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Content Knowledge of Secondary School Teachers of Economics and Students Achievements in Mezam Division, Cameroon

Nubonyin Hilda Fokong
Faculty of Education, University of Buea, Cameroon, Africa

ABSTRACT

Economics education is the pivot of all social sciences(Cameroon GCE Board, 2015). Achievement of Cameroon's vision 2035 therefore is based primarily on the successful attainment of the objectives of economics education at all levels. Yet, statistics obtained from Statistics Bureau, Cameroon GCE Board indicate that students' achievement in economics at the GCE Ordinary Level examination is poor. This study was therefore designed to assess whether teachers' knowledge of economics content influences students' achievement in economics. The sample used consisted of 03 regional pedagogic inspectors, 08 heads of departments, 33 teachers and 444 students of economics from 8 public schools in Mezam Division. The data collected with the use of questionnaires, observation checklist and interview guide were analysed using partial least square regression approach. The results revealed that teachers' content knowledge has both a direct and indirect (through teachers' knowledge of students' conception) influence on students' examination scores in economics. The conclusion was that secondary school economics teachers' content knowledge is an indicator of student achievement in economics but teachers are not well knowledgeable on how to transform the content in some micro and macroeconomics topics. This calls for in-service trainingto equip teachers with the necessary knowledge and skills.

Keywords: *teachers' content knowledge, students' achievements*

INTRODUCTION

General Certificate of Education (GCE) Board (1994) recognized economics as one of the social science subjects in the Cameroon general secondary school education curriculum. This is because the teaching of economics in Cameroon secondary schools aims at helping students to: acquire an understanding of basic economic concepts and principles; grasp and utilise the fundamental tools of economic reasoning; analyse and relate economic principles to current economic activities, social activities and problems (Cameroon GCE Board, 2015). Furthermore, the Cameroon GCE Board economics syllabus (2015) reiterates that for learners' to achieve this aim teachers need to demonstrate knowledge of subject matter of economics. Interestingly, there are many branches of economics but the content of ordinary levels (O/L) economics has been structured to contain two branches: micro economics and macroeconomics. Thus, to Cameroon GCE Board a teacher needs to have control or command of knowledge of both branches in order to enhance students' achievements. This is because teachers with high knowledge of teaching objectives, content, methods as well as students' learning process, also referred to as knowledge of learning difficulties, which includes awareness of common errors students make and their causes can expedite students' achievement in economics among other subjects (VanFossen, 1996; Van-Driel, Verloop and DeVos, 1998; Van Wyk, 2007and Yusof and Zakaria's, 2010).

Looking at the relationship between teachers' knowledge of content (TKC) and students' achievement (SA), it has been observed that between the periods of 2014 to 2016 (see table 1) key micro economics topic like price and market and macroeconomics topic like international trade have been tested consistently yet with a deplorable performance. So many factors account for this terrible performance. For example, empirical studies report that students' achievement is affected by students' factors (lack of interest in the subject), teachers'

factors (lack of content knowledge or teaching skills) and administrative factors such as: poor management of time, financial, material and human resources (Ball, Thames and Phelps, 2008; Alobwede, 2015; Subject Report in Economics, 2016).

Table 1: Situation of GCE Ordinary Level Results in Micro Economics and Macroeconomics for 3 Years at the Cameroon GCE Board

Year of Examination	Candidates Approach on the topic "Price and Markets"	Candidates Approach on the topic "International trade"
2014	At the O/L this topic ranked 5th in performance out of 8 topics and registered 13.4% passed. Some candidates showed poor mastery of formulas, while others were unable to rightly apply the formulas.	At the O/L this topic ranked 6th in performance out of 8 topics and registered 12.4% passed. Several candidates could not correctly define the term BOP.
2015	At the O/L this topic ranked 7th in performance out of 8 topics and registered 23.3% passed. Embarrassingly, most candidates could not differentiate between a change in supply and a change in quantity supplied using diagrams and explanations.	At the O/L this topic ranked 8th in performance out of 8 topics and registered 5.8% passed. Many candidates could not explain how the BOP situation can be improved upon when exports and imports are inelastic in demand in other words, most candidates could not explain the measures to correct BOP deficit.
2016	At the O/L this topic ranked 6th in performance out of 8 topics and registered 32.9% passed. Majority of the candidates failed to master the concept of demand, formulae for YED and how to apply it.	At the O/L this topic ranked 4th in performance out of 8 topics and registered 39.6% passed. Most candidates could not differentiate between visible and invisible trade as well as, favourable and unfavourable BOP. They could not explain the disadvantages of dumping.

