural Science textbook. The objective of the lesson was for pupils to learn to keep their bodies clean and germ-free. The teacher introduced the lesson by writing the topic boldly on the board. She asked pupils to open to the page that had the illustration and explained what personal hygiene signifies. Pupils were then asked questions on the topic to be answered since it was almost time for a break. The picture below shows how pupils were not excited about the topic and not willing to raise their hands to answer questions posed by the teacher. Pupils jumped joyously at the sound of the siren that it was time to break the teacher ended the class by letting pupils go out for a break.



Plate 2: A Natural Science teacher teaching "personal hygiene" to Class 2E pupils.

### 3.1.5 Observation of Lesson on Multiplication under Mathematics

At 8:00 am on 15 June 2016, a class was observed on multiplication under mathematics. The objective of the lesson was for pupils to be able to state the product if the order of factors in a multiplication sentence is changed. Another objective was for pupils to be able to recite the multiplication times table. The methods of teaching mathematics in Class 2E classroom was the lecture, demonstration and discussion. Teachers used textbooks and writing board as the basic methods of teaching maths. Again, the teacher only employed the basic items that could be found in the environment, such as a broomstick, small stones, bottle covers for teaching multiplication. Assessment of pupils was done by asking them to write the correct answers on a given page in their textbook

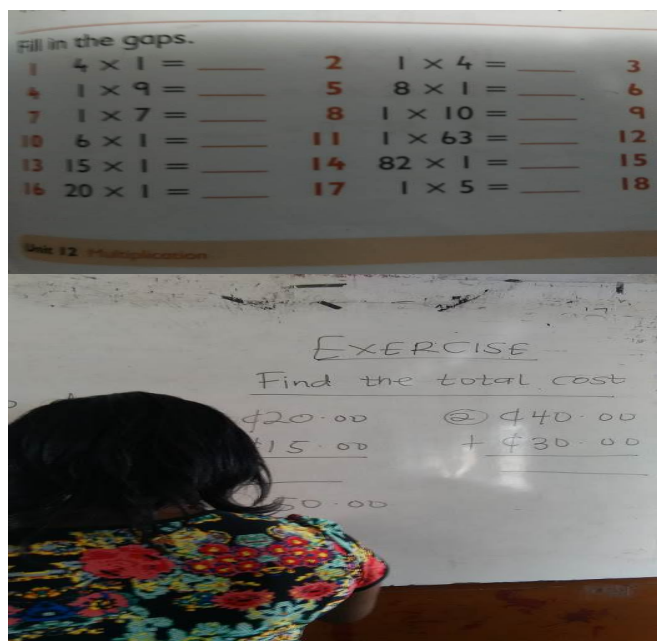


Plate 3: Above is an opened page for class exercise on multiplication and cost of items.

### 3.1.6 Observation of Lesson on Money under Mathematics

The objective of the lesson was for pupils to know the value of money by finding the total cost of items bought and to find the change as well. The teacher introduced the lesson by showing money of the various notes and coins in Ghana Cedis. She showed pupils how to find the total cost and change by working examples on the board and called pupils who understood her method to find the answers to questions she had written on the board. The teacher then gave pupils a class exercise from their math textbook by telling pupils the page number. Pupils who did not understand the exercise, especially those seated at the back of the class were fidgeting, talking, and others slept when the exercise was given.

### 3.2 How will Creative Arts activities be explored to teach "challenging to teach" topics in English Language, Mathematics and Natural Science at KNUST Primary School in Kumasi?

