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ACCEPTANCE OF ARTICLE FOR PUBLICATION

I hereby inform you that your paper entitled : **" Teachers' Pedagogical Skills**

and Use of Instructional Materials as Correlate of Students' Performance

in Social Studies in Yenagoa, Bayelsa State, Nigeria“, is accepted for publication in our “ Revue Internationale de Langues, Traduction et d'Interpretariat (RILTRI) : Volume 1, Number 1, ISSN1840 – 6408 of November 2013, edited by Prof. Taofiki KOUMAKPAI which will be published by Institut Universitaire Panafricain (IUP) at Porto-Novo in Republic of Benin soonest.

We look forward to getting more articles from you.

Yours sincerely,

Dr. Ibrahim YEKINI
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Teachers' Pedagogical Skills and Use of Instructional Materials as Correlate of Students' Performance in Social Studies

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Abstract

The study examined teachers' pedagogical skills and use of instructional materials as a correlate of students' performance in social studies in Yenagoa Metropolis, Bayelsa State. Descriptive survey research of the correlational type was adopted for the study. 701 Junior Secondary School III students within Yenagoa Metropolis were randomly selected for the study. A researchers' designed Questionnaire on Teachers' Characteristics (QTC) and an adopted Social Studies Performance Test (SSPT) from the Bayelsa State Basic Junior School Certificate Examination 2008, 2009 and 2010 past questions were the instruments used in collecting data for the study. The QTC and SSPT was pilot-tested using test-retest and split half methods respectively. A reliability coefficient of 0.72 was obtained for the QTC while 0.74 reliability coefficient was obtained for SSPT. Pearson's Product Moment Correlation was used to analyze the data at a significance level of 0.05 through SPSS for Windows version 17. The results show a positive correlation between teachers' pedagogical skills and students' performance in Social Studies while there was no correlation between teachers' use of instructional materials and students' performance in Social Studies. The study therefore recommended that government at all levels with a meaningful and purposive collaboration with the organized private sector should periodically provide windows of opportunities like learned workshops, seminars and in-service trainings for social studies teachers to equip and improve their knowledge of teaching.

Keywords: teachers' pedagogical skills, use of instructional materials, correlate, students' performance, and social studies

Introduction

Pedagogy or what is commonly referred to as teachers' technical skills is what distinguishes professional teachers from nonprofessionals. In our today's educational practice, pedagogical skills appear to be a rare and scarce commodity even among professionally trained teachers.

What then is pedagogy? One may likely to ask. The Webster Dictionary defines pedagogy as "the whole context of instruction, learning, and the actual operations involved therein." The American Heritage Dictionary of the English Language defines pedagogy as "the art or profession of teaching."

As short as the definitions presented above are, they are narrow and simplistic in the sense that they fail to capture the need for teachers to have good understanding of the subject they teach, of how to monitor students' progress and how to help students who are falling behind. That is students with poor and fluctuating academic performance. In this 21st century, teaching has gone beyond the art and science of conserving and transmitting knowledge, concepts and skills to succeeding generations, to influencing observable and measurable students' outcomes. Clark & Walsh (2002) argued that with the rise of professional teachers rather than the tradition of practitioners who apprenticed students, notably with the sophist in classical Greece, the distinction between the practice of a discipline and the teaching of the discipline gave rise to the notion of skills and knowledge independent of the discipline and particular to teaching. Hence, Clark and Walsh (2002) define pedagogical skills as "consisting primarily of knowledge about classroom, assessment, methods for the motivation of students, personal knowledge about particular students and their families, socio-interactional skills. From this, we can infer that not everyone in the classroom today possesses the needed pedagogical skills to influence student learning and by extension, their academic performance.

Similarly, the National Board for Professional Teaching Standards (NBPTS, 1998) in the United States of America defines pedagogy as follows:

Content pedagogy refers to the pedagogical (teaching) skills teachers use to impart the specialized knowledge/content of their subject area(s). Effective teachers display a wide range of skills and abilities that lead to creating a learning environment where all students feel comfortable and are sure that they can succeed both academically and personally. This complex combination of skills and abilities is integrated in the professional teaching standards that also include essential knowledge, dispositions, and commitments that allow educators to practice at a high level (p. 1).