Source: Subject Report for Economics 2014-2016; Cameroon GCE Board

THE RESEARCH PROBLEM AND OBJECTIVE

The number of candidates who sat for O/L economics increased steadily from 47,067 in 2010 to 90,903 in 2016, yet, the quantitative results in terms of percentage passed from 2010-2016 has dropped from 67.3% to 51.78% respectively (Statistics Bureau, Cameroon GCE Board, 2017).According to table 1, the classroom teaching of topics like price and markets or international trade at the ordinary level of education for three years now seems contrary to the view of national leaders that, the rationale for upgrading the economics teacher education programme of Higher Teacher Training College (HTTC) in Bambili is to produce confident graduates who are knowledgeable and competent in their fields and able to put into practice the knowledge gained (HTTC, Bambili Undergraduate and Graduate Course Description Booklet, 2013). Therefore, the main objective of this study is to evaluate the extent to which teachers' content knowledge influence students' achievement in economics at the ordinary level.

This study set out to answer the following questions:

1. Does TKC have a direct effect on students' examination scores in economics at the ordinary level?

2. Does TKC have an indirect effect on students' examination scores in economics at the ordinary level?

The following research hypotheses were suggested to guide the study:

HO_a: TKC does not have any significant direct effect on students' examination scores in economics at the ordinary level.

HO_b: TKC does not have any significant indirect effect on students' examination scores in economics at the ordinary level.

THEORETICAL AND CONCEPTUAL FRAMEWORK

Theoretically, this piece of research work utilizes Shulman's (1986, 1987) pedagogical content knowledge (PCK) theory and Bruner (1966) theory of instruction. Shulman (1986) stated that for meaningful learning to occur teachers' must possess knowledge of subject matter (i.e. notion, concepts, principles, laws, theories, facts and information from the different subjects that constitute the school curriculum) and also related activities in which the learner would be engaged during the process of learning. Thus to him, a teacher needs to have a good grasp of the subject matter before being able to transform it. To reiterate the above theory Bruner (1966) and Bukova-Güzel (2010) states that, subject matter knowledge (as displayed by the teacher) refers to an exhibition of deep and thorough conceptual and procedural understanding of identified aspects of a topic during classroom teaching. They stipulated that, subject matter knowledge as displayed by the teacher is guided by checking the following: correctness of a subject facts, flexibility of explanations, sequential representation of facts, hierarchical presentation, easy flow of ideas, identification of critical subject components within the concept of the topic that are fundamental for understanding and applying the concept and display of skills for solving problems in the area of the topic. To conclude Bruner (1966) highlighted that, teachers' scaffolding of learning enhances student's understanding of the content.

In keeping with the theoretical and conceptual relationship between TKC and SA, Figure 1 summarised the conceptual framework of the study. The main independent variable in this study is TKC. This variable is operationalized as major elements of TKC (knowledge of objectives (OBJ), content (CON), laws or theories (LAT) and procedures (PROCE)). The dependent variable is secondary school economics students' achievements (SA) which is a sum of multiple choice examinations (SA1) and essay examination (SA2). Hence, Arrow A in the conceptual diagram illustrates the interrelationship between the independent variable and the dependent variable. The above situation has results in many indirect (via teachers' knowledge of student conception, TKSC) and direct effects of TKC on students' achievement. Economics students learning achievements depend on how teachers adequately use their knowledge of economics content to teach this subject. Arrow B identifies the extraneous variables (general pedagogical knowledge, curricular knowledge and technological knowledge) that play a role in explaining the dependant variables.