The second part is linked with the activities undertaken for the second research question. It saw the integration of creative art exercises taking centre stage of how the topics mentioned above were handled in the three subjects. Nouns were taught under the English language lesson whereby students coloured animals to remember names the animals. Again, memory drawings served as a hook for students to remember members of their families. On Mathematics, students were taught to use trees with branches to solve the difficult task in front of the chalkboard for the learning of multiplication, and the use of buying and selling ideas to help them understand how to find the total cost and change of an item. Action songs were used to help children to remember parts of the human body, and a drama was performed for students to learn about the importance of personal hygiene. 3.2.2 Integration of Memory Drawing for Teaching "My Family" in English Composition

Upon enquiry on the next day on pupil's performance on 'My Family' under 'English Composition', the teacher recorded 40% as the pass mark. The researcher introduced drawing and colouring to the English Language teacher and asked her to make pupils draw themselves first and include their family in the drawing. It gave the teacher a clear picture of what pupils wrote about their family.





Plate 4: A pupil's drawing from memory to depict his Muslim family.

A female pupil made the other drawing, and she explained in her essay that the person lying down was in heaven. Upon enquiry from her teacher, she explained that the girl's sister passed away not too long ago. The researcher identified that by doing this, pupils were able to express themselves through art by drawing and colouring. Conversely, it can be surprising for many people to see how 'able' in art some children are when they do not appear so developed cognitively, and vice versa (Tessa, 1990). With pupils drawing and colouring, it served as a reminder for pupils as they wrote about their family. The teacher also got a clear picture of what pupils wrote about their family.

### 3.2.3 Integration of Drama into the Teaching and Learning of Natural Science

Under Natural Science, the topic Personal Hygiene did not seem interesting to pupils in the class as pupils were fidgeting and conversing when the teacher was not looking. The natural science teacher was teaching with the lecture method, hence the need to introduce a creative arts activity in the form of drama. "Kwaku woke up in the morning without brushing his teeth and bathing. He, later on, visited the toilet without washing his hands and then went to take his breakfast (Milo and Bread with a fried egg). Kwaku left for School. Another classmate of Kwaku, by name Kwasi also woke up and then bathed, brushed his teeth and visited the toilet and washed his hands before eating his breakfast (Milo and Bread). Kwasi also left for School after taking his breakfast. In a week, Kwaku ended up at the hospital very sick, and the doctor advised him to practice personal hygiene, thus, bathing twice regularly, brushing their teeth twice and washing their hands with soap and running tap water after every visit to the toilet. Kwasi did not fall sick, and so he continued practising personal hygiene and lived healthier."



Plate 6: Kwaku went to the toilet without washing his hands. He eats his food and falls sick. His doctor advised him. Kwasi washes his hands with soap and water before eating so he is well and happy.



Plate 7: Pupils' interest in answering questions orally after drama on Personal Hygiene

### Integration of storytelling of "Trees with Branches" concept in Mathematics for Teaching and Learning of Multiplication

As a result of the outcome of the low marks scored by pupils, the researcher introduced the story of a forest that had plenty of trees. Each tree represents a multiplication problem, and the branches and fruits were the solutions or answers. An example is seven multiplied by five goes like this; the tree will have seven branches with five fruits on each of a branch. After carefully drawing the tree with branches and fruits, pupils counted the fruits altogether and arrived at the answer

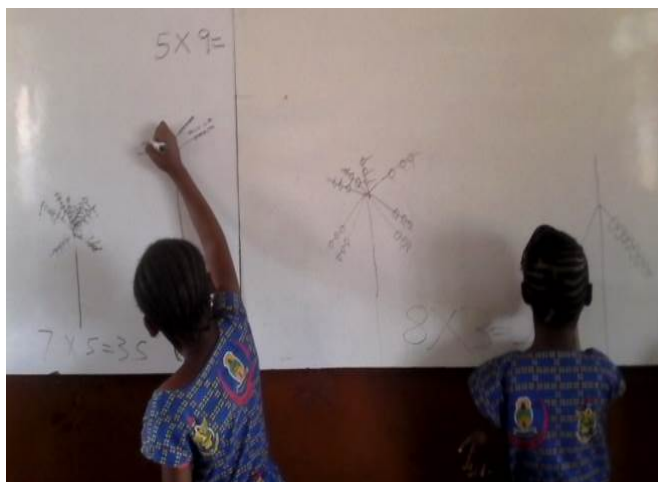




Plate 8: Pupils engaged in a Mathematical activity for Multiplication and selling. Pupils demonstrating buying and selling.

