EFFECTS OF APPLICATION OF INSTRUCTIONAL METHODS ON LEARNER ACHIEVEMENT IN BUSINESS STUDIES IN SECONDARY SCHOOLS IN KENYA

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Abstract

Instructional methods influence achievement of students in education continuum. While appropriate methods enhance learner achievement, inappropriate approaches stifle knowledge retention and application. While empirical studies in Kenya have focused on subjects such as Kiswahili, Biology and Mathematics, none has examined the linkage between instructional methods and learning achievement in business.

Primary data was obtained from 288 form four business studies students across the country. A mixture of probability and non-probability sampling procedures were used to select students and teachers for inclusion in the study. Bivariate analysis obtained cross-tabulations with Chi square (χ^2) and one-way Analysis of Variance (ANOVA) for significance tests; while multivariate analysis obtained β coefficients, Exp(β), -2LL statistic and significance tests. The study found that take-away assignments accounted for the largest proportion of variance in improved student performance (9.1%), brainstorming (8.8%), group discussions (8.3%), dictation (7.9%), lectures (6.3%) and chalkboard notes (5.9%) thus giving prominence to constructivist approach.

Key words: Instructional-methods, teacher-centered, learner-centered, constructivist-approach achievement

Introduction

Teaching is an interactive process through which knowledge and skills are shared with students, with a view to improving students' understanding and ability to manipulate the social, economic, political and physical environment to enhance their survival (Flanders, 1970; Brown, Oke & Brown, 1982). As noted by Ayot and Patel (1992), the main objective of teaching is to bring about desirable learning in students. In this regard, students are expected to develop appropriate knowledge and skills, which are necessary for solving problems and improving human life. In most cases, the teacher initiates communication and influences students to think in a particular ways as guided by the syllabi. However, whether the teacher authoritatively leads communication throughout the instructional process or whether the teacher takes up facilitation role is a matter of choice. While teachers' training makes specific recommendations in favour of participatory-exploratory approaches, the teacher's efforts are often influenced by cognitive orientation in conjunction with the objectives of the teaching-learning process (Flanders, 1970).

Instructional methods can be teacher-centered, learner-centered or mixed approach. Quite often, teachers prefer methods that make their work easier based on their beliefs, personal preferences and norms of their disciplines (Watson, 2003). In this regard, some teachers believe that lessons should be teacher-centered, where the teacher is the expert and the authority in presenting information (Ahmad & Aziz, 2009). Nevertheless, teacher-centered methods are associated with inadequate stimulation of students' innovative capacities, intellectual thinking, memorization, cramming of facts, poor knowledge retention and high dependency among graduates (Adeyemi, 2008; McDowell, 2001; Tanner, 2009; Tella, et al., 2010).

On the other hand, some teachers adopt learner-centered approaches, in which their role is restricted to facilitation of the teaching process (Ahmad & Aziz, 2009). Learner-centered methods are associated with imaginative, critical and creative skills; active participation of students in the learning process through discussions and intellectual engagement; as well as higher learning achievement and effectiveness in addressing problems of humanity (Ministry of Education, 2001; Eken, 2000; Curtin, 2005; Froyd, 2007; Ahmad & Aziz, 2009; Dufresne, et al., 2010). Although teachers have the discretion to choose methods for delivering lessons to their students, Chika (2012) observes that learner-centered pedagogy is a powerful strategy for improving learning achievement in examinations and application of knowledge and skills acquired.

Teacher-centered instructional methods

Teacher-centered methods are also known as traditional instructional methods, where teachers are at the center of classroom activities, including explanations and discussions (Ahmad & Aziz, 2009). Teacher centred method is behaviourist in nature. Teacher-directed learning that follow the instructivist approach which involves careful and meticulous planning of the curriculum and purposeful instructional procedure employed by the teacher. Under such circumstances, students have a definite and fixed perception of their roles as listeners, while teachers are expected to be the talkers and 'custodians of knowledge'. This implies that students' active participation is minimal, until the teacher authorizes them. Tanner (2009) found that teachers dominated classroom talk and students talked only when called upon to answer questions.

Teacher-centered methods are however, associated with a number of shortcomings. For instance, Adeyemi (2008) notes that lecture, which is the most common method, does not stimulate students' innovation, inquiry and scientific thinking but rather encourages students to cram facts, which are easily forgotten. McDowell (2001) notes that instructional methods that encourage memorization and reproduction are short of knowledge that can be used to solve problems in new situations. Tella, Indoshi and Othuon (2010) noted that teacher-centered methods often result to students not enjoying lessons and missing the benefits of intellectual discovery.

Learner-centered instructional methods

Learner-centered methods actively engage students in the learning process for effective mastery of the subject matter and promotion of a positive attitude towards the subject. As noted by the Ministry of Education it its *National Report on the Development of Education in Kenya*, presented at the International Conference on Education in September 2001, teaching approaches adopted should make learning more learner-centered in order to promote imaginative, critical and creative skills in students resulting in better achievement of instructional objectives (Ministry of Education, 2001). In a learner-centered class, students take a participative role by leading discussions and teachers become facilitators In this regard, teachers facilitate student's discussion and interject only when necessary, allowing students to put the language to use and explore aesthetics of learning materials (Eken, 2000; Ahmad & Aziz, 2009).

According to Froyd (2007), the standard features of a learner-centered pedagogy include collaborative learning, connecting new information to previous knowledge and critical thinking. Some scholars refer to learner-centered pedagogy as interactive learning. According to Dufresne, Gerace, Leonard, Mestre and Wenk (2010), interactive learning process within classrooms involve facilitating presentation of questions for small group work. Interactive pedagogy may also include the use of media and involvement of students in fieldwork activities. Furthermore, interactive teachers allow for diverse learning styles among their students and encourage active involvement of all students, while helping them to improve in individual weaknesses (Curtin, 2005). Students are also encouraged to ask questions, define problems and lead conversations (Chika, 2012). Besides, such methods connect students' world with learning pursuits in the classroom (Bush, 2006; Kumar, 2006). However, it is not sufficient to have an experience, if such is not discussed and shared, they may be forgotten rapidly. Sharing of experiences through group discussions improves the application of acquired knowledge and skills (Kumar, 2006).

Learner-centered methods are advantageous in a number of ways, for instance, they promote democratic participation in the learning process, encourages critical thinking, meets student's communication needs and improves performance (Cummins, 2007). The positive impact of such methods have also been documented by Chika (2012), who indicate that interactive methods are more powerful in enhancing learning achievement than teacher-centered pedagogy. Kumar (2006) also indicates that interactive methods have higher impact in overall learning achievement than didactic classrooms. As noted by Arends (1997), learner-centered methods can be used to teach complex academic materials and can help teachers accomplish important social learning and human relations goals.

