

Relationship Between Teacher Absenteeism and Pupils' Achievement in Mathematics in Primary schools In Kenya

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Abstract- Achievement in Mathematics in relation to other subjects has remained a challenge to many pupils at primary and secondary school levels. Many factors are attributed to pupils' achievement in Mathematics examinations. These include: school related factors, pupils related factors, subject related factors and teacher related factors. Substantial literature attributes quality of education in schools to educational background and training of the teacher. The main objective of the study was to determine the relationship between teacher absenteeism and achievement in Mathematics among class eight pupils in public primary schools in Vihiga sub-county, Kenya. The 2020 K.C.P.E. exam Mathematics' scores were used as a measure of teachers' contribution towards pupils' academic achievement. The study was conducted through causal comparative research design. All 31 Mathematics teachers of 2020, class 8 public primary schools in Vihiga subcounty formed the target population. The study employed purposive sampling techniques. All the 31 Mathematics teachers from public primary schools in Vihiga subcounty constituted the sample. Quantitative data was collected using a Mathematics teachers' questionnaire. Reliability of questionnaires was ensured by Chronbach's alpha and a coefficient of alpha > 0.7 was reported. Students achievement was assessed using 2020 K.C.P.E results. Descriptive statistics such as frequencies and percentages were used to analyse quantitative data from questionnaires. Data on achievement was translated to frequency counts and percentages which were presented in contingency tables. The chi square statistic was used to establish the relationship between teachers' absenteeism and its contribution to pupils' achievement in Mathematics at a significant level of 0.05. The findings of the study showed that there was a statistically significant

relationship between teacher absenteeism and achievement in Mathematics among class 8 pupils in Vihiga Subcounty. (The chi-square value calculated for teachers' absenteeism was 6.55. But chi square critical for degree of freedom 1 at significant level 0.05 is 3.84.) The findings of the study were significant since they availed empirical data to guide education planners on issues influencing Mathematics performance in Kenya. They also formed the basis of reference for Mathematics educators and teachers interested in teacher absenteeism and its influence on Mathematics performance in primary schools in Vihiga subcounty. It was recommended that teacher motivation programmes in schools should be improved since they contribute to teacher presence in schools and hence have profound effect on pupils' achievement in Mathematics.

Indexed Terms- Achievement in Mathematics, Teacher absenteeism, Teacher motivation, Primary schools.

I. INTRODUCTION

Formal education is a means of imparting and acquiring knowledge. This is done through teaching and learning within the school. The school system empowers the students with necessary knowledge and skills for an effective living in the society. It is expected that classroom learning be translated into solving problems in real life situation. UNESCO (2006) stated that the worldwide drive for "Education for all" lays emphasis on literacy in science and mathematics. Mathematics comes out clearly as a core subject to be learned. Atherton (2010) observed that Mathematics knowledge plays a crucial role in understanding contents of other subjects such as Chemistry, Physics, Biology and Geography, and

related the importance of mathematics to the scientific, industrial, technological and social progress of a society. In USA (2010) the report on Education in Science, Technology, and Engineering and Mathematics (STEM) subjects showed that students performed poorly on international comparison of mathematical and scientific proficiency. STEM subjects include, biology mathematics, physics and chemistry. On National Assessment of Educational Progress (NAEP) report of the (2010) indicated that there was little improvement in STEM subjects for over a decade. The report further indicated a growing interest in STEM subjects. The report indicated that one of the major contributors towards Achievement in STEM subjects was motivation. In addition, the Program for International Student Assessment (PISA) indicated that 15 year olds' science literacy scores in USA were below average in 2006 according to National Center for Education Statistics (2010) report. Despite its usefulness, students' achievement in Mathematics has been poor (Reddy, Van der Bergs, Jansey Van Rensburg & Taylor, 2012). According to Kurgat and Tanui (2013), performance in Mathematics has generally been poor in Kenyan schools yet it's a core subject in the curriculum, a good performance in it implies good performance in secondary education. Mathematics is an important school subject that is associated with more academic and career opportunities (Kosgey, 2013). According to Korir and Kemboi (2013), students' personal effort made significant contribution to the students' Mathematics achievement. Poor academic achievement in Mathematics has been reported in Kenya (KNEC, 2016).

II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 THEORETICAL FRAMEWORK

The study was guided by the Two factor theory or Hygiene factor theory by Fredrick Hertzberg. According to Fredrick Hertzberg's (1950) two factor theory, certain factors in work place result in job satisfaction, but if absent they do not lead to dissatisfaction but no satisfaction. The factors that motivate people can change over lifetime. He distinguished these factors as: (i) Motivators (Work itself, achievement, advancement, work recognition,

responsibility) which give positive satisfaction and (ii) Hygiene factors (administrative policies, supervision, salary, interpersonal relations and working conditions) that do not motivate if present, but if absent they result to de-motivation. The name hygiene factors is used because, like hygiene, the presence will not make you healthier, but absence can cause health deterioration hence the theory is sometimes called "motivator – hygiene theory". This theory was adopted for this study because it provided a justification for the importance of teacher commitment in a school; without which will lower the morale of a teacher and hence the onset of teacher absenteeism.