The researcher introduced buying and selling in the classroom with the help of the mathematics (class) teacher. From the observations made during lessons, pupils bought pencils, sharpeners, erasers, crayons, rulers, each day since they are not able to keep their things well at their age. The class teacher, with the guidance of the researchers, introduced the concept of buying selling among pupils in the classroom. It made the pupils understand the calculation of total cost and change. Pupils were happy to find the total cost and change for their friends as they practised buying and selling and were able to apply the idea when an exercise was given by their Mathematics (class) teacher.

*3.3 What is the effectiveness of using Creative Arts to teach "challenging to teach" topics in English Language, Mathematics and Natural Science and how will they impact students' academic performance at KNUST Primary School in Kumasi?*

For the third part, activities undertaken for the last research question resulted in assessing the performance of students in the three subjects: English Language, Mathematics and Natural Science (Table 2).

Table 2: Pupil academic performance in the three subjects using Creative Arts activities

Level	English Language			Mathematics			Natural Science		
	Result	N	%	Result	N	%	Result	N	%
Primary 2	Pass	41	100	Pass	34	83	Pass	35	84
	Fail	0	0	Fail	7	17	Fail	6	16
Total		41	100		41	100		41	100

From table 2, the results revealed that 100% of students who took the achievement test in the English Language passed with no failure recorded. Regarding the Mathematics subject, 83% of students passed while 17% failed. With the Natural

Science subject, 84% students passed with 16% of students failing.

#### IV. DISCUSSIONS

The study identified that teachers only use the standard textbook and whiteboard illustrations when teaching without considering the individual abilities of the students. It also revealed that the lecture method of teaching does not help the students to understand what is taught in class, and that makes the lessons dull. Consequently, whereas students performed well in the English Language where all passed (n=41), participation in class was very low, and this led to the low academic performance of some students in Mathematics (n=7) and Natural Science (n=6). The researcher introduced creative arts which were activity-oriented, hands-on lessons that allowed students who had difficulty in expressing themselves freely verbally to communicate and to demonstrate their understanding of the concepts taught. The result also shows that teachers are aware of the existence of Challenging to teach topics in their subject.

With the introduction of the Creative Arts activities, teachers were able to confidently and comfortably tackle 'challenging to teach' topics within the lessons period and even had time to give some form of assessment to students. It made teaching and learning easy and fun. Students who did not previously participate in lessons all got involved in the classroom, answering questions correctly to demonstrate their understanding of the topics.

Students' attitude, conduct and response to English Language, Mathematics and Natural Science lessons of "challenging to teach" topics were also carried out from time to time to ensure that students could grasp what is taught in class by a teacher. Exercises given continuously determine how students understand a topic, and somehow topics are repeated to ensure students understand a particular subject. Topics yet to be discussed in class are hinted by the teacher and parents of some students are uncooperative in assisting their wards' homework. Teachers interviewed seemed to rate themselves as 'good' in their delivery or handling of challenging topics on the subject they teach.

Based on the results from the study through interviews with teachers and participation of students in a standardised quiz, it seems clear from the primary data collected that teachers have a way of handling challenging topics in the three subject areas. Teachers are not limited to one particular way of handling challenging topics in the classroom. Teachers might use many classroom activities to manage difficult students during teaching. Besides, explanations were given on the topics being discussed. Afterwards, exercises were given to determine the level of understanding of the students. Furthermore, classroom demonstrations are handled by students through the direction of the teacher handling a particularly challenging topic for students to better relate to the topic being discussed at the moment.