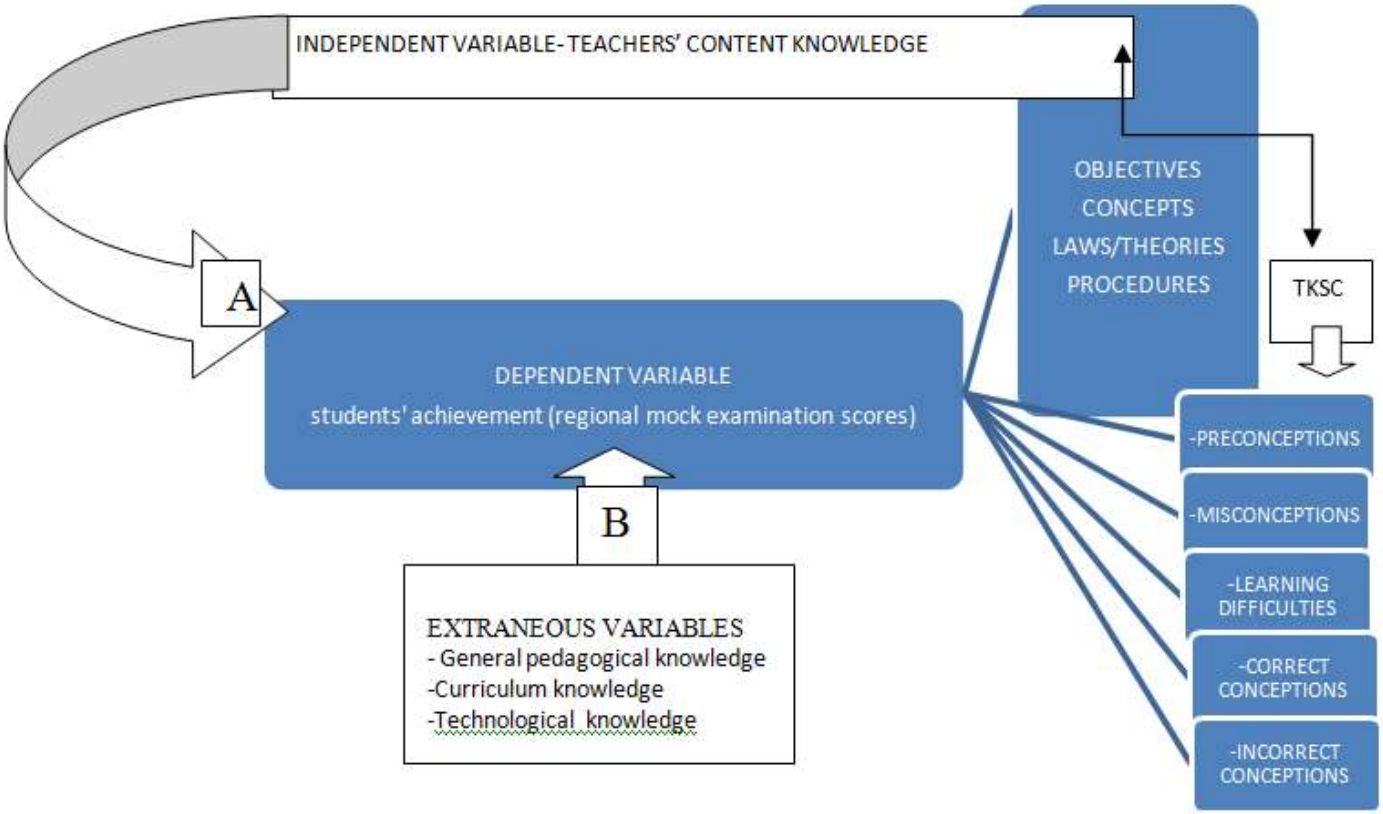

Figure 1: Conceptual diagram
Source: Nubonyin, 2018

REVIEW OF RELATED LITERATURE

In 2016 Kuhn, Alonzo and Troitschanskaia conducted a study with 338 pre-service and in-service teachers of business and economics. They used questionnaires, interviews and rating scales to collect data for the study. Their findings reveal that, teachers' knowledge of economics such as prepositional knowledge, case knowledge and strategic knowledge are related to content knowledge. They argue that, the teaching process of economics topics starts from the teacher's understanding of what must be taught and how it must be taught to the learners. Kuhn, et. al. (2016) reiterate that, economics teaching process proceeds through a series of activities in which learners are given a series of instructions and an opportunity to learn, although ultimately the learning itself remains the learner's responsibility. To them, if teaching action has to be effective, it should end up with the learner having newly acquired comprehension. But, teaching action (practice) is ineffective since teachers are most often engaged in tasks that differ from actual teaching. A similar pattern of results is reported by Ayers (2016). His findings reveal that, to teach economics effectively, teachers ought to have a deep understanding of the economics knowledge of the topics that they teach. His findings further indicate that there is an interrelationship existing among common content knowledge, specialized content knowledge, and horizon content knowledge for teaching economics. He argues that, if teachers' have good conceptual understanding of economics topics, the influence on the quality of their instruction and the instructions used and provided would be positive. An earlier finding by Bonney, Amoah, Micah, Ahiamenyo, and Lemaire (2015) corroborate the above findings.