It is observed that since effective teaching not only necessitates making difficult and principled choices but also exercising careful judgment and honouring the complex nature educational mission, teachers need to be aware of the technical knowledge and skills in their daily practice.

Teachers' pedagogical skills enable classroom teachers to have a good and thorough understanding of the subject they teach (Social Studies for example) and appreciate how the knowledge gained overtime in their subject areas can be created, organized and linked to other areas of knowledge. Also, pedagogical skills make teachers to be aware of the preconceptions and background knowledge that students typically bring to each subject and of strategies and instructional materials that be of assistance in addition to understanding and solving the possible difficulties likely to arise in the classroom and modify their practice accordingly (NBPTS, 1998).

Also, Mckenzie (2003) identified seven elements (categories) which indicate the direction and importance cum the scope of pedagogy. The elements are needsassessment, professionalgrowth, classroomculture, strategy, resourcemanagement, problem-solving, and orchestration

In summary, though there seems to be more theoretical research on pedagogy but little empirical evidence linking teachers' pedagogical skills to students' performance is available. However, the findings of Oladele (2010) confirmed that there is a positive relationship between teachers' technical expertise and students' performance. It is on this basis that this particular study seeks to replicate the few findings available on this construct in Social Studies.

Similarly, It has been argued severally that teaching resources or teaching and learning materials/resources are determining factor in the attainment of instructional objectives at the classroom level of the educational enterprise. Instructional delivery cannot be said to be effective when teachers assume the role of "sage on stage", doing the talking alone. On the other hand, learning is said to be ineffective when teaching and learning are done without the use of teaching/learning resources or materials.

What can be deduced from the foregoing is that gone are the days when instructional delivery will solely be carried out by the teacher alone. This method often referred to as teacher-talk (oral exposition) instruction, involves only the learners' sense of hearing. It is said that this practice could be boring and hence, does not contribute to effective learning but when all the senses are involved, learning becomes long-lasting and efficient. Thus, it holds true of the Chinese proverb in their educational practices which says:

What I hear, I forget;

What I see, I remember;

What I do, I understand (Mkpa, 2001).

What then can we specifically say constitute teaching and learning resources/materials? To answer this poser, Offorma (2005) saw instructional resources as aids for effective teaching and learning. They are the teachers' assistants in the classroom. On her part, Onyejemezi (2001) put that instructional resources are those people and things that enhance the accomplishment of

organizational or instructional objectives. Given the myriad of challenges that modern education is characterized, the use of innovative teaching-learning system has become necessary. According to Imogie (2001) innovative teaching-learning is an organized combination and utilization of people, materials, facilities, equipment and procedures that interact to achieve the desired instructional goals or objectives.

The central point of emphasis here is, instructional resources comprises of people, places, events, materials or objects that can be used to enhance human learning in terms of improved capacity to understand, remember and apply knowledge, develop and use skills and cultivate the desirable attitudes and values in a chosen area of learning say Social Studies. In the same token, instructional materials are objects or gadgets which may be electronic or non-electronic, projected or non projected or real objects; that are not only relevant and useful for enhancing and concretizing learning in a chosen area of study say, social studies but they are utilized by the teacher to reinforce the impact of verbal expressions in the teaching-learning process.

It should be noted that instructional resources are inclusive in nature in that it consists different categories of resources and materials. While instructional materials are used in an exclusive way in that it focuses on things, objects, gadgets and other inanimate or non-human instructional aids. It can, therefore, be submitted here, that the human factor form part of instructional resources while the non-human element essentially made up what is commonly called instructional materials. Hence, for the purpose of this study, the two terms will be used interchangeably.