The study was also supported by the Modern Expectancy –Value Theory by Wigfield and Eccles (2000). Expectancy Value theory associates academic achievement, persistence and choice most directly to person's expectancy related and task value beliefs. Choices are assumed to be influenced by both negative and positive tasks characteristics and all choices are assumed to have costs related with them precisely because one choice eliminates other options in this model (Wigfield & Eccles, 2000). Researchers in the field of motivation concur that anyone engaging in any learning situation do ask himself or herself three basic questions of Can he/she do a given task?, Does she/he wish to do the task and why?, and what does she/he need to do to be successful in the task? (Wigfield & Eccles, 2000).

Theorists in expectancy –value theory point of view further believe that individuals option, determination and performance can be well explained by their beliefs about how well they will do a task and the extent to which they value the task they are to perform (Wigfield & Eccles, 2000). The theory proposed three motivational beliefs components namely: an expectancy component which deals with students' beliefs in capability of carrying out a task (self-efficacy), value part that involve learners' goals and beliefs about the importance of the task and the cost/affective component which involves students' emotional reaction to the task that is, interest and test anxiety (Wigfield & Eccles, 2000).

Expectancy components deals with students' self-efficacy believes and this is where students answer the questions of the kind "Can I do this task?" Expectancy

aimed at success is parson's way of life about how well he/she will future task (Eccles et al., 1983).

Value factor involve an individuals' goals and thinking about the significance or importance of the undertaking or engaging in a particular task. It is a motivational construct associated with the question "why do I do this task and do I need to do it?" and this involves both intrinsic and extrinsic motivation beliefs and task value (Wigfield & Eccles, 2000). Intrinsic value is the pleasure a learner gets from doing a task or the subjective interest the learner has in the task. Intrinsically motivated teachers engage in a task for the reason that they find it pleasant, The current study focused on intrinsic and extrinsic motivational constructs of value component of the expectancy – value theory.

2.2 LITERATURE REVIEW

High rate of teacher absenteeism is reported in recent studies in Africa, Asia and South America and these are directly attributed to low levels of commitment, (World Bank, 2001). In East African countries researchers have reported chronic levels of absenteeism and certain casualness about attending classes, which tends to increase when teachers run out of money. (Bartlett, 2004). Absenteeism and actual time spent on school and in teaching and learning activities have of late become highly emotive and controversial issues. Poor academic performance of children in government schools has been making headlines and has become a highly contentious issue. Public debates on quality of education have invariably led to the question of how teachers can be made accountable and what the teachers actually attend school and teach children. Data on teacher attendance has been collected in schools through school management strategies in Kenya on a daily basis. Although teacher absenteeism is an issue because it is not possible to compile accurate information. There are different kinds of absenteeism:

- a) Officially present, but away on government duty-related to education or tasks unconnected to education.
- b) Officially present but not in class or in school-typically teachers come in the morning, mark their attendance and leave on personal work/chores.

- c) Teacher absent herself/himself without information- but routinely leaves an application behind just in case a senior official visit the school. Researchers confirm they have seen a bunch of leave letters without a date in the attendance register.
- d) The school itself is unofficially shut down due to a local festival, extreme, whether, agricultural activity (harvesting, planting etc).
- e) Teachers come to school but do not teach. They are busy filling registers, reading newspapers, knitting or mending, conducting their business on mobile phones and so on.

The public report on basic Education (PROBE, 1999) convincingly showed that one third of the head teachers were absent and little teaching happened in schools even when teachers were present. A study commissioned by the World Bank and done by Harvard University (Kremer, Chaudhury, Hammer & Rogers, 2004) compiled information of teacher absenteeism in India after surprise visits to 3750 schools across India. The study revealed that "the more powerful (male teachers, older teachers, more educated teachers and head teachers) are more likely to be absent. Having attended a training programme does not reduce a teachers' probability of absence. Schools with better quality infrastructure have lower absence and existence of multi-grade teaching in a school is associated with greater teacher absence....." (Kremer, et. al.2004).In the same study on "teacher motivation in India" the issue of teacher absence is linked to teacher motivation. Head teachers and stake holders admit that Motivated and "energetic "teachers do not absent themselves without compelling reasons but a teacher who is dispirited and disillusioned with her/his work is consistently looking for opportunities to stay away from school. (Gray&Ross, 2006).