Subject matter knowledge by teachers of any subject is important in teaching as evidenced by findings of Arsaythamby and Julinamary (2015). They used a sample of 150 students from five national secondary schools in Kedah, Malaysia. They used test and interviews to collect data for the study. The test comprised of 18 items namely six symbol items, six graph items and six economic problem solving items. This test covered chapter 1 to 4 of the micro economics and macroeconomics in the economics syllabus of form six. All these items were validated by a group of experts and experienced form sixth economics teachers. They selected only 10 students for the interview session. Findings from the students interviewed showed that 70/% of the students failed to differentiate the items in terms of symbols, graphs and

problem solving. The findings also indicated that the graph items were easier to comprehend and answer compared to the symbols and economic problem solving items. Hence, Arsaythamby and Julinamary (2015) suggested that economics teachers need to use content knowledge when teaching topics involving symbols (formulas), graphs and problem solving. The contribution of the above study to pedagogy indicates the need for teachers to know these three types of items in order to improve their students learning ability and achievements in this subject.

To reaffirm the above findings, Tokarcikova (2013) used a sample of 320 students who had been attending courses in principles of economics theories and principles of micro economics in the University of Zilina, Slovak Republic. He used questionnaires, semi structured interviews and focus group discussions to collect data for the study. The reliabilities of the instruments were analysed using cronbach's alpha. The data collected from the study were presented using descriptive statistics. Tokarcikova (2013) observed that, 32% of students generally understood the meaning of economics concept like gross domestic product, while 49% and 82% of the students generally understood the meaning of economics concepts like unemployment and inflation respectively. Shepherd (2015) complement the above results by reiterating that teachers' knowledge of content together with procedure to deliver the content enhance students learning. Rollison, Ludlow, and Wallingford, (2012) possess knowledge of content in economics as demonstrated by their increasing confident to explain and illustrate economics concepts using different historical periods and by their ability to integrate economic concepts and literacy in the classroom.

Using quasi experimental design Van Wyk (2013) collected data from 229 grade 10 economics learners and 8 teachers at secondary schools in South Africa. He subjected learners to complete a 40-item multiple-choice economics test. The data were analysed using multivariate estimations techniques in order to determine t-values and p-value. He observed that, by finding ways to teach learners more about economics, teachers are contributing to an improvement in students' knowledge and attitude toward the subject. Specifically, Van Wyk explained that by teaching basic economic concepts and applying them to classroom discussions of economic issues and institutions, teachers are not indoctrinating learners, but providing a knowledge foundation for more informed learner opinions and decision making on vital issues. He reiterated the fact that, the more economics concepts learners know, the more they like and value the subject and the more information they have about economic issues. He further reported that learners who do not get the opportunity to learn economics and increase their economic understanding will probably never take much interest in the subject or in their economic world. This study points to the critical importance that teachers' knowledge of subject matter has on students' achievement in economics.

METHODOLOGY

The study employed the ex-post-facto research design. Geographically the study was conducted in Mezam Division, the North West Region of Cameroon. The population of the study consisted of all form five students, teachers and heads of departments (HODs) of economics in Mezam Division, all regional pedagogic inspectors (RPIs) of economics in the North West Regional Delegations of Secondary Education in Cameroon and head of department for economics in Higher Teacher Training College (HTTC) Bambili. The number stood at 4000 students and 250 teachers of economics (Statistics obtained from the North West regional delegation for secondary education 2016/2017 academic year).According to Krejcie and Morgan (1970), 485 were deemed appropriate as the sample size for the study. It consisted of 03 RPIs, 08 HODs of economics, 33 teachers of economics and 444 students of economics. The purposive sampling technique was used to selectthe HODs, RPIs, teachers and students of economics. Stratified, simple random and proportional sampling techniques were used to select the schools and students per school respectively. To collect the data for the study separate qquestionnaires were administered to students as well as teachers. Observation checklist was used to collect data from the HODs and interview guide was used to collect data from RPIs.

The convergent validity of the questionnaires scale was established using the average variance extracted (AVE) statistical method. The AVE for all the constructs exceeded 0.5 cut off criteria (Thalut, 2017). Specifically, the validity coefficients for reflective measurement like TKC were 0,55 and 0,65 (for the students and teachers questionnaires respectively). The validity coefficients for TKSC were 0,63 and 0,60 (for the students and teachers questionnaires respectively) whereas, the validity coefficients for

formative measurement such as SA was 0.54.The observation checklist and interview guide were valid because they were adopted from the observation checklist used by RPIs. The reliability of the questionnaires scale was established using the composite reliability (λ>0.6) and Cronbach alpha (α >0.6) as seen on table 2.