On this basis, Ayodele (2001) and the National Teachers' Institute (NTI, 2009) classifies instructional materials accordingly:

Table 2:Classification of Instructional Material with examples

S/N	Instructional Materials	Examples
1.	Visuals	Objects, slides, models, photograph, puppets, and so on.
2.	Audio	Audiotape, compact disc, tape recorder, and so on.
3.	Audio-Visuals	Television, Video tapes/cassette, VCDs, motion pictures with sound.
4.	Projected Media	Overhead projectors, slide projectors, microfiche, opaque projector, film stripes projector, and so on.
5.	NonProjected Media	Modules, realia, and so on
6.	Printed Materials	Textbooks, journals, periodicals, newspaper, magazines, study guide, pamphlets, workbooks, and so on.
7.	Non-Printed	Pictures, Mockups
8.	Display Boards	Chalkboard, notice boards, magnetic board, flannel board, felt board, storyboard
9.	Graphic Display	Flip charts
10.	Software	Programme stored in diskette, flash drives, Compact Disc, DVD, tape, cassette, transparencies
11.	Hardware	Computer, radio set, TV set, tape recorder, and so on.
12.	NonDimensionalObjects	Maps, charts, pictures, comic, posters, cartoons
13.	Dimensional Objects	Globes, models, robots, puppets, and so on.

On the importance of the use of instructional materials in teaching and learning, Nkuuhe (1995) argued that instructional materials/resources amongst others:

1. enables the teacher and the class to have an easy and repeated reproduction of an event or procedure.
2. provide visual access to a process or technique.
3. provide a common framework of experience to a large number of learners.
4. promote an illusion of reality.

Similarly, in an empirical study on the “importance of the use of instructional materials to the successful implementation of the social studies curriculum at the Junior Secondary School level”, Enem (2005) reported that students taught with instructional materials performed better than students taught without instructional materials in social studies. It can be extrapolated

therefore, that in using instructional material for teaching any subject including social studies, teachers need to ensure that the purposes which the materials ought to serve are clearly spelt out in advance, vigorously pursued during the lesson and successfully achieved by the end of the instructional process. No doubt, resource materials constitute a vital part of the teaching-learning process in the school system. Also, resource materials convey learning experiences to students and often determine the structure of the social studies curriculum. We should equally note that they introduce students to ideas and information about social studies in a meaningful and realistic manner (Iyewarun, 1984, Mkpa, 2001).

However, the school system has since time immemorial devised a means of assessing students' academic progress or performance. This is reflected in the teacher-made test, internal and external examinations administered to students from time to time.

For example, Table 1 shows the trend of the performance of students in Social Studies in the Junior School Certificate Examination (JSSCE) in Yenagoa Local Government Area for 2006 – 2010.

Table 1. The Trend of Performance of Students in Social Studies in BJSCE in Yenagoa Local Government Area for 2006 – 2010

Year	No. of Schools	Candidates Examined	A			C			P			F		
				%		%		%		%		%		%
2006	32	3380	16	(0.47)	600	(17.75)	2231	(66.05)	533	(15.77)				
2007	34	3612	8	(0.22)	458	(12.68)	2334	(64.62)	812	(22.48)				
2008	36	3983	2	(0.05)	425	(10.67)	3259	(81.82)	297	(7.46)				
2009	43	4699	2	(0.04)	420	(8.94)	3734	(79.46)	543	(11.56)				
2010	58	5452	5	(0.09)	331	(6.07)	2077	(38.09)	3039	(55.74)				

Source: Bayelsa State Ministry of Education, Yenagoa (2011).

It can be observed from Table 1 that there is a clear mark of fluctuation in the performance of students in Social Studies, and several factors may have accounted for this trend.

The performance of students (i.e the result) in both internal and external examinations is usually sent to schools as feedback indicating what teachers and students should do to improve on future performance (Yara & Manjohi, 2011). Against this background, the poor and fluctuating performance of students in the core of Mathematics, English including Social Studies subjects in the Upper Basic Schools has been reported to have strong link to teachers attributes or variables (Adeniyi, 2009; Akiri & Ugborugbo, 2009; Sotoyinbo, 2009).

