Depth of Teachers' Subject Content and Pedagogical Knowledge as Predictors of Secondary School Students' Academic Achievement in Kwara State, Nigeria

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Abstract
High rate of student failure in Senior Secondary Certificate Examinations (SSCE) in Nigeria has become a perennial source of worry to all stakeholders. Less than 40% of candidates had credits and above in English language and Mathematics between 2009 and 2015. Previous research efforts did not yield conclusive explanations for the problem but not much had been done to empirically assess the contributions of teacher subject and pedagogical knowledge. This study therefore investigated the predictive value of Teachers' Depth of Subject Content Knowledge (DSCK); and Depth of Pedagogical Knowledge (DPK) on Students' Academic Achievement (SAA). Specifically, the study investigated which category of teachers (B.Ed. /B.Sc.Ed /B.A.Ed.; PGDE; or B.A. /B.Sc.) had the deepest DSCK; the deepest DPK; and the deepest DSCPK; also, the predictive ability of DSCPK for SAA in English Language and Mathematics. Seventy-eight Senior Secondary II English Language and Mathematics teachers in thirty-two randomly selected secondary schools in Kwara State; and intact classes of SS II students constituted the sample. Data were collected through tests, observations and vignettes; and analysed using descriptive and inferential statistics. Findings of the study showed that teachers with B. Sc. demonstrated the deepest DSCK, DPK and DSCPK. Also, both pedagogical and subject content knowledge of sampled teachers were significant predictors of SAA accounting for 10.7% of the total variance of SAA. These findings raised concerns of profound implications for teacher education curriculum in Nigeria, although the findings remain only tentative until a full blown investigation is undertaken to either confirm or refute them.

Key words: Teacher Knowledge, Subject Content, Pedagogical Content, Academic Achievement

Introduction

High rate of students' failure in Senior Secondary Certificate Examinations (SSCE) has become a perennial source of worry to all stakeholders in the education sector in Nigeria. There have been reported cases of mass failure of students in public examinations, such as the Secondary School Certificate Examination (SSCE), General Certificate Examination (GCE), and University Tertiary Matriculation Examination (UTME). In 2015, for instance, more than 60% of students failed English Language in the SSCE; while only 38.6% candidates obtained credit in five subjects including English and Mathematics (West African Examination Council, 2015). There is need to reverse this trend because poor performance in SSCE leads to colossal wastage in educational investment and reduction in quantity and quality of candidates accessing tertiary education. It also limits students' learning effectiveness which, in turn, compromises quality of tertiary education products in terms of cognate ability and service delivery competence.

Various efforts by education researchers to provide valid explanation for the trend have not yielded conclusive results. For instance, Tella (2007) investigated the impact of motivation on secondary school students' Mathematics achievement in Nigeria. He reported that there was a significant difference in Mathematics achievement of students on the degree of their motivation. McDonald (2001) also found that two thirds of high school students appeared to have experienced uncomfortable level of test anxiety, which consequently affected their academic performance, negatively.

No doubt, each and all of such studies are useful. However, the fact that the trend of poor performance of students in public examinations persists suggests the need to also look for solution outside the students; since they are not solely responsible for whatever they learn- they must be taught, abinitio. To these researchers' minds, solution to the problem of high failure rate in SSC Examination should also involve critical assessment of the contributions of teacher quality in the discharge of their responsibilities as learning facilitators since it is generally acknowledged that the education of any nation cannot rise above the quality of its teachers. Although learning can take place without teaching, the roles of the teacher as facilitator of learning are indispensable in the field of education (Figure I).

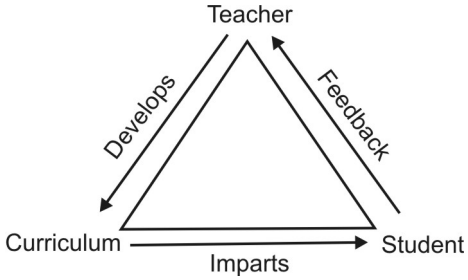

Figure I: Components of Teaching-Learning Relationship
Source: Olasehinde-Williams, 2012.