Table 2: Reliability of the Questionnaire Instruments

	Composite Reliability	Cronbach's Alpha	Communality
Students' Results			
SA	0,688765	0,314353	0,547341
TKC	0,828674	0,728929	0,551839
TKSC	0,870493	0,814455	0,573741
Teachers' Results			
SA			0,487970
TKC	0,883000	0,822288	0,656656
TKSC	0,884315	0,832564	0,608785

Source: Computed by the Author using Smart PLS, 2018

Table 2 shows thatall the constructs were reliable since the composite and cronbach alpha reliability coefficients all exceeded 0.6 cut off criteria (Thalut, 2017).The communality result shows that all the indicators used explained more than 50% of the variations that were manifesting from the constructs.Both descriptive and inferential statistics were used to analyse the data with the aid of SmartPLS, 2018 statistical package.All ethical issues were identified and considered.

Model Specification

Based on the works Shulman (1987) as well as Ball, Thames and Phelps (2008) the structural model was specified as follows:

$$SA = f(TKC, TKSC) \quad (1)$$

Equation one examined the direct causal relationship between the latent variables

$$SA = f(TKC(TKSC)) \quad (2)$$

Equation two examined the indirect partial effect of TKC through TKSC on students' achievement.

Empirical the model for direct effect specification appeared as:

$$SA_i = \theta_i TKC_i + \theta_2 TKSC_i + \varepsilon_i \quad (3)$$

The empirical model for direct effect gives the direct effect of change in the endogenous variable as a result of change in the exogenous variable, while the indirect effect measure a change in the endogenous variable as a result a change in the exogenous variable moderated by other exogenous variable.

$$SA_i = \theta_0\theta_1 TKC_i TKSC_i + \varepsilon_i \quad (4)$$

Equation four examined the effect of TKC on SA through TKSC. The partial derivative of equation four was given by the expression below:

$$\frac{\partial SA}{\partial TKSC} = \theta_0\theta_1 TKC_i, \frac{\partial^2 SA}{\partial TKSC \partial TKC} = \theta_0\theta_1$$

From the model specification the theoretical expectations of the sign of the coefficients were estimated as follows: A priori:$\theta_0 > 0, \theta_1 > 0, \theta_2 > 0$.

In equations 3 and 4 the PCK theory (Shulman, 1986, 1987) and the conceptual framework adopted from Bruner's theory of instruction explained that an improvement in teachers' TKC would enhance SA. Hence, an improvement in TKC was expected to contribute indirectly to an improvement in SA via TKSC whereas; an improvement in TKSC was expected to contribute directly to an improvement in SA. Consequently, the coefficients of θ_1 *and* θ_2 were positive. Meaning a positive association between teachers' TKC and SA was expected.

RESULTS AND ANALYSIS

Correlation measure the degree of association between the variables used in the study. A close observation of the correlation matrix in table 3 shows that, there is a strong positive relationship (r = 0.60) between teachers' knowledge of content and students' achievement in economics. This result indicates that an improvement in teachers' knowledge of content is accompanied by an improvement in students' achievement or a decrease in teachers' knowledge of content will result to a decrease (or no improvement) in students' achievement in economics. The correlation matrix table further shows that, there is a moderate relationship between teachers' knowledge of students' conception (r = 0.39) and students' achievement. This means that a modest improvement in teachers' knowledge of students' conception is accompanied by a modest improvement in students' achievement in economics and vice versa.

Table 3: Pairwise Correlation

	SA	TKC	TKSC
SA	1		
TKC	0,603522	1	
TKSC	0,398695	0,559857	1

Source: Computed by the Author using Smart PLS, 2018

The pairwise correlation matrix table results are strongly supported by the indicators loading factors. Table 4 shows that, the indicators loading factors for both the reflexive (TKC, TKSC) and formative (SA) model were significant at 0.05 significant levels. This implies that the structural equation model has a strong and positive significant relationship with their indicators.

Table 4: Measurement Model Loading factor

	SA1	SA2	OBJ	CON	LAT	PROCE	PRECON	MISCON	LD	CCON	INCCON
SA1	0,5184	0,9409									
TKC			0,6207	0,8089	0,7104	0,8199					
TKSC							0,7598	0,7873	0,7450	0,7800	0,7116

Source: Computed by the Author using Smart PLS, 2018

The relationships between TCK and SA in economics were further explained using the coefficient of determination (R^2). An estimation of students' data shows that, teacher knowledge of students' conception (TKSC) and teacher knowledge of contents (TKC) explained 7 % of the variation in students' achievement (SA) whereas, an evaluation of teachers' data indicates that teacher knowledge of students' conception (TKSC) and teacher knowledge of contents (TKC) explained 37 % of the variation in students' achievement (SA).