Given the fluctuating performance of students in the Basic Junior School Certificate Examination (BJSCE) Social Studies in Bayelsa State in recent years, there has been in recent times, a growing body of research which indicates that students' performance is more heavily influenced by teachers' characteristics or quality than the students' prior academic record, students' race or parents' level of educational attainment etc. unfortunately, the previous studies of Abuseji (2007), Adeniyi (2009), Emmanuel (2010), Ibe and Maduabum (2001), Oladele (2010), Opasola (2009), Raheem (2010), Sotoyinbo (2009), Yara and Manjohi (2011) who at various times investigated into Student other teacher-related variables as determinants of Secondary school students' achievement in biology, social studies, Christian religious studies, economics, chemistry and mathematics respectively, did not capture the teachers' characteristic of pedagogical skills and use of instructional materials.

Therefore, the problem of the study is to examine teachers' pedagogical skills and use of instructional materials as a correlate of students' performance in social studies in Yenagoa metropolis, Bayelsa State, Nigeria.

Purpose of the Study

The study aims to:

1. Examine teachers' pedagogical skills as a correlate of students performance in Junior Secondary School Social Studies,
2. Examine teachers' use of instructional materials as a correlate of students' performance in Junior Secondary School Social Studies.

Research Questions

1. Do teachers' pedagogical skills correlate with students' performance in Upper Basic School Social Studies?
2. Does teachers' use of instructional materials correlate with students' performance in Upper Basic School Social Studies?

Methodology

The Correlational research design was adopted for the study. This design is considered appropriate for the study because it enables the researcher to correlate teachers' pedagogical skills and use of instructional materials with Students Performance in Upper Basic School Social Studies, through the use of questionnaires and a performance test respectively.

The study covers both the public and private Basic Junior Secondary Schools located within the Yenagoa metropolis of Bayelsa State. Basic Junior Secondary School III students participated in the study. Based on the estimated sample size in relation to the population as provided by the Research Advisors (2006), the researcher employed a simple random sampling technique to select Seven Hundred and Twenty-Seven (727) students of Upper Basic School III

(BJSS III) from the Thirty Four (34) schools who participated in the 2011/2012 Basic Junior Secondary Certificate Examination in Yenagoa Metropolis.

The study made use of two instruments – Questionnaire on Teachers' Characteristics (QTC) and Social Studies Performance Test (SSPT) to examine teachers' pedagogical skills and use of instructional materials as correlate of Junior Secondary School students' performance in Social Studies. Copies of the QTC and SSPT were given to experts in Measurement and Evaluation in the Department of Social Sciences the Education University of Ilorinto establish the face and content validity of the instruments. The QTC and SSPT were pilot-tested using test-retest and split half methods respectively. A reliability coefficient of 0.72 was obtained for the QTC while 0.74 reliability coefficient was obtained for SSPT. At the end of the administration of the instrument, 701 copies were retrieved. Thus, the data analyzed was based on 701 participants who returned copies of the QTC and SSPT. Lastly, Pearson's Product Moment Correlation was employed to analyze the data collected for the study.

Results

1. Research Question 1: Do teachers' pedagogical skills correlate with students' performance in Upper Basic School Social Studies?

Table 2: Table showing the Correlation between Teachers' Pedagogical skills and Students' Performance in Upper Basic School Social Studies

	SSPT	TPS
SSPT	1.000	.084
TPS	.084	1.000

Where:

SSPT: Social Studies Performance Test

TPS: Teachers' Pedagogical Skills

Table 2 shows the correlation between teachers' pedagogical skills and social studies performance test. The findings revealed that teachers' pedagogical skills ($r = .084$) had a positive relationship with students' performance in the Junior Secondary School Social Studies in Yenagoa metropolis of Bayelsa State, Nigeria.

Research Question 2: Does teachers' use of instructional materials correlate with students' performance in Upper Basic School Social Studies?

Table 3: Table showing the Correlation between Teachers' Use of Instructional Materials and Students' Performance in Upper Basic School Social Studies

	SSPT	TUIM
SSPT	1.000	.000
TUIM	.000	1.000

Where:

SSPT: Social Studies Performance Test

TUIM: Teachers' Use of Instructional Materials

Table 3 shows the correlation between teachers' use of instructional materials and social studies performance test. The findings revealed that teachers' use of instructional materials ($r = .000$) had no correlation with students' performance in the Junior Secondary School Social Studies in Yenagoa metropolis of Bayelsa State, Nigeria.