As shown in Figure I, teachers have responsibilities to gather information to determine what subject content to teach (Develop curriculum), determine the most strategic methods to teach them (Impart knowledge) and finally evaluate the teaching program (Test students for Feedback). The fact that teachers can only perform any of

such responsibilities to the best of their own knowledge is not debatable. They can only teach WHAT they know in the ways they know HOW to teach. Thus, the significance of high quality teachers in the teaching-learning relationship cannot be over-emphasised. Indeed, the pivotal roles of quality teachers in providing quality education are well documented in the National Policy on Education (FRN, 2013). The Teachers Registration Council of Nigeria (TRCN) also noted that "no education system can rise above the quality of its teachers" (TRCN, 2004:p.8). Consequently, some recent research efforts in finding solution to the problem of high failure rate in public examination also involved critical assessment of the contributions of teacher quality in the discharge of their responsibilities as learning facilitators. Agoro and Akinsola, (2013); and Ladipo, (2013), for instance, all suggested that poor teacher quality is one of the significant factors responsible for the consistently poor performance of secondary school students in public examinations in the country.

Teacher quality is generally believed to be basically dependent on the nature of training teachers receive, abinitio; and there is no doubt that teachers differ in their depth of knowledge of the WHAT to teach and the HOW to teach basically because of disparities in their own pre-service training. In Nigerian secondary schools, for example, two categories of teachers (Qualified and Non-qualified teachers), from three different learning paths, are responsible for preparing students for public examinations.

Two of the three learning paths qualify individuals for the teaching profession in Nigeria. Firstly, during training, individuals may combine core teacher education courses (Pedagogical Knowledge) with minor teaching subject courses (Subject Content Knowledge) for a period of three to four years, for the award of Bachelor Degree in Education. Secondly, individuals may first obtain Honors degree (Bachelor of Science or Bachelor of Arts Honors Degree) in one or two subjects (Subject Content Knowledge); and later undertake a one-year Postgraduate training for the Diploma in Education (PGDE) Certificate (Pedagogical Knowledge). Although the proportions of teaching subject and education courses both groups undertake are not the same, it is generally assumed that both include sufficient proportions to produce competent teachers (Abimbola, 2012). Consequently, both categories of teachers are accorded professional teacher status and are qualified for formal admission into the teaching profession upon registration with the TRCN. Non-qualified Teachers, on the other hand, are individuals who also teach in Nigerian secondary schools with Honors Degrees in Science, Social Sciences and Arts-related courses without undertaking any education course at all in the university. Since such teachers have exposure to Subject Content Knowledge only, without Pedagogical Knowledge, they are categorised as non-professional teachers and are not qualified for formal admission into the teaching profession.

These categories of teachers, professional and non-professional, have been receiving criticisms from major stakeholders in the education sector. In respect of the learning paths to teacher certification, there are concerns that the teaching subject courses offered by B.Ed/B.Sc. Ed. /B.A. Ed. graduates; and the pedagogical content knowledge in the PGDE format may not be sufficiently adequate to make for competent and effective teachers. For instance, education students minor in their teaching subjects and devote substantial part of their training to pedagogical knowledge; just as PGDE students acquire more of subject content than pedagogical

knowledge. Similarly there are concerns that unprofessionally trained persons recruited as teachers in Nigerian secondary schools are mostly graduates in various disciplines that may or may not even be related to the subject that they were recruited to teach. Besides, while these unqualified teachers often have deeper subject content knowledge than teachers with B.Ed/B.Sc.Ed Degrees, they are typically deficient in pedagogical knowledge.

It was assumed in this study that such discrepancies in the professional and academic qualifications of teachers will likely reflect in the teachers' depth of subject content and pedagogical knowledge; in the ways they discharge their roles as facilitators of learning (Henze, Driel & Verloop 2008); and consequently in the ways they impact their students' academic achievement.

The holistic learning theory of Learning Psychologists such as Jean Piaget and Sigmund Freud provide the theoretical underpinning for this assumption. The theory identifies three types of learning that students must be exposed to: Cognitive Learning (acquisition of knowledge through direct teaching); Affective Learning **(**acquisition of feelings, values, motivation and attitudes through the process of observation); and Psychomotor Learning **(**acquisition of skills through observation and practice). However, effective and holistic learning must involve all the three i.e. stimulate critical thinking, stimulate interest and develop skill.

For instance, Hill, Rowan and Ball (2005) explored whether and how teachers' mathematical knowledge for teaching contributes to gains in students' mathematics achievement. Findings of the study showed that teachers' mathematical knowledge was significantly related to students' achievement gains in both first and third grades; and provided support for policy initiatives designed to improve students' mathematics achievement by improving teachers' mathematical knowledge. Baumert, Kunter, Blum, Brunner et al. (2010) investigated teachers' mathematical knowledge, cognitive activation in the classroom, and student progress. Findings of the study showed that teachers with a higher PCK score created better lessons, which had positive effects on the students' content knowledge and test results.