Assessing students from time to time helps the teacher to know the rate at which he or she is moving, and if the teacher noticed that it is too fast, then the teacher might slow down. It helped to know if it went down well with the students and what topics need to be revisited. Engaging students consistently with exercise gives the teacher an idea of whether students understand the topic and how prepared they are should there be an exam at the time. Introducing the next topic to students ensures that students prepare by themselves or through the help of a guardian or a parent on the next topic. This activity resulted in students getting an 'easy' understanding of the topic to be treated in class, and they are better placed at asking questions related to the subject at their level.

## V. CONCLUSION

Preparation is mentioned as the main advice for new teachers in the field of speciality, using relevant books and internet as well as critical planning. A lack of preparation might result in the teacher confusing the students in the class. Some students are very clever due to the use of ICT, and this might have broadened their minds in several subjects. Students at that level trust what their teachers say to them, therefore it is important that adequate preparation is done in order not for teachers to disgrace themselves in front of the students.

The implications for schools to adopt unique ways of handling challenging topics were discussed. It is recommended that periodic training or professional development (PD) sessions are organised for primary school teachers. It will equip the teachers with the skills to vary their methods of teaching using creative art activities and adopt more child-centred lessons, such as hands-on activities and visually-oriented materials. The teachers, through the PD session, will also develop the ability to handle students with different learning abilities, learning preference and learning styles when teaching challenging topics in the classroom.

## VI. RECOMMENDATIONS

- The study recommended that teachers should vary the way they handle "challenging to teach" topics by using appropriate methods which ensure that students understand a particular topic being treated.
- Videos should also be encouraged at the level during teaching, and not only on challenging topics. Primary schools should purchase a projector which could be used during such lessons to aid in the understanding of challenging topics. The computer laboratory in various schools could help with the provision of a laptop to aid in the viewing of educational videos in solving problems students encounter with the learning of challenging topics in the classroom.
- Teachers should explore creative art activities to teach challenging topics in English Language, Mathematics and Natural Science. Periodic assessment should be encouraged by teachers regularly to know if what is being taught is

understood. The periodic assessment will result in better grades on the part of students during examinations, and ultimately parents or guardians will be delighted in their ward's performance.