The constructivist method

An aspect of learner centered pedagogy that that has been in vogue in the age of electronic learning is the constructivist method. Constructivism, drawing from cognitive and behavioural psychology, is a theory that the individual learner processes stimuli from the environment and the resultant cognitive structures that the learner builds produce adaptive behaviour. As noted by Roblyer (2006), constructivists believe that knowledge is generated by students through experience-based activities rather than directed by instructors. Advocates of a constructivist approach suggest that educators first consider that the knowledge and experiences that the learner brings to the learning tasks are paramount. It is such knowledge, skills and attitudes that is built upon and expanded by connecting them to new learning (Huitt, 2003). In the process, the learner attains a level of self-regulation, which surpasses mere memory recall and explanations and fits the conceptual framework of the learner. This is done by providing the learner with opportunities to uncover facts and discover ideas in either a real world setting or case-based environment through own efforts in a regulated manner. Cummings (2007) found that when constructivist approaches are employed in learning, students post an improvement in their academic performance.

The teacher's role is facilitative, coaching, stimulative and provocative in ways that allow the learner to engage in critical and creative thinking, analysis and synthesis of ideas during the learning process as the teacher assumes the role of a co-learner. The constructivist teacher provides learning tools and activities that encourage problem-solving and inquiry-based learning activities with which students formulate and test their ideas, draw conclusions and inferences, and convey and pool their knowledge in a collaborative learning environment (Sunderman, 2006). It is in this sense that constructivist theory is friendly to technology assisted learning through the Internet using virtual learning environments or web-based course management systems. To this end Open and Distance and Electronic Learning (ODeL) which seems to be the future of education and learning has continued to take root as the teacher is able to manage the learning environment remotely through synchronous or asynchronous collaboration with learners.

Instructional methods and learning achievement

There is empirical evidence that instructional methods adopted by teachers influence learning achievement significantly. Whereas appropriate instructional methods would facilitate grasping of new concepts, inappropriate methods are likely to constrain knowledge retention and application (Dunn, 1983; Chang, 2010). Consequently, it is important for teachers to align their instructional methods with the needs and preferences of students to enhance effectiveness of the process in terms of learning achievement. Students whose learning preferences are mismatched with instructional methods are less likely to develop interest in the subject matter, prompting some to drop out altogether (Odundo, 2003; Zeeb, 2004).

A study conducted by Dunn (1983) found that student leaning achievement was significantly related to the instructional methods used by teachers. In this regard, the methods used to deliver lessons had a greater impact than the content covered in a course of study. In another study, Chang (2010) investigated the effectiveness of teacher-centered and learner-centered pedagogical methods on the performance of students. The study found that learner-centered methods were more effective in influencing the perception of students towards science subjects. Students placed more value on active participation in-group discussions than attendance of lectures. Learner-centered methods

foster greater flexibility in teaching and stimulate intellectual engagement with teachers and among students (Chang, 2010).

Kang'ahi, Indoshi, Okwach and Osodo (2012), investigated the influence of teaching styles on learners' achievement in Kiswahili language in secondary schools. The study found a positive relationship between teaching styles and learners' academic achievement. Besides, learning achievement was seen to increase with more learner-centered teaching styles. Furthermore, Muraya and Kimano (2011) found that cooperative learning (learner-centered) approach resulted in significantly higher mean achievement scores compared to regular teaching (teacher-centered) method. The study concluded that learner-centered method was an effective teaching approach, which should be adopted by biology teachers.

In Kenya, the Sessional Paper No. 1 of 2005 on *A Policy Framework for Education, Training and Research*, amplifies the Government's commitment to enhancing quality of education at all tiers to produce people with adequate knowledge and skills to tackle challenges of the 21st Century. The instructional methods adopted by teachers remain paramount in realization of objectives of the sectoral policy guidelines regarding quality of education provided (Odundo, 2003). Although the Government and other education stakeholders continue to provide sound curriculum, physical infrastructure and human resource, such measures alone cannot improve learning achievement without appropriate instructional methods. Poor instructional methods have been associated with poor performance in science and arts-based subjects in the national examination (Muraya & Kimano, 2011; Kang'ahi, et al., 2012). This paper presents findings of a study that investigated, among other things, the influence of instructional methods on the learning achievement of secondary school students in business studies.

Statement of the problem

The method used by teachers in sharing knowledge with students is factor influencing learning achievement of students at all tiers of the education system. While appropriate instructional methods are likely to enhance learning achievement, inappropriate approaches are known to stifle knowledge retention and realization of learning objectives (Brown et al., 1982; Henson, 2004; Chang, 2010). Consequently, aligning instructional methods with the needs and preferences of students is considered important for higher learning achievement (Zeeb, 2004).

As noted by Odundo (2003), students who experience a mismatch between instructional methods used during teaching and their preferred styles often feel that their learning needs are being addressed using an unfamiliar language. The mismatch poses a difficulty for some students in internalizing the materials delivered, leading to lower grades (Odundo, 2003). Similarly, Zeeb (2004) indicate that students whose styles are not matched with instructional methods that are chosen by teachers are less likely to develop interest in learning. In the absence of learner interest in a subject, concentration level drops and learning achievement is greatly impaired (Odundo, 2003).

A number of empirical studies have investigated the link between instructional methods used in subjects such as Kiswahili, English, Chemistry, Biology and Mathematics, just to mention a few (Wachanga & Mwangi, 2004; Muraya and Kimano, 2011; Kang'ahi et al., 2012). When it comes to business studies, the linkage between instructional methods and learning achievement at the

secondary tier remains scanty in terms of academic literature, especially in Kenya. Similarly, there is little or no effort to support teachers already in service to improve their instructional methods. These issues influenced the conduct of this study.

Purpose and objectives

The purpose of this study was to determine the effect of application of instructional methods adopted by secondary school teachers on the level of learning achievement by students. The outcome of this study is particularly important for teachers of business studies, education administrators and curriculum developers. Understanding the effect of teaching approaches on students' learning achievement will help teachers to choose most appropriate methods that improve teaching quality, effectiveness and accountability to students. More specifically, the study was conducted to: establish the effects of application of instructional methods used in business studies; establish the level of learning achievement in business studies; and determine the relationship between instructional methods and the level of learning achievement in business studies.

Theoretical context

Teaching is an interactive process involving teachers and students. Although teachers are the ones who often initiate communication, the approach adopted thereafter is a matter of choice based on teachers' cognitive orientation (Flanders, 1970). Through communication in the classroom, teachers stimulate students to communicate back and to interact among themselves, with a view to achieving learning objectives. Between 1955 and 1960, Ned Flanders developed a system of interaction analysis to study what happens in a classroom during teaching and learning processes. The system of interaction was named Flanders Interaction Analysis Categories (FIACs) and it is composed of ten categories, broadly grouped into two, viz. teacher-centered and learner-centered.