Discussion

The research question 1 which sought to know the correlation between teachers' pedagogical skills and students' performance in social studies, the results obtained from the

Pearson's Correlation Coefficient matrix and the shows a very strong correlation and a significant predicting power on students' performance in social studies. This result is also in line with Clark & Walsh (2002) assertion that teachers' pedagogical skills affect students' achievement. It also confirms McKenzie (2003) opinion that good teachers are magnificent at the diagnosing and customizing instruction that enables students to succeed in learning. In fact, this result agrees with the findings of Oladele (2010) that there is a positive relationship between teachers' technical (pedagogical) skills and students' performance. Put differently, teachers' pedagogical skills is one of the major propellers that drives students' performance to the needed direction and destination in the education enterprise. Teachers that are well schooled in the art and science of teaching strives not only to improve the learning capacity of students with low ability in learning but also combine different teaching strategies to consolidate on the gains recorded by high ability students.

On research question 2 which sought to know whether there is a correlation between teachers' teachers' use of instructional materials and students' performance in upper basic school social studies. With a zero order correlation, teachers' use of instructional materials shows no significant correlation with students' performance in social studies at the upper basic school level. Though instructional materials is said to be an important element in teaching and learning of social studies, the result of this study differs from Enem's (2005) conclusion that, students taught with instructional materials performed better than students taught without instructional materials in social studies. This difference in findings may be as result of the fact that Enem used a sample size of eighty (80) students' and a research locale cutting across three education zones in Enugu while a sample size of one hundred and one (701) participants and one education zone was used in this study. However, the implication of the result is that there could be other teachers' factors or characteristics that are not within the scope of this study like teacher location, experience,

qualification, and so on, that may strongly correlate students' performance in social studies rather than use of instructional materials.

Conclusion and Recommendation

Contrary to the widely held views and opinions as reflected in the review of literatures that the combination of teachers' use of instructional materials, teachers' dispositions, teachers' pedagogical skills and teachers' reflective practice greatly influences students' performance may not be out rightly correct in all situations and subjects. As findings in this study shows that while teachers' pedagogical skills and teachers' reflective practice can significantly predict students' performance, the same is not true with teachers' use of instructional materials. It should also be submitted here that even though use of instructional materials by the teachers as well as their dispositions does not significantly predict students' performance in this study, the import of instructional materials and teachers' dispositions in the classroom situation should not be completely disregarded. The ultimate conclusion however is that social studies teachers should take the issue of enhancing and updating their pedagogical skills seriously. That is, if they hope to up and better the performance of students in social studies.

Therefore, the following are useful recommendations and suggestions for implementation.

- a. The government at all levels with a meaningful and purposive collaboration with the organized private sector should periodically provide opportunities like learned workshops, seminars and in-service trainings for social studies teachers to equip and improve their knowledge of teaching.
- b. Social studies teachers should on their look for opportunities to improve themselves because knowledge is dynamic so also the teaching and learning of social studies.

- c. Criteria for recruiting new social studies teachers and other subject teachers should henceforth, include possession of adequate pedagogical skills and the ability to enhance students' performance through reflective practice by the prospective teacher seeking to be employed as social studies teacher.
- d. The promotion of teachers and other incentives to be given them should from now on be tied to how well the teacher influences the performances of his students.