## REFERENCES

- [1] Adu-Agyem, J., & Osei-Poku, P., 2012. Quality Education in Ghana: The Way forward. *International Journal of Innovative Research and Development*, 1(9), 164-177.
- [2] Aina, J. K., 2011. Science Teaching in Primary Schools: Its Implication for Nigeria. Retrieved July 9, 2013 from <http://www.articlesbase.com/science-articles/science-teaching-in-primary-school-its-implication-for-nigeria-5434632.html>
- [3] Akerle, A. J. and Afolabi, A. F., 2012. Effect of Video on the Teaching of Library Studies among Undergraduates in Adeyemi College of Education, Ondo.
- [4] Ali, Z., Ghani, F., & Ali, A., 2010. The use of instructional technology in private schools and national education policy. *The Dialogue*, 6(2), 161-172.
- [5] Alzaghoul, A. F., 2012. The implication of the learning theories on implementing e-learning courses. *The Research Bulletin of Jordan ACM*, 11(11), 27-30.
- [6] Amenuke, S. K., Dogbe, B. K., Asare, F. D. K., Ayiku, R. K., Baffoe, A., 1991. *General Knowledge in Art for Senior Secondary Schools*. London: Evans Brothers Limited.
- [7] Asare-Forjour, E., 2009. "Developing a method in drawing for students in the Department of Publishing Studies," PhD Dissertation, School of Graduate Studies, Kwame Nkrumah University of Science and Technology. Retrieved 17 February 2017 from [ir.knust.edu.gh/handle/123456789/333](http://ir.knust.edu.gh/handle/123456789/333).
- [8] Austin, K., Orcutt, S., Rosso, J., 2001. How people learn: Introduction to learning theories. Retrieved 5 September 2016 from <http://www.stanford.edu/class/ed269/hplintrochapter.pdf>.
- [9] Cabrera, M. P., Bazo, P., 2002. Teaching the four skills in the primary EFL classroom. *The Internet TESL Journal*, 3, 12.
- [10] Castle, E. B., 1993. *Principles of education for teachers in Africa*. New York: Oxford University Press.
- [11] Competence profile for primary school teachers in Uganda, n.d. <http://download.ei-ie.org/Docs/WebDepot/Competence%20Profile%20for%20the%20Primary%20School%20Teacher%20in%20Uganda.pdf>
- [12] Costa, A. L. & Kallick, B., 2009. *Habits of mind across the curriculum: practical and creative strategies for teachers*. VA: Association for Supervision and Curriculum Development.
- [13] Cowan, P., 2006. *Teaching mathematics: A handbook for primary and secondary school teachers*. Routledge.
- [14] Curriculum Research and Development Division, 2007. *Teaching Syllabus for Creative Arts (Primary 1 – 3)*. Retrieved 20 September 2015 from [www.ibe.unesco.org/curricula/ghana/gh\\_lpr\\_ar\\_2007\\_eng.pdf](http://www.ibe.unesco.org/curricula/ghana/gh_lpr_ar_2007_eng.pdf)
- [15] De Houwer, J., Barnes-Holmes, D. & Moors, A., 2013. *Psychon Bull Rev* 20: 631. DOI:10.3758/s13423-013-0386-3
- [16] DeCarvalho, R. J., 1991. *The founders of humanistic psychology*. Praeger Publishers.
- [17] Department for Education and Employment (DfEE), 1999a. *The National Curriculum: Handbook for Primary Teachers in England*. London: DfEE and QCA.
- [18] Dosoo, K. M., 1996. *Comprehensive notes on education for teacher training college*. Wesley College, Kumasi
- [19] Driscoll, M., 2000. *Psychology of Learning for Instruction*. Needham Heights, MA, Allyn & Bacon.
- [20] Dunn, R., Beaudry, J. S. & Klavas, A., 2002. Survey of research on learning styles. *California Journal of Science Education*, 2(2), 75-98.
- [21] Early Childhood Learning and Knowledge Centre, 2016. Retrieved 30 July 2016 at [https://eclkc.ohs.acf.hhs.gov/hslc/hs/sr/approach/elof/ca\\_express.html](https://eclkc.ohs.acf.hhs.gov/hslc/hs/sr/approach/elof/ca_express.html)