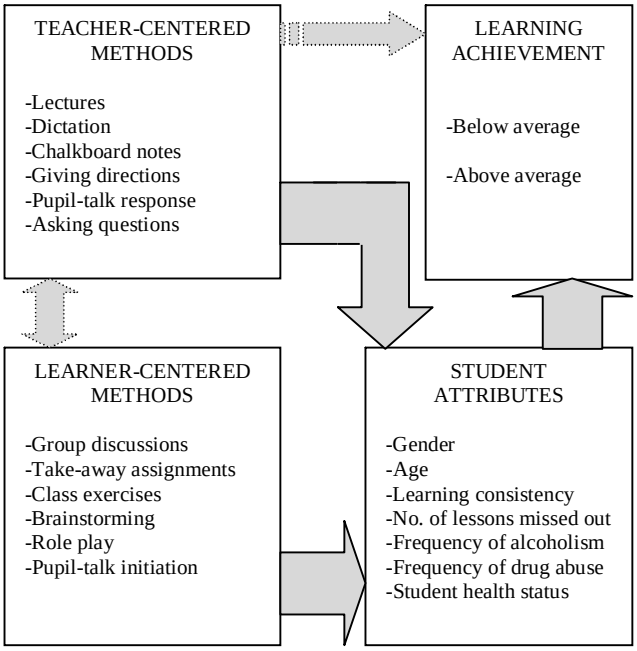
The first seven categories of FIACs are meant to record teacher-centered instructional methods; the next two measures student communication during lessons; while the last category is meant to record silence or a state of confusion in the classroom. This suggests that FIACs is concerned with verbal behaviour only; because it can be observed with higher reliability than the non-verbal (Flanders, 1970). FIACs is founded on the assumption that the verbal behaviour of an individual is an adequate sample of his total behaviour (Amidon & Hough, 1967). It also assumes that classroom interaction is a series of events and that teaching behaviour consists of acts or patterns of behaviours, embedded to the chain of classroom events.

The major features of this category system lie in the analysis of initiative and response, which are the core characteristics of interaction between two or more individuals (Flanders, 1970). The category system further assumes that the teacher is the influential authority in the classroom, because whatever the teacher says determines reactions of students. Based on empirical studies, Flanders further formulated the two-thirds rule, stating that about two-thirds of classroom time is devoted to talking; in about two-thirds of this time, the person talking is the teacher and two-thirds of the teacher's talk involves lecturing, giving directions and controlling students (Kang'ahi, et al., 2012).

The two-thirds rule confirms that teachers often dominate the teaching and learning processes in the classroom, at least verbally. Teacher verbal domination of the classroom conditions students to

become passive and dependent. This dependency has adverse effects on students' attitudes toward learning and their performance in tests and examinations (Kang'ahi, et al., 2012). However, Flanders point out that when teachers are trained in this observation technique and become aware of the importance of students' active participation in the teaching and learning process, their verbal monopoly in classrooms decreases. This study adopted FIACs principle to assess the influence of teacher-centered and learner-centered instructional methods on the learning achievement of business studies students in public secondary schools in Kenya. Based on this theoretical underpinning, the linkage between instructional methods and learning achievement has been conceptualized as indicated in figure 1.

Figure 1: Conceptual framework



The conceptual framework shows the perceived relationships between instructional methods adopted by teachers and learning achievement of students in business studies. In this regard, the dependent variable is learning achievement, which was measured in terms of scores in business studies terminal test. Independent variables were clustered into two groups including teacher-centered and learner-centered methods, which have been adapted from FIACs. Teacher-centered methods included frequency of exposure to lectures, dictation and chalkboard notes, among others; while learner-centered methods included frequency of exposure to group discussions, take-away assignments and brainstorming, among others. However, the effect of independent variables on the dependent variable may be confounded by a set of student personal attributes, which included gender, age, learning consistency, frequency of alcoholism and drug abuse.

Methodology

The study applied the ex-post facto design to source the requisite information. Ex-post facto design is a systematic empirical inquiry in which the investigator does not have direct control over independent variables (Kerlinger, 1973). In such studies, inferences are made without direct

intervention from concomitant variations of independent and dependent variables. This means that the variables are studied retrospectively, while searching for possible relationships or effects.

The design used in this study had two main approaches for data collection, processing and analysis, viz. quantitative and qualitative. The quantitative approach elicited quantifiable and numerical data, which were used to generate descriptive statistics, cross-tabulations and statistical inferences. The qualitative approach captured in-depth information arising from experiences and opinions of business studies teachers and students through key informant interviews and open-ended questions, respectively. Qualitative approach also involved observation of the teaching and learning processes in the classroom. The method helped to confirm the information provided by students regarding the most common instructional methods used by teachers.

A mixture of probability and non-probability sampling procedures were used to select students and teachers. Participants were sampled through a multi-stage procedure, which started at the national level, targeting schools. At the time of the study, about 3,028 public secondary schools across the country were offering business studies curriculum. Using the sampling guide developed by Krejcie and Morgan (1970), which indicates minimum samples that can be used for various population sizes, a sample size of 341 would be appropriate. To ensure regional representation, the sample size was proportionately distributed across seven administrative provinces. However, North Eastern Province was excluded from the sample sue to insecurity reasons.

Primary data was obtained from 1,192 students drawn from seven administrative provinces, including Nairobi, Central, Eastern, Nyanza, Western, Rift Valley and Coast. Of this lot, 288 (24.2%) were in form four, 420 (35.2%) were sampled from the third form, while 484 (40.6%) were in form two at the time of the study. However, the focus is on the information sourced from form four students.

In each province, the sampling frames were stratified based on the category of schools and school type (boys only, girls only, mixed). This ensured a fair representation of national, provincial and district schools as well as boys', girls' and mixed schools in the sample. A random sampling procedure was applied to select schools in each stratum. From each school, a sampling frame of all students taking business studies was prepared with the support of teachers. The sampling frames were further stratified based on gender and class. Again using random sampling procedure, students were selected from each stratum for inclusion in the sample. The desired sample size was distributed proportionately to ensure fair representation. From each school, business studies teachers were selected purposively based on their professional experience and duration of stay at their respective workstations.

Three sets of instruments were used to collect data, including a survey questionnaire targeting students, a key informant interview schedule for teachers, observation guide for classroom observation of teaching and learning processes. The tools were pretested on a set of participants, including 132 students and 30 teachers, but who were not included in the main data collection. Questionnaires were distributed to students and collected after a week, alongside data on test scores. Secondary data was sourced through a review of empirical studies focusing on the subject of this study, as well as government and sectoral policy documents.