Adediwura and Bada (2007) investigated perception of teachers' knowledge, attitude and teaching skills as predictor of academic performance in Nigerian secondary schools. They found that students' perception of teachers' knowledge of subject matter, attitude to work and teaching skills were significantly related to students' academic performance. In an ongoing study related to teacher professional knowledge, Olasehinde-Williams, Yahaya, Sanya, Owolabi & Jimoh are investigating the comparative effectiveness of teaching strategies (Collaborative, Critical thinking and Technology-integrated teaching strategies) in reducing secondary school students' failure in Senior Secondary School Certificate English Language Examination in Kwara State, Nigeria. Preliminary findings of the study suggest the superiority of each strategy over the traditional teaching strategy.

However, many of such studies have focused on the impact of each of these variables on students' academic achievement, separately (Abell, 2007 ;Baumert et.al.2010); some have investigated the impact of both variables on students' academic achievement in single subjects , especially Science subjects (Abell, 2007;Park & Oliver, 2008; Lee & Luft, 2008; Baumert, Kunter, Blum, Brunner et.al. ,2010); and

findings of most of the studies are generally inconclusive (Park & Oliver,2008). Besides, most of the studies were carried out in foreign settings making their findings not directly applicable to Nigeria because of the socio-cultural differences. Thus, the apparent dearth of studies on the extent to which teachers' subject content knowledge and pedagogical knowledge relate to students' academic achievement in Nigeria made this study imperative.

Research Questions: Consequently, to make up for part of the gaps in our current understanding of this important factor of student academic achievement, this preliminary study investigated the relative contributions of teachers' training background to their depth of subject content and pedagogical knowledge; as well as the extent to which teachers' subject content and pedagogical knowledge improve students' learning outcomes in two core subjects, English Language and Mathematics ,which are compulsory for all secondary school students in Nigeria. The ultimate goal of the study was to establish the impact of teacher professional knowledge on students' learning outcomes. Specifically, the following questions were answered in the study:

1. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the deepest DSCK?
2. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the most adequate DPK?
3. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the strongest DSCPK?
4. What is the predictive ability of teachers' DSCPK for students' success in examination?

To these researchers' minds, empirically determining what mix of teacher subject content and pedagogical knowledge best impacts students' learning outcomes is critical to reversing the current trend of high failure rate of students in public examinations in Nigeria. Such a reversal, it was hoped, would enhance the quality and quantity of candidates accessing tertiary education, enhance the quality of tertiary education products in terms of cognate ability and service delivery competence; and, consequently, boost the nation's developmental status.

Literature Review: Critical insights for the study, gleaned from extant literature, related to our conceptualisation of teacher professional knowledge, data gathering techniques and study approach. Teachers' professional knowledge can be broken down into different components/categories. As early as 1987, Shulman had distinguished seven categories: content knowledge; curricular knowledge; pedagogical content knowledge; general pedagogical knowledge; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes and values. Subsequently, researchers identify specific components for study, which also inform their choice of measurement techniques. For instance, Kirschner, Borowski & Fischer (2010) focused on three levels of teachers' knowledge areas (i)declarative knowledge, (ii)procedural knowledge and (iii) conditional knowledge including teachers' reactions to critical teaching situations, which they measured through experiments, teaching strategies and vignettes (i.e. describing short situations in a classroom). Baumert, Kunter, Blum, Brunner et al.(2010)focused on teachers' knowledge of Science and teaching /

learning process as components of teacher professional knowledge; and gathered data through paper and pencil tests as well as observation of videotaped lessons respectively. Henze, Driel & Verloop (2008) focused on teachers' knowledge about instructional strategies concerning a specific topic; students' understanding of the topic; ways to assess students' understanding of the topic; and goals and objectives for teaching the specific topic in the curriculum. To measure these components, in the Netherlands, the researchers followed nine teachers for a period of three years in their natural settings to see if, and how, their initial PCK developed while they were teaching a new subject.

In our own study, three components of teachers' professional knowledge and the extent to which they can positively impact student learning outcomes were investigated:

(i). Depth of Subject Content Knowledge (DSCK);
(ii). Depth of Professional Knowledge (DPK);
(iii). Depth of Subject Content and Professional Knowledge (DSCPK), patterned after Gess-Newsome's (1999) integrative knowledge category; and
(iv). Students' Academic Achievement (SAA)

Figure II, developed by these researchers, presents the schematic representation of how the variables of interest to this study were manipulated.