- [22] Edwards, S., 2008. *Primary mathematics for teaching assistants*. Routledge. Place
- [23] Essel, H. B. (2010, 8). Electronic Submission of Theses and Dissertations in Kwame Nkrumah University of Science and Technology. KNUST. Doi, 10, 1-120.
- [24] Essel, H. B., & Osei-Poku, P. (2011). An Effective Knowledge Management of Graduate Research Output at Kwame Nkrumah University of Science and Technology. *Journal of Science and Technology*, 31, 95-108.
- [25] Essel, H. B., Awuni, T. B., & Mohammed, S. (2020). Digital Technologies in Nursing and Midwifery Education in Ghana: Educators Perspective, Practice and Barriers. *Library Philosophy and Practice*.
- [26] Essel, H. B., Boakye-Yiadom, M., & Kyeremeh, F. A. (2018). Assessing students' experiences of internal quality assurance practices in selected private higher education institutions. *International Journal of Science and Research*, 7, 804-809.
- [27] Essel, H. B., Butakor, P. K., & Northey, S. (2019). Summative e-Examination for High Stake Assessment in Higher Education: A Case of Undergraduate Students at the Kwame Nkrumah University of Science and Technology. *Global Journal of Human-Social Science: Arts & Humanities-Psychology*.
- [28] Essel, H. B., Nunoo, F. K., & Ahiaklo-Kuz, N. A. (2017). Development of an Integrated Art and Visual Programming Framework for Ghanaian Basic Schools based on a 21st-century skill deficiency diagnostic on two basic school subjects. *Journal of Education and Human Development*, 6, 89-98.
- [29] Essel, H. B., Nunoo, F. K., Tachie-Menson, A., & Amankwa, J. O. (2018). Higher Education Students' Ownership and Usage of Smart Phones and Tablets: The Case of Kwame Nkrumah University of Science and Technology (KNUST). *International Journal of Educational Technology*, 5, 20-28.
- [30] Essel, H. B., Osei-Poku, P., Tachie-Menson, A., & Opoku-Asare, N. A. (2016). Self-Paced Interactive Multimedia Courseware: A Learning Support Resource for Enhancing Electronic Theses and Dissertations Development. *Journal of Education and Practice*, 7, 74-84.
- [31] Essel, H. B., Tachie-Menson, A., & Ahiaklo-Kuz, N. A. Y. (2017). 21st Century Skill Set Deficiency in Ghanaian Basic Education: A Review of Basic Design and Technology, and Information and Communications Technology Syllabi. *Indian Journal of Applied Research*, 8(3), 248-250.
- [32] Essel, H. B., Tachie-Menson, A., & Owusu, M. (2018). Effects of student support services on distance learners in selected centres of Jackson college of education. *International Journal of Science and Research*, 7, 649-652.
- [33] Essel, H. B., Tachie-Menson, A., Amponsah-Fordjour, A., Appiah, I. K., & KNUST, P. M. (2017). Analytical Study of the Implications of Text Illustration on Lower Primary Pupils' Controls in the Classroom: The Case of Illustrations in Ghanaian Language and Literacy Textbook. *Journal of Education and Practice*, 59.
- [34] Etor, C. R., Mbon, U. F. & Ekanem, E. E., 2013. Primary Education as a Foundation for Qualitative Higher Education in Nigeria. *Journal of Education and Learning*, 2(2), p155.
- [35] Farr, S., 2010. *Teaching as leadership: the highly effective teacher's guide to closing the achievement gap*. John Wiley and Sons.
- [36] Feasey, R., 2008. *Primary Science for teaching assistants*. Routledge.
- [37] Fisher, L. J., 2006. *One hundred ideas for surviving your first year in teaching*. A&C Black.
- [38] Fiske, E. B., 1999. *Champions of change: The impact of the arts on learning*.
- [39] Fraenkel, J. R. & Wallen, N. E., 2009. *How to design and evaluate research in education* (7th ed.). NY: McGraw-Hill.
- [40] Fredua-Kwarteng, Y. and Ahia, F., 2005. Ghana flunks mathematics and science: Analysis (2). *Ghana News*.
- [41] Frimpong, O. S., 2009. *Principles and Practice of Teacher Education in Ghana*, University of Education, Winneba, Ghana.