Table 5: Summary Statistics and Empirical Results for TKC and SA

	Coefficient	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
OBJ <- TKC	0,262438	0,045439	0,045439	5,769230
CONCEPT <- TKC	0,366482	0,032265	0,032265	11,161712
LAT <- TKC	0,301233	0,040174	0,040174	7,538655
PROCE <- TKC	0,406965	0,030909	0,030909	13,050786
SA1 <- SA	0,353237	0,177017	0,177017	1,950923
SA2 <- SA	0,851031	0,109693	0,109693	7,953683

Source: Computed by the Researcher using Smart PLS, 2018

From the students' statistical analysis in table 5, the t-statistics results specifically show that, an improvement in teachers' knowledge of content will results to an increase in students' achievement in economics. Meaning that a 1% improvement in teachers' knowledge of objective, concept, laws and theories as well as on procedures will results to a 0,26%, 0,36%, 0,30% and 0,40% improvement in students' achievement in economics respectively. These effects are statistically significant at 1% level of significance.

***Table* 6: Teachers' Knowledge of Economics Content**

SN	Teachers' content knowledge	Yes Responses		No Responses		Responses
		F	%	F	%	∑F
1	The instructional objectives of the lesson were clear and the teacher was able to clearly articulate what economics ideas and/or procedures the students were expected to learn.	8	100	0	0	8
2	The teacher knew economic theories, axioms, laws and how to break information into smaller pieces.	6	75.0	2	25.0	8
3	The teacher knew how to present the lesson systematically (from concrete to abstract) and to connect the lesson with daily life.	8	100	0	0	8

Source: Researcher's estimation based on data from HODs of Economics

The analysed results on the table 6 shows that as far as issues regarding teachers' knowledge of the content are concerned, 8(100%) of the teachers observed could clearly state the instructional objectives of the lesson; present the lesson systematically and connect the lesson to students' daily life. Just 2 (25%) of the teachers were not knowledgeable on how to break economics information into smaller pieces. These teachers knew very little about economic theories, axioms and laws. This therefore implies that, 6(75%) of the teachers observed could fully demonstrate mastery of economic theories, axioms and laws.

Detailed interviews established that teachers' knowledge of content has an effect on students' achievement in economics. Specifically, the RPIs highlighted that teachers' mastery of subject matter and appropriate use of concrete examples and teaching methods to communicate the content leads to an improvement in students' achievement in economics. Teachers' ability to state objectives clearly and to link old and new knowledge was similarly underlined as a major factor influencing students' achievement in economics.

Table 7 Bootstrapping Students' Test Results for Effects of TKC on SA

Hypothesized Link	Coefficient	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	Decision
TKC -> TKSC	0,182034	0,074922	0,074922	2,410640	Supported
TKSC -> SA	0,194800	0,085946	0,085946	2,099352	Supported
TKC -> SA	0,092586	0,062197	0,062197	1,005608	Not Supported

Source: Computed by the Researcher using SmartPLS, 2018

From students questionnaire the bootstrapping result in table 7 shows that there is a positive significant partial relationship between teacher knowledge of contents (TKC) and students' achievement (SA) through teacher knowledge of students' conception (TKSC). This implies that a unit improvement on teacher knowledge of subject contents through teacher knowledge of students' conception (TKSC), students' achievement (SA) will be improved by 3.24% (Coefficient = 0.18 x 0.18, t =2,41 x 2,09, P=0.000). This finding permit us to reject the null hypothesis which state that there are no significant indirect effects of teacher knowledge of subject content via TKSC on students' examination scores in economics at the ordinary level.

Teacher knowledge of subject contents (TKC) has insignificant positive direct effect on students' achievement (SA). This can be interpreted to means that a unit change in the standard deviation of teachers' knowledge of subject contents (TKC), students' achievement (SA) will have improved by 6.2% (Coef = 0.0602, t =1.005). This finding permit us to retain the null hypothesis which state that there are no significant direct effects of teacher knowledge of subject content on students' examination scores in economics at the ordinary level.