Both quantitative and qualitative techniques were applied to process, analyze and interpret the data. Processing quantitative data began with coding open-ended data, keying-in, cleaning, transformation, analysis and interpretation. Quantitative analysis was carried out at bivariate and multivariate levels. Bivariate analysis obtained cross-tabulations with Chi square (χ^2) and one-way Analysis of Variance (ANOVA) for significance tests; while multivariate analysis obtained *odds ratios* and significance tests. When applying the binary logistic regression models, the predicted variable takes the value 1 with a probability of success θ, or the value 0 with probability of failure 1-θ. In this study, the dependent variable included *learning achievement*, with only two possible values – *below average* or *above average*. The model is often expressed as indicated below:

$$Logit[\theta(Y)] = log\left[\frac{\theta(Y)}{1-\theta(Y)}\right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots + \beta_i X_i + \varepsilon$$

Where: Y = the predicted variable *(learning achievement);* $\theta(Y)$ = the probability that a student attained above average score; *1-* $\theta(Y)$ = the probability that a student attained below average score; α = the constant term of the equation; $\beta_1, \beta_2 \ldots \beta_i$ = regression co-efficients associated with independent variables; $X_1, X_2 \ldots X_i$ = independent variables and ε = the error term. Although the model has several output parameters, this study was interested in the *odds ratios* also denoted as *Exp(β)*. The Statistical Package for Social Sciences (SPSS) and Microsoft Excel packages were used to facilitate quantitative analyses.

Qualitative data were processed and analyzed following three steps. In the first step, data was organized and summarized in line with key thematic areas. The second step involved description of the summary sheets to produce a preliminary report. The third step involved systematic analysis and interpretation of the preliminary report, which was then integrated with quantitative data in the final report (Best & Khan, 2004).

Findings

Presented in this section are results obtained from the information sourced from students in their fourth form, of whom 31 (13.6%) were drawn from national schools, 73 (32.0%) came from provincial schools, while 124 (54.4%) were sampled from district schools across seven administrative provinces. Besides, 60 (26.3%) students were from girls' schools, 77 (33.8%) were sampled from boys schools, while 91 (39.9%) came from mixed schools.

Leaning achievement

In this study, learning achievement was measured by asking students to provide their academic reports for the terminal tests of the previous term. From the report forms, scores for business studies were extracted and recorded. The study found that the mean score for 288 students stood at 55.2% (standard deviation = 14.7); besides, the scores ranged between 15% and 88%. The scores were then graded based on a predetermined scale, which graded scores of less than 50% as 'below average' and scores of 50% or higher as 'above average'. Based on this grading, 75 (32.9%) students were below average, while 153 (67.1%) had above average scores.

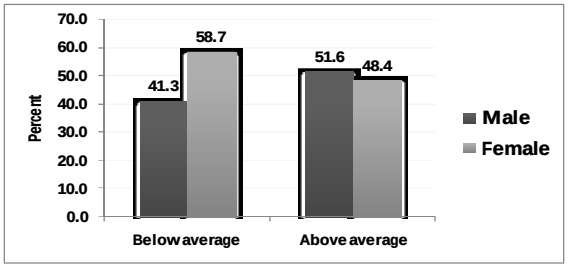
Student attributes and learning achievement

Learning achievement was analyzed against personal attributes of students to identify factors likely to confound the effectiveness of instructional methods used by teachers. The key attributes measured by this study, include gender of students, age, learning consistency, as well as behaviors such as alcoholism, particularly during school days and drug abuse.

Gender and age distribution

The students consisted of 110 (48.2%) boys and 118 (51.8%) girls. Figure 2 shows cross tabulation results between gender and learning achievement. The results show that among those below average, 31 (41.3%) were boys and 44 (58.7%) were girls. Those above average consisted of 79 (51.6%) boys and 74 (48.4%) girls.

Figure 2: Learning achievement and gender



The boys reported a mean score of 56.98 (standard deviation = 13.6), while the girls had a mean score of 53.55 (standard deviation = 15.1). One-way ANOVA was then applied to determine if there was a significant difference in the mean score of boys and girls. The analysis obtained a computed $F_{(1, 226)}$ statistic of 3.233 and a p-value of 0.073, which was marginally significant at 0.1 error margin. This suggests up to 90% chance that the performance of boys and girls in the terminal tests was significantly different. The findings suggest that boys performed marginally better than girls; consequently, gender was one of the personal attributes likely to confound the influence of instructional methods used by teachers on learning achievement.

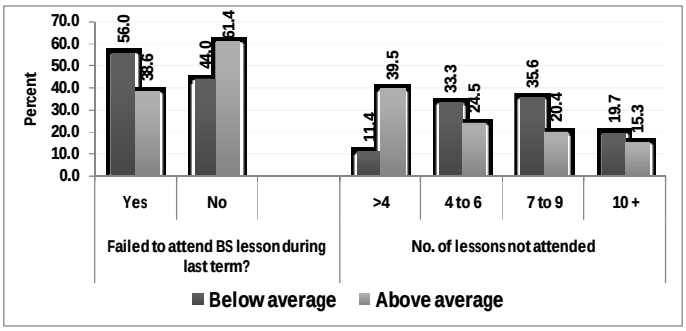
The students reported a mean age of 19.1 years (standard deviation = 1.54), with the youngest being 17 years old and the oldest, 23 years. In relation to learning achievement, the analysis obtained a computed Pearson's Correlation Co-efficient of -0.059 with a p-value of 0.376, which was not significant. This finding is confirmed by ANOVA results, which obtained a computed $F_{(1, 226)}$ statistic of 0.003 and a p-value of 0.956, which was also not significant at any point within the 10% error margin. Consequently, age was not significantly related to performance in the terminal tests, hence, was less likely to confound the influence of instructional methods on learning achievement.

Learning consistency

Learning consistency is important for students to improve their performance. Students who regularly miss out classes are likely to miss out key tips and skills imparted by teachers, leading to poor performance. Learning consistency was measured by requesting students to indicate whether they failed to attend business studies lessons during the previous term. The results showed that out of 288 participants, 101 (44.3%) missed out at least 1 lesson, while 127 (55.7%) did not. Figure 3

shows that among those who missed out at least one lesson of Business Studies (BS), up to 42 (56.0%) were below average, while 59 (38.6%) were above average. Among those who did not miss out classes, 33 (44.0%) reported below average scores, while 94 (61.4%) were above average.

Figure 3: Learning consistency and learning achievement



The analysis reveals that failure to attend classes was related to learning achievement. In this regard, a computed χ^2 value of 6.202, with 1 degree of freedom and a p-value of 0.013 were obtained. This suggests that the two variables were significantly related at 0.05 error margin; thus, learning consistency was likely to confound the influence of instructional methods on learning achievement.