Teacher absenteeism data collected through direct observation in Indonesia by Rogers, Chadhury, Hammer, Kremer & Muralidharan (2004) showed that teacher absenteeism is indeed a significantly negative correlate of student performance. Studies have yielded preliminary results on correlation between absence and student performance in India, higher primary-teacher absence is correlated with a small but strongly significant reduction in predicted test scores (Kremer

et al 2004). Ehrenberg & Rees, (2008) relate teacher absenteeism- measured by leave days used, taken from administrative records to student pass rates in various tests using data from New York. They found that teacher absenteeism had lower student pass rates on elementary level test but not on high school level tests. The same research indicated that teachers with secure jobs work less hard, but that any lack of effort affects only students' math skills, just as absence.

The more days a teacher is out of the classroom, the lower the students score on standardized tests. Research shows that teachers tend to be absent more from low socio economic schools which has detrimental effects on students whom are already struggling (Ballou et al 2001). Schools having lower socio- economic and minority students had a higher teacher absence rates and lower students test scores. On average public school teachers in the United States are absent five to six percent of days that schools are in session. (Ballou, 2001, Ballou & Podgursky, 2001). This rate of absence is low relative to those in developing countries where absence rate of 20% are common (Paul & Faustine, 2005). Numerous studies have documented higher rates of absence for female employees than male employees and that teachers are most absent on Mondays and Friday ((Paul & Faustine, 2005)

Instructional intensity may be radically reduced when a regularly assigned teacher is absent (Ballou, 2001). 10 days of teacher absences reduces students' mathematical achievement by 33% of a standard deviation (Paul & Faustine, 2005). Teacher absenteeism can be influenced by school and district policies. For example, teachers' rates of absence are positively associated with the generosity of available leave provisions (Rees and Enrenberg, 2008) and the number of contractually allowed days of paid sick leave or personal leave. (Mukyanuzi, 2003).

Studies have found a negative relationship between teacher absences and student achievement (Bayard, 2003, Cantrell, 2003), although these studies do not give explicitly the correlation between measures of teachers' absences and effort. For example a teachers' high level of absences may signal the teachers' lack of effort when he is in school. Conflict between work and family is associated with increased absenteeism,

increased turnover decreased performance and poorer physical and mental health (Greenshaus & Leutell, 1985). Work-to-family conflict occurs when experiences at work interfere with family life, like extensive, irregular, or inflexible work hours, work overload and other forms of job stress, interpersonal conflicts at work. A teacher may be absent from school in order to take care of a sick child. (Greenshaus & Leutell, 1985).

2.3 GOAL OF THE STUDY

The study sought to investigate the relationship between teachers' absenteeism and primary school pupils' achievement in Mathematics in Vihiga sub County-Kenya.

III. RESEARCH METHODOLOGY

3.1 Research Design

A research design is the arrangement of conditions and analysis of data in a manner which aims to combine relevance to the research purpose with economy in procedure (Cresswell, 2014). In this study, both descriptive and inferential statistics were used. Descriptive research is intended to produce statistical information about aspects of teacher absenteeism and achievement in Mathematics.

This study was conducted through causal - comparative design. This design enables establishing of relationships or associations between two or more sets of data from a group of subjects (Cresswell, 2014, Oso & Onen, 2005). The design was most appropriate for the study because it identifies cause effect relationships. Pupils' achievement in Mathematics is the effect while teacher absenteeism is the possible cause under study.

3.2 Study Participants

A study population is a term used to describe total quantity of cases of the type subjected to the study (Cresswell, 2014). If the population is broadly defined, generalizability is maximized and confidence level is easily obtained because the sample is distributed in the same way as the population.

The target population was derived from Vihiga Sub-County which had had 31 public primary schools when the study was conducted. All the 31 schools were

used to obtain the required data. All Mathematics teachers from Vihiga sub-county who taught the 2020 class 8 constituted the population.

3.3 Research Instruments

Reliable data depends on the precision of research instruments to be used. For reliable data, suitable instruments which provide high accuracy for generalizability were used.

This research employed the use of questionnaires to collect information from the respondents. The teacher absenteeism scale questionnaire which composed of 10 items had internal consistency of $\alpha = .796$; an indication that the instruments had adequate reliability for the study.

3.4 Data Collection Procedures

Quantitative data was rigorously collected from students using questionnaires. Creswell & Plano (2010) notes that “Respondents can be helped to overcome difficulties with questions, and that personal persuasion and reminders by the researcher can ensure high response rate.” The researcher introduced herself to the school’s head teachers before seeking further permission to meet and administer the questionnaires to the various respondents. The researcher then organized, analyzed the data collected, drew valid conclusions from it and presented the findings.