REFERENCES

- Abuseji, F. A. (2007). Student and teacher-related variables as determinants of secondary school students' academic achievement in chemistry. *Journal Pendidikan*, 32, 3–18.
- Adeniyi, T. B. (2009). Influence of selected teacher variables on secondary school students' performance in social studies in Ado-Ekiti, Nigeria. Unpublished M. Ed Thesis, University of Ilorin, Ilorin.
- Akiri, A. A., & Ugborugbo, N. M. (2009). Teachers' effectiveness an students academic performance in public schools in Delta state, Nigeria. *Kamla-Raj Stud Home Communication Science*, 3(2), 107-113.
- Ayodele, S. O. (2001). Quality, quantity, production and distribution of teachingresources. In O. Nnoli, & I. Sulaiman, (Eds), *Reassessing the Future of Education in Nigeria*, pp 63-77. Abuja: Education Tax Fund.
- Bayelsa State Ministry of Education (2011). An extract of 5-years result of JSCE for Yenagoa L.G.A. Yenagoa.
- Clark, J. C.,& Walsh, J. (2002). Elements of a model of effective teachers. Retrieved April 1st, 2011. From <http://www.aare.edu.au/02pap/wal0220.htm>
- Emmanuel, S. (2010). The influence of teachers' characteristics and senior secondary students' performance in economics in Ilorin West L. G. A. Unpublished B. Sc. (Ed) Research Project, University of Ilorin, Ilorin.
- Enem, F. O. (2005). The importance of instructional materials to the successful implementation of social studies curriculum at junior secondary school Level. *Journal of Curriculum and Media Technology Research*, 1(11), 48 – 56.
- Ibe, B. O.,& Maduabum, M. A. (2001). Teacher qualification and experience as correlates of secondary school students' achievement in biology. *Educational Thought*, 1(2), 176-183.
- Imogie, A. I. (2001). Optimization of instructional media. In O. Nnoli, & I. Sulaiman (Eds.), *Reassessing the Future of Education in Nigeria*(91-101). Abuja: Education Tax Fund.
- Iyewarun, S. A. (1989). The Teaching of social studies. Ilorin: Owoye Press & Book Industries (Nig) Ltd.
- Mckenzie, J. (2003). Pedagogy does matter. *The Educational Technology Journal*, 13(1), 1-10.
- Mkpa, A. M. (2001). Optimization of available teaching and learning materials/facilities. In O. Nnoli, & I. Sulaiman, (Eds.), *Reassessing the Future of Education in Nigeria*, pp 79-89. Abuja: Education Trust Fund.

National Board for Professional Teaching Standards (1998). *Pedagogy – definition –summary*. Retrieved 7thApril, 2011. From <http://www.intime.uni.edu/model/teacher/pedagogy/summary.html>

National Teachers' Institute (2009). Manual for the re-training of primary school teachers social studies: A MDGs Project 2009. Kaduna: NTI Printing Press.

Offorma, G. C. (2005). Curriculum issues, resource provision and use in the arts and language teaching. *Journal of Curriculum and Media Technology Research*, 1(1), 162 – 178.

Oladele, O. T. (2010). Teacher quality and students' academic performance in C. R. S. in secondary schools, Ilorin – South L. G. A., Nigeria. Unpublished B. A. (Ed) Research Project, University of Ilorin, Ilorin.

Onyejemezi, D. A. (2001). Quality, quantity, production and distribution of teaching resources/facilities. In O. Nnoli, & I. Sulaiman, (Eds.), *Reassessing the Future of Education in Nigeria*, pp 41-61. Abuja: Education Tax Fund.

Opasola, A. J. (2009). Influence of school variables on junior secondary school students' performance in social studies in Afijio, Oyo State, Nigeria. Unpublished M. Ed. Thesis, University of Ilorin, Ilorin.

Raheem, M. J. (2010). Relationship between teachers' characteristics and senior secondary school economics students' performance in Ilorin, Nigeria. Unpublished B. Sc. (Ed) Research Project, University of Ilorin, Ilorin.

Research Advisors, (2006). Sample size table. Retrieved 7thApril, 2011. From <http://research-advisors.com>

Sotoyinbo, A. O. (2009). Influence of teachers variables performance in social studies in Abeokuta metropolis, Nigeria. Unpublished M. Ed. Thesis, University of Ilorin, Ilorin.

The New Webster's Dictionary of the English Language (1995), USA: Lexicon Publication, Inc.

Ukuuhe, J. (1995). Instructional media. In Matiru, B; Mwangi, A; & Scheele, R. (Eds.), *Teach Your Best*, pp 63-78. A publication of the Institute for Social Cultural Studies. Germany: University of Kassel.

Yara, P. O.,& Wanjohi, W. C. (2011). Performance determinants of Kenya certificate of secondary education (KCSE) in mathematics of secondary schools in Nyamaiya division, Kenya. *Asian Social Science*, 7(2), 107 – 112.