Students who failed to attend business studies lessons were further requested to indicate the number of lessons missed out. Figure 3 shows that out of 101 respondents, 29 (27.8%) failed to attend less than 4 lessons, another 28 (27.7%) did not attend 4 to 6 classes, 27 (26.7%) missed out 7 to 9 lessons and 17 (16.8%) failed to attend 10 or more lessons. In relation to learning achievement, among those who missed out less than 4 lessons, up to 23 (39.3%) were above average, while 5 (11.4%) were below average.

Contrastingly, among those who missed out 7 to 9 lessons, up to 15 (35.6%) were below average, while 12 (20.4%) reported scores that were above average. Figure 2 suggests that performance decreased with the unit increase in the number of lessons missed out. The analysis confirmed that the number of lessons missed out and learning achievement were significantly related (computed χ^2 value = 9.703, degrees of freedom = 3 and a p-value of 0.011). In addition, the number of lessons missed out was one of the factors likely to constrain effectiveness of the instruction methods used by teachers.

As indicated in table 1, the main reason for missing out classes was school fees payment difficulties, which prompted schools to send students home. Although both boys and girls experienced the challenge, it appears that more girls than boys were sent home for school fees. For boys, the second most important reason for missing lessons was lack of school requirements, including stationery and uniforms, as stated by 9 (23.1%).

Table 1: Main reasons for missing out business studies lessons

Valid responses	Boys		Girls	
	Frequency	*Percent*	*Frequency*	*Percent*
School fees	18	46.2	28	45.2
Poor health	6	15.4	15	24.2
Pregnancy	0	0.0	4	6.5
Lack of school requirements	9	23.1	11	17.7
Parental obligations	1	2.6	2	3.2
Indiscipline	5	12.8	1	1.6
Others	0	0.0	1	1.6
Total	**39**	**100.0**	**62**	**100.0**

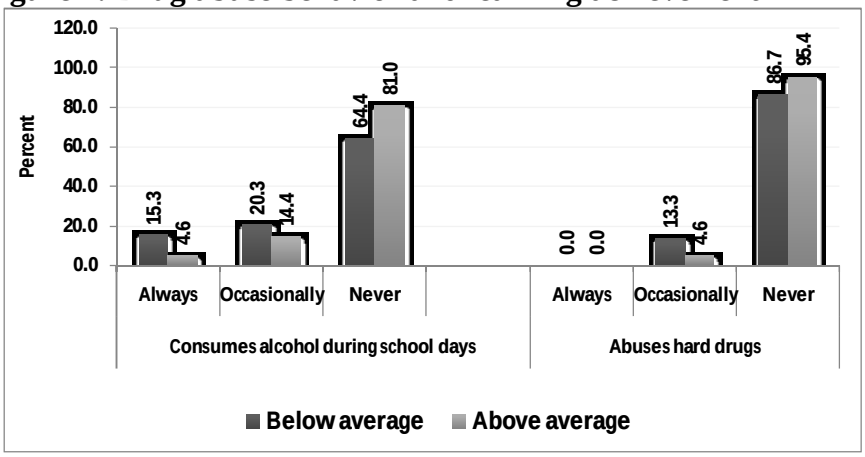
Other reasons cited by boys include health issues, stated by 6 (15.4%), indiscipline, 5 (12.8%) and parental obligations, 1 (2.6%). For girls, the second most important reason for missing out lessons was poor health 15 (24.2%), followed by lack of school requirements as indicated by 11 (17.7%) participants, pregnancy (6.5%) and parental obligations (3.2%).

Involvement in alcoholism and drug abuse

The study found that out of 288 students, 11 (4.8%) were consistent consumers of alcoholic beverages during school days, 41 (18.0%) indicated that they consumed alcohol only occasionally, while 176 (77.2%) were non-consumers of alcohol. In relation to learning achievement, the results presented in figure 4 indicate that among students who were consistent in taking alcohol, 11 (15.3%) were below average, while 7 (4.6%) were above average.

Contrastingly, among students who never used alcoholic beverages, 48 (64.4%) were below average, as compared to 124 (81.0%) who were above average. The results suggest that non-alcoholic students had better performance than those using alcohol. Consequently, frequency of alcoholism was related with learning achievement. Further analysis obtained a computed χ^2 value of 8.313, with 2 degrees of freedom and a p-value of 0.016, which was significant at 0.05 error margin. This confirms that the frequency of alcoholism was significantly associated with learning achievement and was likely to confound the influence of instructional methods on learning achievement.

Figure 4: Drug abuse behavior and learning achievement



Students were further requested to indicate how often they used hard drugs such as marijuana, cocaine or heroin, among others. The results showed that none of the students was a consistent user of such drugs. However, up to 17 (7.5%) indicated that they used such drugs occasionally, while the majority, 211 (92.4%) never used such drugs. The results presented in figure 3 show that among occasional users of drugs, 10 (13.3%) scored below average, while 7 (4.6%) reported above average scores. The results suggest that drug abuse influenced performance. This was confirmed by further analysis, which obtained a computed χ^2 value of 6.398, with 1 degree of freedom and a p-value of 0.036, which was significant at 0.05 error margin. This suggests up to 95% chance that the frequency of drug abuse and learning achievement were significantly related.

Instructional methods used by teachers

As noted by Flanders (1970), the choice of instructional method is influenced by teachers' cognitive orientation and objectives of the teaching-learning process. While some teachers have subjective inclination towards particular methods, others tend to use a mixture of methods. In this regard, key informant interviews revealed that teachers of business studies did not restrict themselves to particular methods of delivery. Consequently, it was common to find a teacher using a mixture of instructional methods, knowingly or unknowingly.

Nonetheless, students were further requested to indicate three most common instructional methods used by their business studies teachers. To achieve this, students were taken through a list of instructional methods, which were fully explained to enable them provide informed responses. The explanations formed part of the survey questionnaire. This enables students to accurate judge the methods commonly applied by their teachers. The results presented in table 2 show that lecture was the most commonly used instructional method used by business studies teachers, as reported by 121 (53.1%) of the students. This is followed by group discussions stated by 92 (40.4%), take-away assignments reported by 53 (23.2%) students. Other methods cited by students include dictation of notes (19.7%), brainstorming during class sessions (19.7%) and class exercises.