- [42] Gardner, H., 1999. *Intelligence reframed: Multiple intelligences for the 21st century—basic books*.
- [43] Glaser, R., 1991. The maturing of the relationship between the science of learning and cognition and educational practice. *Learning and Instruction*, 1(2), 129-144.
- [44] Glaserfeld, E., 1984. An introduction to radical constructivism. In P. Watlawick (Ed.), *The invented reality*. New York: W.W. Norton.
- [45] Gurney, P., 2007. Five factors for effective teaching. *New Zealand Journal of Teachers' Work*, 4(2), 89-98.
- [46] Hancock, B., 2002. Trent Focus for Research and Development in Primary Health Care: An Introduction to Qualitative Research. Retrieved 30 April 2013 from [http://faculty.cbu.ca/pmacintyre/course\\_pages/MBA603/MBA603\\_files/IntroQualitativeResearch.pdf](http://faculty.cbu.ca/pmacintyre/course_pages/MBA603/MBA603_files/IntroQualitativeResearch.pdf).
- [47] Haylock, D., 2007. *Key concepts in teaching primary mathematics*. Sage.
- [48] Hopper, C., 2012. *Practising college learning strategies*. Cengage Learning.
- [49] Hoskins, B. & Fredriksson, U., 2008. Learning to Learn: What is it, and can it be measured. *Joint Research Centre Technical Report JRC*, 46532.
- [50] Huiitt, W., 2001. Motivation to learn: An overview. *Educational Psychology Interactive*, 12.
- [51] Iwai, K., 2003. The Contribution of the Arts Education to Children's Lives. *Development* (pp. 1-15).
- [52] Ko, J. and Sammons, P., 2013. *Effective Teaching: A Review of Research and Evidence*. CfBT Education Trust. 60 Queens Road, Reading, RG1 4BS, England.
- [53] Krause, K. (2010). *Educational psychology: for learning and teaching*. (3rd ed.). South Melbourne, Vic.: Cengage Learning Australia.
- [54] Lemanski, T. & Overton, T., 2011. UK Physical Sciences Centre: An Introduction to Qualitative Research. Retrieved 30 April 2013 from [http://www.heacademy.ac.uk/assets/ps/documents/primers/primers/qualitative\\_research.pdf](http://www.heacademy.ac.uk/assets/ps/documents/primers/primers/qualitative_research.pdf).
- [55] Lestage, A., 1959. The Use of Audio-visual Aids in Education. *UNESCO Chronicle*.
- [56] Lightfoot, L., 2007. *Five-minute lessons in school reforms*. Available at: <http://www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/07/13/nschool213.xml>
- [57] Lockheed, M. E. & Hanushek, E., 1994. Concepts of educational efficiency and effectiveness. Washington, DC, The World Bank. (Human Resources Development and Operations Policy Working Papers, 24.).
- [58] Martin, L., 2014. Education is so important for kids. Retrieved 20 June 2016 from <http://www.learningliftoff.com/10-reasons-arts-in-education-important-kids/#.V2fG0zWELb4>
- [59] Marzano, R. J., Marzano, J. S., & Pickering, D. J., 2003. *Classroom management that works*. Alexandria, VA: Association for Supervision and Curriculum Development.
- [60] Mereku, K., 2003. *Methods in Ghanaian Primary Mathematics Textbooks and Teachers' Classroom Practice*. Learning, 23(June), 61-66.
- [61] Miles, M. B. & Huberman, A. M., 1994. *Qualitative Data Analysis* (2nd ed.). Thousand Oaks, CA: Sage.
- [62] Mödrtscher, F., 2006. The Impact of an E-Learning Strategy on Pedagogical Aspects. *International Journal of Instructional Technology and Distance Education*, 3(3).
- [63] Murphy, J., 2006. *One hundred ideas for supply teachers*. Routledge.
- [64] National Council for Curriculum and Assessment (NaCCA) Taskforce. (2020). *Creative Arts Curriculum for Primary Schools* (basic 1-3). URL: <http://nacca.gov.gh/wp-content/uploads/2019/06/CREATIVE-ARTS-B1-B3.pdf>. Retrieved 20 August 2020
- [65] Nespeca, S. M. and Reeve, J. B., 2003. *Picture books plus: 100 extension activities in art, drama, music, math, and science*. American Library Association.