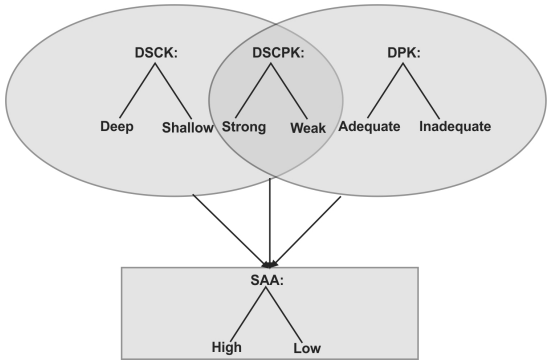

Figure II: Schematic Representation of DSCK, DPK , DSCPK and SAA

Note:

DSCK:	Depth of Subject Content Knowledge, whether Deep or Shallow
DPK:	Depth of Pedagogical Knowledge, whether Adequate or Inadequate
DSCPK:	Depth of Subject Content and Pedagogical Knowledge, whether Strong or Weak
SAA:	Student Academic Achievement, whether High or Low

Methodology: The research design adopted for the study was descriptive survey because of its capacity to allow assessment of certain attributes, properties or characteristics in a situation at one or more point in time (Hassan, 1995). Originally, the plan was to sample two hundred SSII English Language and Mathematics teachers from 10 randomly selected secondary schools across the three Senatorial Districts of Kwara State (i.e. Kwara North, Kwara Central and Kwara South) but the reality of the situation in the field altered this plan because most of the schools had only 1 teacher

each for Senior Secondary II (SS II) English Language and Mathematics. Consequently, the number of secondary schools was increased to 32, randomly selected across the three Senatorial Districts of the State (to ensure fair representation of every part of the State); and all available SSII teachers of English Language and Mathematics in each of the 32 schools (totaling 78) participated in the study (to provide data on DSCK and DPK for the study). Intact classes of SSII students of each teacher -participant took part in the study so that their test scores could be readily matched with their teachers' DSCK, DPK and DSCPK. Instruments employed for data collection were paper and pencil tests (used to measure teachers' DSCK and students' achievement in both subjects), observation of teaching strategies and vignettes (i.e. short classroom situations to which teachers responded to measure their DPK) because of the potential of such multiple sources to yield rich, comprehensive and reliable data. Face and content validity, as well as test-re-test reliability measures of the objective tests and vignettes were determined; while observation of class teaching and management, were subjected to inter-rater validity. The internal consistency reliability measures of the DSCK and DPK objective tests were 0.94 and 0.82 respectively; while 0.62 and 0.63 were obtained for the English Language and Mathematics objective tests respectively.

Members of the research team and trained Research Assistants (comprising lecturers and PhD students of Educational Measurement and Evaluation) were involved in the data collection. Data gathering spanned three weeks and occurred in the second school term to enable substantial coverage of the syllabus to enhance the validity of students' academic achievement. Measures of students' academic achievement were obtained about one week to the schools' official examination period so as not to disrupt the school programme; and to fall within a period when students naturally prepared for end-of -term examinations. The maximum score on the test of teachers' DSCK and DPK each was 100%, where 60-100% indicated Deep Knowledge and Less than 50% indicated Shallow Knowledge. Similar rating was adopted for students' Academic Achievement Test, with 60-100% indicating High Achievement and less than 50% indicating Low Achievement.

Conclusions

Main Findings: Seventy-eight SS II teachers of English Language and Mathematics were sampled as participants in the study from the three Senatorial Districts of Kwara State, Nigeria. However, only 75 of them participated fully in the study by making their lesson notes available for inspection, subjecting their lessons to observation, completing the paper and pencil test, responding to the vignettes and having the students taught by them assessed. The 75 teachers comprised 33 female and 42 male teachers; and 39 English Language and 36 Mathematics teachers. Their ages ranged from 21-60 years; and they had between 1 and 30 years teaching experiences. Answers to the four research questions raised for the study are presented below.

1. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the deepest Depth of Subject Content Knowledge (DSCK)?

Assessment of the sampled teachers' DSCK was carried out through observation of content of lessons they taught using the Faculty of Education, University of Ilorin's teaching practice assessment format, and responses to a cognate test scored in

percentage. The mean score on both measures was calculated and each category of teachers compared with the mean. Summary of the assessment is presented on Table1.