Table 2: Most common instructional methods used by teachers

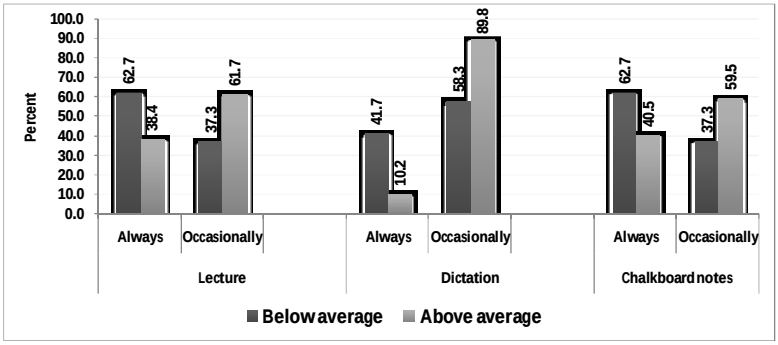
Valid responses	Frequency	Percent of responses	Percent of cases
Lecture	121	29.8	53.1
Dictation	45	11.1	19.7
Chalkboard notes	16	3.9	7.0
Group discussions	92	22.7	40.4
Class exercises	24	5.9	10.5
Take-away assignments	53	13.1	23.2
Brainstorming	45	11.1	19.7
Role play	10	2.5	4.4
Total	**406**	**100.0**	**178.1**

The instructional methods reported by students were then grouped into two, namely, teacher-centered and learner-centered. Teacher centered methods included lectures, dictation and chalkboard notes, while learner-centered methods included group discussions, class exercises, take-away assignments, brainstorming and role-play.

Teacher-centered methods

Teacher-centered methods require teachers to take the most active role in all classroom activities. In this regard, students are socialized to take up their roles as passive listeners and followers of instructions. This implies that students' active participation is minimal, until they are authorized by the teacher (Ahmad & Aziz, 2009; Tanner, 2009). Figure 5 presents cross-tabulation results between the most important teacher-centered methods used by teachers of business studies and learning achievement. Out of 121 students who cited lecture as the most important method of instruction used by their teachers, 52 (42.9%) had below average scores, while 69 (57.1%) were above average. Among those whose scores were below average, up to 33 (62.7%) were consistently subjected to lectures, while 19 (37.3%) said their teachers used lectures occasionally.

Figure 5: Teacher-centered methods and learning achievement



Contrastingly, among those who reported above average scores, 26 (38.4%) said they were always subjected to lectures, while 43 (61.7%) stated that lectures were used occasionally. These findings suggest that the use of lecture was associated with the learning achievement of students. Further analysis obtained a computed χ^2 value of 14.461, with 1 degree of freedom and p-value of 0.017, which was significant at 0.05 error margin. This confirms that the use of lecture method was significantly associated with students learning achievement.

Among the 45 students citing dictation of notes as the most common method of instruction used by their teachers, up to 19 (42.2%) had their scores below average, while 26 (57.8%) reported above average scores. Figure 5 shows that among students with below average scores, 8 (41.7%) were always subjected to dictation of notes, while 11 (58.3%) indicated occasional use of dictation by their teachers. Among those above average, 3 (10.2%) were always instructed through dictations, while 23 (89.8%) said their teachers used dictations occasionally. The analysis indicated that the use of dictations was significantly associated with performance in the examinations (computed χ^2 value = 11.440, degree of freedom = 1 and p-value = 0.052). This suggests that the use of dictation as an instructional method significantly influenced learning achievement. Chalkboard notes were cited by 16 participants, of whom 9 (56.3%) reported below average scores in the examination, while 7 (43.8%) indicated above average scores. As indicated in figure 4, students whose scores were below average, 6 (62.7%) said their teachers used chalkboard notes always, while 3 (37.3%) reported they were instructed through chalkboard notes occasionally.

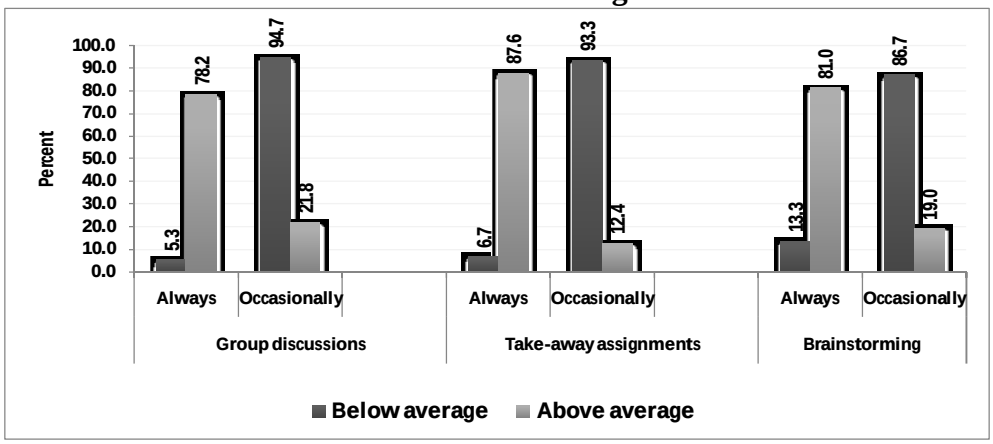
Among those reporting above average scores, 3 (40.5%) indicated their teachers used chalkboard notes consistently, while 4 (59.5%) indicated occasional exposure to chalkboard notes. The analysis obtained a computed χ^2 value of 13.102, with 1 degree of freedom and a p-value of 0.001, which

was significant at 0.05 error margin. This further indicates that the use of chalkboard notes to instruct students had a significant influence on their learning achievement.

Learner-centered methods

Learner-centered methods actively engage students in the learning process to enhance knowledge retention and learning achievement. As noted by Ahmad and Aziz (2009), in a learner-centered setting, students take a participative role by leading discussions and teachers become facilitators In this regard, teachers facilitate student's discussion and interject only when necessary, allowing students to put the language to use and explore aesthetics of learning materials (Eken, 2000). The most important learner-centered methods stated by students included group discussions (40.4%), take-away assignments (23.2%) and brainstorming (19.7%). The analysis indicated that among the 92 students who cited group discussions as the most important method used by their teachers, 20 (21.7%) reported scores that were below average, while 72 (78.3%) had scores that were above average. Furthermore, figure 6 shows that among those below average, up to 19 (94.7%) were exposed to group discussions only occasionally, while among those above average, 56 (78.2%) said their teachers were consistent in using group discussions as the main instructional method. Based on this pattern, the analysis obtained a computed χ^2 value of 11.945, with 1 degree of freedom and a p-value of 0.015, which suggests that the used of group discussions are learner achievement were significantly related. This further implies that group discussions significantly influenced learning achievement for students.

Figure 6: Learner-centered methods and learning achievement



Moreover, 53 students cited take-away assignments as a key instructional method used by their business studies teachers. Of this lot, 18 (34.0%) were below average in terms of scores, while 35 (66.0%) reported above average scores. The analysis results in figure 5 show that among the below average students, up to 17 (93.3%) indicated that they subjected to take-away assignments only occasionally, while among those reporting above average scores, up to 31 (87.6%) said their teachers used take-away assignments always. These findings suggest that the frequency of exposure to take-away assignments had some influence on the performance of students. Based on this, the analysis revealed that the use of take-away assignments was significantly associated with students learning achievement (computed χ^2 value of 17.455, degree of freedom = 1 and p-value = 0.02).