Ethical considerations protect the rights of participants by ensuring that participants are treated with respect and sensitivity beyond what may be required by law (Patton, 2002, Radnor, 2005). To adhere to ethical issues permission was sought from the sub county education office, and respective schools within the sub county by the researcher to conduct the study. Learners were given time to choose or decide whether they would take part in the study or not by agreeing to sign consent forms. After their consent, data gathering tool was administered. Participants were informed about the purpose of research as well as possible risks and benefits from participation in the research project (Graziano & Raulin, 2010). The respondents were encouraged of their cooperation in participating in the study and that their responses were to be treated with utmost confidentiality. The respondents were assured of anonymity by concealing their identities.

3.5 Data Analysis

Researchers asserts that data analysis is the ordering, structuring and giving meaning to a set of collected data. (Cresswel,2014). In this study data gathered was loaded into statistical package for social science(SSPS) Version 22 software for statistical analysis. Data file was created in SSPS to compile data from teacher questionnaire on teacher control behaviour as well as students’ achievement from their respective achievement test scores. Statistical techniques such as percentages, frequencies, and chi square were used. The data collected using questionnaires was coded manually. Data collected on achievement in terms of mean score were summarized in two broad categories: Number of teachers whose pupils are above the average (mean score >3.0), average and below average (Mean score <3.0). The achievement was tabulated against teachers’ absenteeism. Data collected was also summarized in a table for clarity in distribution of respondents by their absenteeism. From the Contingency tables, chi-square values were computed. Chi square statistic was used to determine any associations between teacher absenteeism and pupils’ achievement in Mathematics.

IV. FINDINGS

The study objective was to determine the influence of teacher absenteeism on Mathematics achievement among students in primary schools in Vihiga Sub County, Kenya. The null Hypothesis tested was, “There was no statistical significant influence of teacher absenteeism on Mathematics achievement among students in secondary schools in Vihiga Sub County Kenya”. To do this, data on teachers’ absenteeism and pupils’ achievement in mathematics was summarized in frequencies and percentages as shown in table I.

From table I, 17 teachers had absenteeism level of less than 30% an indicator of low absenteeism level while 14 teachers had an absenteeism level of greater than 30%. From the tabulation, more teachers contributed to below average performance of pupils than those who contributed to above average performance. To determine whether there was any significant relationship between teachers’ absenteeism and

pupils’ achievement in mathematics, chi-square statistic was calculated.

The chi-square value calculated for teachers’ absenteeism was 6.55. But chi square critical for degree of freedom 1 at significant level 0.05 is 3.84. There was therefore a statistical significant relationship between teachers’ absenteeism and achievement of pupils in class 8 mathematics of the year 2012.

Table I Teachers’ Absenteeism Percentage and pupil’s achievement in mathematics

Total Absenteeism Percentage	No. of Teachers with Above average performers	No. of Teachers with Below average performers	Total
< 30	5 (16.1%)	12(38.7%)	17 (54.8%)
30-60	8 (25.8%)	6(19.4%)	14 (45.2%)
Total	13 (41.9%)	18(58.1%)	31 (100%)

The results were in concordance with studies done by Ballou, 2000, Paul&Faustin,2005, Mukyanuzi,2003 which found a positive relationship between teacher absenteeism and pupils’ achievement in mathematics. The results were however in discordance with a study done by Rogers, Chandury, Hammer, Kremer & Muralidharan (2004) in Indonesia which showed teacher absenteeism as a significantly negative correlate of students’ performance. Other studies also found a negative relationship between teacher absences and student achievement (Bayard, 2003, Antrell, 2003).

V. DISCUSSION

From the finding of the study, it is clear that out of the absenteeism percentage level, 11.9% of teachers absent themselves for no good reason and due to

overall lateness. On average 50.8% absence rate for Vihiga sub-county is high relative to that of developed countries, teacher absenteeism hurts classroom learning, and is one of the problems that need to be addressed if improvement in the education sector is to be seen. Average absence in a fifth of schools surveyed rated between 20-40% and a tenth of the schools it is above 40%.The report further indicated that most senior and experienced teachers are most likely to be absent from class. It also established that absenteeism was high among teachers who teach in their home counties and those on permanent jobs than on contracts. (The standard newspaper, July 17th 2013, page 33). The study revealed that there was statistically significant relationship between teacher absenteeism and pupils achievement in primary schools in Vihiga sub-county, Kenya.The ratio of absence to presence of mathematics teachers throughout the year 2020 was 5:4. This implied that there was higher absenteeism level compared to presence level. Those teachers who contributed to above average performers had low total level of teacher absenteeism.

CONCLUSION

The government through the ministry of Education and Teachers’ Service Commission (TSC) should facilitate improvement of teachers’ level of job satisfaction and their salaries so that they are comfortable in teaching career. This will ensure their presence in schools and that they do not involve themselves in other income generating activities to supplement their merge pay and hence balance their economic demands.This is because the current study revealed that teacher absenteeism has a statistical significant influence on Mathematics achievement in primary schools in Kenya.

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