Table 1: Mean Scores of Teachers' Depth of Subject Content Knowledge (DSCK)

Qualification	Frequency	Mean Score in Percentage
PGDE	2	44.00
NCE	4	44.75
B.A. Ed	21	49.43
B.Sc. Ed	11	57.83
B.A.	16	59.69
Others	8	62.19
B.Sc.	13	65.42
Total	75	Grand Mean = 56.59

As shown on Table 1, the grand mean of DSCK among teachers was 56.59%. The lowest mean score was observed among teachers with PGDE (44%) ; holders of B. A. Ed's mean score of 49.43% was lower than the grand mean; teachers with B. Sc. Ed. with a mean score of 57.83% were better than their B. A, Ed counterparts (49.43%); while teachers with B. Sc. had the deepest DSCK (mean of 65.42%).

2. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the most adequate Depth of Pedagogical Knowledge (DPK)?

Sampled teachers were exposed to an assessment of DPK through observation of their involvement in classroom processes, responses to vignettes and personal interview. Each of them was scored in percentage and the mean score for each category of teachers was calculated. Summary of the assessment is presented on Table 2.

Table 2: Mean Scores of Teachers' Depth of Pedagogical Knowledge (DPK)

Qualification	N	Mean Score
B.A.	16	41.13
NCE	4	44.75
Others	8	49.63
B.A. Ed.	21	50.90
PGDE	2	53.00
B.Sc. Ed.	11	54.73
B.Sc.	13	56.08
Total	75	Grand Mean = 49.87

Table 2 shows that despite generally low levels of depth of pedagogical knowledge mean scores demonstrated by the sampled teachers, those holding the B. A. degree had the poorest mean scores of 41.13% ; while teachers with B. A. Ed., PGDE, B. Sc. Ed. and B. Sc. recorded above average mean scores of 50.90%, 53%, 54.73%, and 56.08% respectively. The teachers with the most adequate depth of pedagogical knowledge were those holding the Bachelor of Science degree (56.08%).

3. What category of teachers (B.Ed. /B.Sc.Ed. /B.A.Ed.; PGDE; or B.A. /B.Sc.) has the strongest Depth of Subject Content and Pedagogical Knowledge (DSCPK)?

Scores on the measures of DSCK and DPK were added and the mean score for each category of teachers summarized as presented on Table 3.

Table 3: Mean Scores of Teachers' Depth of Subject Content and Pedagogical Knowledge (DSCPK)

Qualification	Frequency	Mean score out of 200
NCE	4	89.50
PGDE	2	97.00
B.A. Ed	21	100.33
B.A.	16	100.81
Others	8	111.81
B.Sc.Ed	11	112.55
B.Sc.	13	121.50
		Grand Mean KSCPK = 106.45

The mean DSCPK score was found to be 106.45 as shown on Table 3. Holders of B. Sc. demonstrated the strongest DSCPK of 121.50 and they were followed by those with B. Sc. Ed. with 112.55. On the other hand, PGDE holders had the weakest depth of DSCPK (97).

4. What is the predictive ability of teachers' DSCPK for students' success in examination?

Students taught by the 75 teachers who participated in this study were tested in those same subjects and their scores regressed on the assessment of their teachers' subject content and pedagogical knowledge to determine how predictive they were. The results of the regression analysis are summarized on Tables 4.

Table 4: Prediction of Students' Performance by Teachers' Depth of Subject Content and Pedagogical Knowledge

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
1	.327[a]	.107	.082	14.43578	.107

Table 4 shows a coefficient of multiple correlations (R) of 0.327 which indicated that both pedagogical and subject content knowledge of sampled teachers were significant predictors of students' success in examinations. Findings of the study further revealed that the two variables accounted for 10.7% of the total variance of students' success in examinations as shown by the R^2 of 0.107. The analysis of variance summary on Table 5 was carried out to ascertain the significance of the predication of students' success by their teachers' subject content and pedagogical knowledge.

Table 5: ANOVA of Prediction of Students' Success by Teachers' Depth of Subject Content and Pedagogical Knowledge

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1768.126	2	884.063	4.242	.018
Residual	14795.820	71	208.392		
Total	16563.946	73			

As shown on Table 5, the F ratio of 4.242 and df of 2, 71 was significant at 0.018 indicating that the sampled teachers' depth of subject content and pedagogical knowledge significantly predicted their students' performance. Table 6 contains the summary of the test of the contribution of each predictor in the regression analysis.