Table 8: Bootstrapping Teachers' Test Results for Effects of TKC on SA

Hypothesized Link	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)	Decision
TKC -> SA	0,580660	0,573320	0,053408	0,053408	10,872135	Supported
TKC -> TKSC	0,213723	0,212623	0,053753	0,053753	3,976013	Supported

Source: Computed by the Researcher using SmartPLS, 2018

From teachers' questionnaire, the bootstrapping result in table 8 indicates that there is a positive significant partial (indirect) relationship between teacher knowledge of contents (TKC) and students' achievement (SA) through teacher knowledge of students' conception (TKSC). This implies that a unit improvement on teacher knowledge of subject contents through teacher knowledge of students' conception (TKSC), students' achievement (SA) will be improved by 12.18% (Coefficient = 0.58 x 0.21, t =10.87 x 3.97 P=0.000). This finding permit us to reject the null hypothesis which state that there are no significant indirect effects of teacher knowledge of subject content on students' examination scores in economics at the ordinary level.

Furthermore, teacher knowledge of subject contents (TKC) has a significant positive direct effect on students' achievement (SA). This can be interpreted to means that a unit change in the standard deviation of teachers' knowledge of subject contents (TKC), students' achievement (SA) will have improved by 58.0% (Coef = 0.580, t =10.872). Therefore, we reject the null hypothesis which state that there are no significant direct effects of teacher knowledge of subject contents on students' examination scores (SA) in economics at the ordinary level.

DISCUSSIONS AND IMPLICATIONS

Looking at the ten items that addressed teachers' knowledge of economics content and its effects on students' achievement it was clearly observed that both students and teachers overwhelmingly agreed that there are significant indirect effects (3.24% and 12.18% respectively) through TKSC of teachers' knowledge of economics content on students' examination scores in economics. Yusof and Zakaria (2015) suggested that, teachers who possess better content knowledge will enhance students' achievement in the classroom through their knowledge of students, as well as their knowledge of the different ways in which content knowledge can be applied in the classroom. Thus, this result provides a clear picture of the positive relationship between TKC and SA as predicted by the theory on PCK and the a priori expectation of the study.

Furthermore, it is easily observed from the estimated partial least square (PLS) regression analysis from both students and teachers that, there are direct effects (6.2% and 58.0% respectively) of teachers' knowledge of economics content on students' examination scores in economics. This small but positive effects can be ascribed to the fact that most teachers prepared an appropriate lesson ensuring that the objectives of the lessons were in alignment with the 2016 economics syllabus, recommended textbooks, scheme of work and they knew how to assess the students learning (this has accounted for the 0.26% improvement in SA); teachers knew the basic definitions and economics vocabulary in the lesson, they drew economics concepts from real life situations as well as they knew how to make connections between old and new topics (this has accounted for the 0.36% improvement in SA); teachers knew economics theories axioms, laws in the lesson and they taught concepts using multi representations such as tables, diagrams, graphs and equations (this has resulted in 0.30% improvement in SA); teachers presented the lesson systematically, they knew how to break information into smaller pieces and they have knowledge of the instructional programme (this has accounted for 0.40% improvement in SA). The findings have confirmed Bonney, et. al. (2015) assertion that there is a positive but very low relationship between teachers' knowledge in the subject matter and pupils performance in the 2012 basic education certificate examination (BECE).

Similarly, during the classroom observation of teachers, some of the teachers observed clearly stated the instructional objectives of the lesson, presented the lesson systematically and connected the lesson to students' daily life. Most of the teachers were knowledgeable on how to break economics information into smaller pieces and fully

demonstrated mastery of economic theories, axioms and laws. Again, these findings are in alignment with the recommendations of Van Wyk (2013) that, teachers' knowledge of content enhances students understanding of the subject matter positively. Van Wyk explained that by teaching basic economic concepts and applying them to classroom discussions of economic issues and institutions, teachers were not indoctrinating learners, but they were providing a knowledge foundation for more informed learner opinions and decision making on vital issues. Kuhn, et. al. (2016) agreed with this conclusion as they contended that teachers who have a good understanding of the subject matter find different ways to represent it and make it accessible to learners.

To a greater extent the findings of observation checklist item relating to teachers' knowledge of content are in alignment with the suggestions of Shulman (1982) that, teachers' knowledge of content has a positive effect on students understanding of the subject matter. To a lesser extent, the findings of observation checklist item relating to teachers' knowledge of content further indicated that, some teachers' were not knowledgeable on how to break economics information into smaller pieces. These teachers knew very little about economic theories, axioms and laws. This has accounted for the negative effects of teachers' knowledge of content on students' achievement in economics. To corroborate this findings Swan and Hofer (2011) observed that, teachers' knowledge variable captured both positive and negative effects on students' achievement.