The application of brainstorming by teachers was reported by 45 students, of whom 19 (42.2%) were below average, while 26 (57.8%) had scores that were above average. Furthermore, figure 5

shows that among students with below average test scores, up to 16 (86.7%) were exposed to brainstorming only occasionally, only 3 (13.3%) indicated that their teachers used brainstorming consistently. Among those with above average test scores, the majority, 21 (81.0%), reported being exposed to brainstorming consistently, while 5 (19.0%) said their teachers applied brainstorming only inconsistently. This further indicates that performance in the end-term test varied as per the frequency of exposure to brainstorming. The relationship between the two variables is further confirmed by bivariate analysis, which obtained a computed χ^2 value of 10.922, with 1 degree of freedom and p-value of 0.041. This suggests up to 95% chance that the frequency of exposure to brainstorming sessions significantly influenced learning achievement among students.

The analysis results suggest that exposure to take-away assignments was the most important instructional method influencing learning achievement among students. This is followed by brainstorming and group discussions in second and third places, respectively. However, compared to teacher-centered methods of instruction, students exposed to learner-centered approaches reported better performance. This suggests that learner-centered approaches were more effective in improving learning achievement than teacher-centered methods.

Effects of application instructional methods on learning achievement

Bivariate analysis indicated that learning achievement is significantly related to students' personal attributes such as gender, learning consistency, number of lessons missed out, alcoholism and drug abuse. Learning achievement is also associated with teacher-centered instructional methods, including lecture, dictation and chalkboard notes, as well as learner-centered approaches, including group discussions, take-way assignments and brainstorming. These variables were incorporated into the binary logistic regression models to determine the effect on learning achievement. The analysis obtained two models, model 1 incorporated instructional methods only, while model 2 included exposure to instructional methods and personal attributes of students. This process obtained β co-efficients and Exp(β) from which the effect and importance of each variable was determined.

Table 3: Summary results of binary logistic regression

COVARIATES	MODEL 1				MODEL 2			
	β	***S.E.***	***ρ***	***Exp(β)***	***β***	***S.E.***	***ρ***	***Exp(β)***
Lecture								
Always	1.00	0.78	0.03**	2.73	0.98	0.78	0.04**	2.67
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx
Dictation								
Always	1.04	0.32	0.03**	2.83	1.02	0.30	0.03**	2.77
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx
Chalkboard notes								
Always	0.77	0.55	0.04**	2.17	0.75	0.24	0.03**	2.12
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx
Group discussions								
Always	1.15	0.93	0.00*	3.16	1.13	0.78	0.00*	3.09
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx
Take away assignments								
Always	1.62	0.34	0.01**	5.05	1.60	0.34	0.01**	4.94
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx

Brainstorming								
Always	1.55	1.33	0.00*	4.70	1.53	1.32	0.00*	4.60
Occasionally (RC)	xxxx	xxxx	xxxx	Xxxx	xxxx	xxxx	xxxx	xxxx
Gender								
Male	-	-	-	-	0.01	0.19	0.37	1.01
Female (RC)	-	-	-	-	xxxx	xxxx	xxxx	xxxx
Learning consistency								
Consistent	-	-	-	-	0.39	1.19	0.04**	1.48
Inconsistent (RC)	-	-	-	-	xxxx	xxxx	xxxx	xxxx
No. of lessons missed out								
Less than 4	-	-	-	-	1.36	0.30	0.02**	3.90
4 to 6	-	-	-	-	1.04	0.47	0.03**	2.82
7 to 9	-	-	-	-	0.98	0.78	0.04**	2.67
10 + (RC)	-	-	-	-	xxxx	xxxx	xxxx	xxxx
Alcoholism								
Always	-	-	-	-	-2.00	1.82	0.00*	-7.36
Occasionally	-	-	-	-	-1.59	1.39	0.01**	-4.90
Never (RC)	-	-	-	-	xxxx	xxxx	xxxx	xxxx
Drug abuse								
Always	-	-	-	-	-1.53	1.32	0.00*	-4.60
Occasionally	-	-	-	-	-1.30	0.10	0.01**	-3.68
Never (RC)	-	-	-	-	xxxx	xxxx	xxxx	xxxx

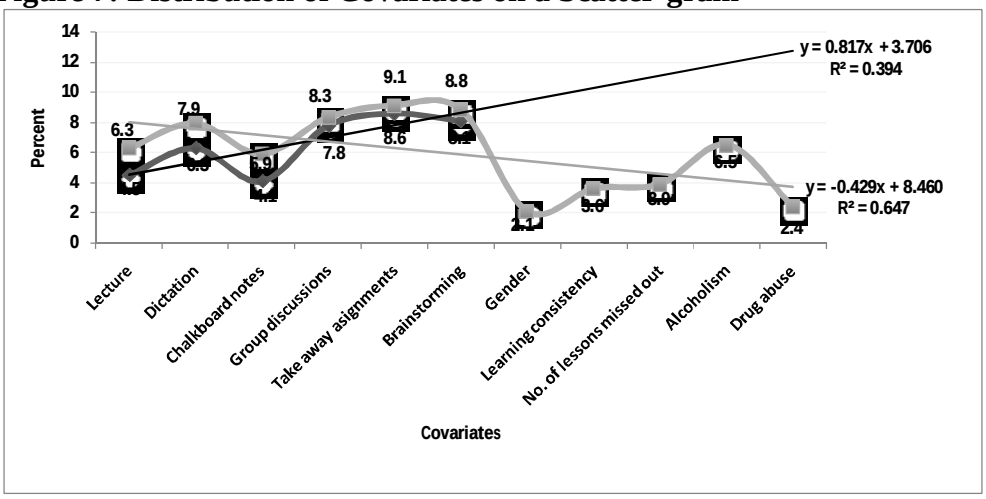
*RC= Reference Category; ***, ** and * significant at 0.01, 0.05 and 0.1 error margin, respectively*

Model 1 shows that students exposed to lectures always were about 2.73 times more likely to perform better than those whose teachers used lectures only occasionally. However, when the model is adjusted to include students' personal attributes, the odds ratios revises marginally to 2.67 times in favor of those consistently exposed to lectures. Besides, model 1 indicates that students instructed through dictations always were about 2.83 times more likely to perform better than those exposed only occasionally. However, when the model is expanded for students' personal attributes, those exposed to lectures always becomes 2.77 times more likely to perform better than those exposed only occasionally. Model 2 further shows that students that were always instructed through chalkboard notes were about 2.12 times more likely to have better performance than those exposed to chalkboard notes only occasionally. The results suggest that dictation was the most important teacher-centered instructional method, followed by lectures and chalkboard notes.