Table 6: Strength of Teachers' Depth of Subject Content and Pedagogical Knowledge in the Prediction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	44.944	6.859		6.552	.000
Pedagogical Scores	-.186	.114	-.186	-1.633	.107
Knowledge Scores	.219	.082	.304	2.669	.009

As shown on Table 6, the unstandardized regression coefficient of pedagogical and subject content knowledge were -0.186 and 0.219 respectively, their standardized regression coefficients were -0.186 and 0.304 respectively. Though the two variables were joint predictors of students' achievement, pedagogical knowledge did not contribute significantly to the prediction with a t=0.107.

Implications of Findings: The mean score of 56.59% on DSCK showed that the sampled teachers were generally weak. Without being strong in this skill, their competence to teach the subject is also affected. Their delivery of instruction to learners may not be sustainable and many times, questions raised by inquisitive and intelligent learners may not be well addressed. To probe deeper into the causes of this low performance may require taking a look at the training received by the teachers. Findings in this study suggested that teacher training tends to have a debilitating influence on subject content knowledge as those who obtained their degree in the same or even a related subject to the ones they teach tend to have lower scores in the test of knowledge of subject matter content. This may also question the observation by Abimbola (2012) that the exposure to courses in Faculties of Education is adequate to produce competent teachers.

In general, the results of this study fell in the expected direction as the DPK of most untrained teachers was found to be weak. It is however surprising that a category of untrained teachers, i.e. those holding the Bachelor of Science degree, had the most adequate depth of DPK. Also, the finding indicating that the DPK of professionally

trained teachers holding B. A. Ed. and B. Sc. Ed. fell close to the mean calls to question what happened to the teachers while in training and after they had been certified. It also calls to question whether they are in position to utilize their professional training while practicing in the school system.

Though it was discovered that a few of those with B. A. and B. Sc. as their highest educational qualifications had earlier gone through the Nigeria Certificate in Education (NCE) training, which is also a professional teacher qualification, the fact that the Bachelor of Science or Art in Education curriculum offers deeper professional exposure should imply that products should still perform better. Could the fact that many teachers of English Language and Mathematics might have had some measure of pedagogical knowledge passed through specialized seminars, workshops and other training programmes, which are regularly organized to stem the tide of mass failure in schools, have been responsible for this unexpected result? A national study across many other school subjects should be helpful in determining the validity of the current findings.

Findings of this study also suggested that teachers who had received professional training demonstrated weaknesses in subject content and pedagogical knowledge combined with mean scores just barely half of the mark obtainable. Plausible explanation could be that these very important skills are treated with levity when teachers start practicing thus supporting reports of studies by Harris and Sass (2007); Agoro and Akinsola (2013); and Ladipo, (2013) pointing in the direction of poor quality of teachers in secondary schools.

As expected, the subject content and pedagogical knowledge of teachers significantly predicted students' performance in English and Mathematics. However, the variance of students' performance accounted for by both variables was found to be 10.7%. This suggested that there are several other variables that account for students' level of success traceable, for instance, to the students themselves, their teachers, the school and home environments and such other sources.

Limitations: A preliminary study was embarked upon to achieve the following objectives: identification of the category of teachers (B.Ed. /B.Sc.Ed /B.A.Ed.; PGDE; or B.A. /B.Sc.) that has the deepest DSCK; the most adequate DPK; and the strongest DSCPK. The study also investigated the predictive ability of teachers' DSCPK for students' performance in English Language and Mathematics. Seventy-eight teachers of Senior Secondary II English Language and Mathematics in thirty-two randomly secondary schools in Kwara State and intact classes of SS II students taught by the teachers constituted the sample. Data were collected through tests, observations and vignettes, patterned after Kirschner, Borowski and Fischer (2010) and Baumert, Kunter, Blum, Brunner et al. (2010); and analysed using descriptive and inferential statistics to compare the teachers' DSCK /DPK/DSCPK in both subjects. Findings of the preliminary investigation showed that teachers with B. Sc. demonstrated the deepest DSCK; the most adequate DPK; and the strongest DSCPK. Findings of the study further indicated that both pedagogical and subject content knowledge of sampled teachers were significant predictors of students' success in examinations; and the two variables accounted for 10.7% of the total variance of students' success in examinations.

However, illuminating as the findings of this study may appear, the fact that it was only a preliminary study, limited in scope and subject coverage, means that no conclusive statements about the findings reported here can be made . Neither can the findings be taken as valid representation of the depth of subject content and pedagogical knowledge of SSII English Language and Mathematics teachers in Nigerian secondary schools. A large-scale national study is therefore imperative.

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