Results obtained from an interview with regional pedagogic inspectors of economics tallies with Ayers' (2016) idea that to teach economics effectively, teachers ought to have a deep understanding of the economics knowledge of the topics that they teach. This is because, if teachers' have good conceptual understanding of economics topics, the influence on the quality of their instruction and the instructions used and provided would be positive. To confirm the findings obtained from the interviewees Shepherd (2015) reported that, teacher knowledge is only estimated to have a significant positive impact on performance when considering teachers' understanding of what must be taught and how it must be taught to the learners. This is because the more economics concepts the learners knew, the more they liked and valued the subject and the more information they had about economic issues. The pedagogic implication of this interview results is for teachers to have control or command of knowledge of both branches of economics. This is because teachers who are highly knowledge with the subject matter of both branches are able to select (and/or effectively teach) the subject matter according to the level and other characteristics of the students. Thus, they can help students to apply learning to real life situations.

In addition to the above, the findings confirm Bruner's theory of instruction because; it provides a possible framework for teachers to design lessons that help students discover learning. That is, it provides a possible background (or structure) for the measure of teachers' knowledge and its effects on students' achievement following instruction such as: economics teachers must present the content in a sequence giving the learners the opportunity to acquire and construct knowledge, transform and transfer learning. Teachers must endeavour to provide instructions that are appropriate to the level of the learners. Economics teachers should provide instructions that involve students in using prior experiences and structures to learn new knowledge. Teachers must revisit material to enhance knowledge, they should assist learners in building their knowledge, they should help the students to categorise new information in order to see similarities and differences between them.

It was clearly realized that there is a significant indirect effect of teachers' knowledge of students' conception on students' examination scores in economics. This result is confirmed by the a priori expectation of the study that an improvement on TKC via TKSC leads to an improvement in SA in economics. These findings have confirmed Van Wyk (2007) arguments that teachers' knowledge of students' conceptions exerts a positive influence on student achievements in economics. It is for this reason that Tokarcikova (2013) recommends that to enhance students understanding of economics content and help them to develop critical skills, economics teachers should engage students in small group discussion, use media and interactive lecturing method, integrate methods and analytical framework from more than one academic discipline to examine a theme, issue, question or topic. Similarly, Arsaythamby and Julinamary (2015) as well as Rollison, et. al. (2012) argue that to improve students' learning, teachers' need to demonstrate content knowledge by their ability to integrate economic concepts and literacy, explain and illustrate economic concepts (especially topics involving formulas, graphs and problem solving) using different historical

periods. According to chief examiners reports in table 1, most of the causes of failure in economics are blamed on teachers' inability to teach topics in micro and macroeconomics. From the researcher's point of view, economics teachers' knowledge of content is not just a deep knowledge and understanding of subject matter taught, but the teachers' ability to transfer that information in a meaningful way to learners. This calls for teachers to recognise both the acquisition of knowledge on the subject (economics) taught as well as knowledge of students' conception as necessary tools for effective teaching.

CONCLUSION

Based on the findings and discussions on the above objective it is imperative to state that there are significant direct and indirect effects of teachers' knowledge of economics content on students' examination scores in economics. This is because students' achievements at examinations were to a greater extent influenced by teachers' knowledge of micro and macro-economic content via their knowledge of the students' conceptions. This implies that teachers must know the subject and the students they teach since, teachers who do not themselves know a subject matter and their students well are not likely to have the knowledge they need to help students learn this content. Thus, economics teachers' knowledge of content is an important indicator of students' achievement in economics.

LIMITATION OF THE STUDY

The sample of this study was limited only to students and teachers of economics in some selected government grammar secondary schools in Mezam Division. This made it difficult to determine whether or not the results were accurately representative of a larger population.

RECOMMENDATIONS

Based on the findings obtained from this study, the following recommendations were made:
A minority of secondary school teachers' knowledge of transforming some micro and macroeconomics contentis scanty. There is therefore the urgent need for professional training programme to be organized to help teachers in understanding economics concepts, laws, principles and providing them with the competencies to break information into smaller pieces as well as to transform economics content in order to enhance students understanding.

Teachers' knowledge of preconception, misconceptions, learning difficulties, correct conceptions and incorrect conceptions were found to have influenced students' achievement positively. Therefore, curriculum planners and developers should consider teachers' TKSC as among the useful tools in the teaching and learning of economics in secondary schools. They should identify and expunge irrelevant contents and incorporate current topic and new developments that focus on TKSC and TKC in the field of teacher education to make the curriculum current and comprehensive in order to develop teachers' professional performance.

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