Regarding learner-centered methods, model 1 shows that students instructed through group discussions were about 3.16 times more likely to perform better than those exposed to group discussions only occasionally. However, when the model is adjusted to include students personal attributes, the odds ratios become 3.09 times. As for take away assignments, the adjusted model indicates that those who were always instructed through this method were about 4.94 times more likely to perform better than those exposed only occasionally. Furthermore, the performance of students who were always exposed to brainstorming sessions was about 4.6 times better than that of students were instructed using the method only occasionally.

The predictive power of binary logistic regression models is indicated by the -2Log Likelihood (-2LL) statistic. Each model generates an initial -2LL (chance model); the unit change in the value of -2LL statistic each time a covariate is added represents the proportion of variance in the dependent variable, explained by that covariate. The proportion of variance attributed to each covariate was transformed into percentages and plotted on a scattergram to determine the predictive power of the regression models.

Figure 7: Distribution of Covariates on a Scatter-gram



The analysis indicates that take-away assignments accounted for the largest proportion of variance in student performance (9.1%). This implies that subjecting students of business studies to take-away assignments would improve performance by up to 9.1 percent. This is followed by brainstorming (8.8%), group discussions (8.3%), dictation (7.9%), lectures (6.3%) and chalkboard notes (5.9%). The findings affirm that learner-centered instructional methods accounted for a larger proportion of variance in the performance of students. Based on this, learner-centered approaches should be advocated for in the teaching of business studies at the secondary level to improve performance. The scatter-gram also provides best-fit lines, linear equations ($y = mx + c$) and co-efficient of determination (R^2). The latter indicates the explanatory power of the models; consequently, model 1 explained up to 39.4 percent of variance in the performance of students, while model 2, which incorporated students personal attributes, predicted up to 64.7 percent of variance.

Summary, Conclusions and Implications

The purpose of this study was to determine the influence of instructional methods adopted by secondary school teachers on the level of learning achievement by students. To achieve this, primary data was sourced from 288 students in their fourth form. Bivariate analysis generated one-way ANOVA with F statistic, cross-tabulations with χ^2 statistic, while multivariate analysis obtained β coefficients, odds ratios and -2LL statistic. The analysis of qualitative data involved transcription, creating thematic nodes, followed by systematic interpretation.

The study found that learning achievement was significantly related to students' personal attributes such as gender, learning consistency, number of lessons missed out, alcoholism and drug abuse. Learning achievement was also associated with teacher-centered instructional methods, including

lecture, dictation and chalkboard notes, as well as learner-centered approaches, including group discussions, take-way assignments and brainstorming.

The analysis further indicated that take-away assignments accounted for the largest proportion of variance in student performance (9.1%). This implies that subjecting students of business studies to take-away assignments would improve performance by up to 9.1 percent. This is followed by brainstorming (8.8%), group discussions (8.3%), dictation (7.9%), lectures (6.3%) and chalkboard notes (5.9%). Overall, the adjusted model (model 2) explained up to 64.7 percent of variance in learning achievement.

The findings confirm that learner-centered instructional methods accounted for a larger proportion of variance in the performance of students in business studies. In Kenya, similar findings have been reported by Muraya and Kimano (2011), Kang'ahi, et al., (2012), among others. Like its predecessors, this study concludes that learner-centered methods are more effective in enhancing learning achievement in business studies than teacher-centered approaches. Whereas leaner-centered methods are known for encouraging critical thinking, innovation, knowledge retention and higher learning achievement, teacher-centered methods are associated with limited stimulation for innovation and scientific thinking. Instead, teacher-centered methods encourage students to cram facts, which inhibit their ability to apply knowledge and skills acquired to cope in their environment.

A critical assessment of graduates from the 8-4-4 system of education, one cannot fail to notice manifestations of teacher-centered methods. The education system has been criticized for teaching students how to pass examinations and not how to apply knowledge to solve problems. Recommendations to overhaul the education system, to make it more skills-based rather than examination-based, have been documented in the *Report of the Presidential Commission on the Review of Education*, popularly known as the Koech Report. The challenge has been lack of political will to implement the recommendations because the 8-4-4 system of education was created to achieve political interests.

Although the Sessional Paper No. 1 of 2005 on *A Policy Framework for Education, Training and Research*, emphasizes the need for quality of education that would enable graduates to cope with challenges of the 21st Century, some programmatic gaps continue to undermine the realization of this policy objective. For instance, effectiveness of the education system is impeded by the fact that the training of secondary school teachers combines teaching methodology and teaching subject content mastery. Under this arrangement, both academic and methodology suffer from an overburdened programme (Ministry of Education, 2005), which in turn, suggests that teachers are not adequately prepared on teaching approaches.

Moreover, the training of teachers within the framework of 8-4-4 system of education is largely teacher-centered, where students are provided with all information and supported to pass examinations. Consequently, it is inevitable that graduates of the 8-4-4 system will tend to incline more towards teacher-centered methods to deliver their lessons. This calls for critical policy measures at the universities to tilt instructional methods in favor of learner-centered approaches. The mindset of teachers should be re-oriented right from the point of training to enable them carry forth the tradition to their work.

Although learner-centered methods have better returns in terms of learning achievement, teacher-centered methods cannot be thrown out of the window altogether. They remain important, especially for supporting weak students who may not cope in an environment that is purely learner-centered. Again, this calls for policy intervention on the correct balancing of instructional methods based on the learning needs and preferences of students. A mixture of both approaches at the correct proportion is necessary and it is important for policy documents to define the correct proportion to guide education and school administrators, as well as teachers.

Continued embracing of teacher-centered approaches will ensure that weak students are supported to walk alongside their colleagues. Also critical is the need for teachers to understand the preferences, circumstances and needs of their students to facilitate the choice of instructional methods. This may be achieved through regular sensitization of teachers at the school level through the education administrative structures at the district level.

Teacher-centered and learner-centered approaches are not new concepts in the history of education. Although most teachers are aware of these concepts, they often downplay the importance of active participation of students in the teaching and learning process. Once posted in their stations, teachers tend to incline towards certain methods which they feel suits their interest and which enable them to stamp their authority as the 'owners of knowledge' within classrooms.

This is particularly due to lack of policy guidelines on appropriate mix of instructional methods, lack of regular in-service training of teachers to remind them of what they should be doing, as well as inadequate sensitization of teachers through the administrative system of education sector. This calls for the inclusion of a section on instructional methods in the national and sectoral policy documents to guide stakeholders; there is also need for in-service training for teachers and regular sensitization through circulars to wake up teachers on matters of instructional approaches.

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