- [66] Numale, M. K. & Buku D. K., 2009. *The Professional Teacher: Preparation and Practice*. Cape Coast, YACI Press.
- [67] Obi, E., 2003. *Educational Management: Theory and Practice*. Awka: Jamoc. Enterprise.
- [68] Opoku-Asare, N. A., Tachie-Menson, A., & Essel, H. B. (2015). Perceptions, Attitudes and Institutional Factors That Influence Academic Performance of Visual Arts Students in Ghana's Senior High School Core Curriculum Subjects. *Journal of Education and Practice*, 6, 39–49.
- [69] Piaget, J., 1962. *Play, dreams, and imagination in children*. New York: Norton.
- [70] Reference. 2015. Retrieved from 23 September 2015 from <https://www.reference.com/art-literature/creative-arts-a1f2682dd0330465>
- [71] Roux, R., 2012. *Research in English Language Teaching: Mexican Perspectives*. Palibrio.
- [72] Ruane, J., 2005. *Essentials of Research Methods: A Guide to Social Science Research*. Malden: Blackwell Publishing.
- [73] Ryan, C., 2009. *Teach Primary: Improving the status and quality of primary school teaching*. Retrieved July 30, 2016 at <https://www.reference.com/art-literature/creative-arts-a1f2682dd0330465#>
- [74] Sarama, J., & Clements, D. H., 2009. Teaching math in the primary grades: The learning trajectories approach. *YC Young Children*, 64(2), 63.
- [75] Saunders, M., Tosey, P. & Thornhill, A., 2012. *Research Methods for Business Students* (6th ed.). Pearson.
- [76] Schwartz, K., 2015. How Integrating Arts Into Other Subjects Makes Learning Come Alive. Retrieved 21 June 2016 from <https://ww2.kqed.org/mindshift/2015/01/13/how-integrating-arts-into-other-subjects-makes-learning-come-alive/>
- [77] Shuttleworth, M., 2008. Quasi-Experimental Design. Retrieved 12 February 2017 from Explorable.com: <https://explorable.com/quasi-experimental-design>.
- [78] Stern, H. H., 1983. *Fundamental concepts of language teaching: Historical and interdisciplinary perspectives on applied linguistic research*. Oxford University Press.
- [79] Stigler, J. W. & Hiebert, J., 2009. *The teaching gap: Best ideas from the world's teachers for improving education in the classroom*. Simon and Schuster.
- [80] Tachie-Menson, A., Opoku-Asare, N. A., & Essel, H. B. (2015). Teaching and Learning of Drawing for Book Design and Illustration: A Study of Higher Education in Publishing. *Global Journal of Human-Social Science: Arts & Humanities–Psychology*.
- [81] Tachie-Menson, A., Opoku-Asare, N. A., & Essel, H. B. (2015). Teaching and Learning of Drawing for Book Design and Illustration: A Study of Higher Education in Publishing. *Global Journal of Human-Social Science: Arts & Humanities–Psychology*.
- [82] Tamakloe, E. K., Amedahe, E. K. & Atta, E.T., 2005. *Principles and Methods of Teaching*, Accra: Ghana University Press.
- [83] Teacher Education through School-based Support in India. (n.d.). Creative arts and English learning: instructing, describing, discussing and performing. Retrieved 20 March 2016 from [www.teindia.nic.in/Files/TDU/Elementary/English/ee\\_11\\_final.pdf](http://www.teindia.nic.in/Files/TDU/Elementary/English/ee_11_final.pdf)
- [84] Thwaites, A., 2008. *One hundred ideas for teaching primary mathematics*. London: Continuum.
- [85] Unicef. (2012). *Global evaluation of life skills education programmes*. New York: United Nations Children's Fund.
- [86] University of Kent, 2016. *Teaching Skills: Skills You Need*. Retrieved on 25 October 2016 from <http://www.skillsyouneed.com>
- [87] Vygotsky, L. S., 1978. *Mind in society*. Cambridge, MA: Harvard University Press.
- [88] Warren, J. E., 2013. Rhetorical reading as a gateway to disciplinary literacy. *Journal of Adolescent & Adult Literacy*, 56(5), 391-399.
- [89] Wolff, L., Schiefelbein, E. & Valenzuela, J., 1994. Improving the quality of primary education in Latin America and the Caribbean: Toward the 21st century (Vol. 257). World Bank Publications.
- [90] Wright, A., 2001. *Art and crafts with children*. Oxford University Press.