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Influence of Teacher Qualification on Students' Performance in Mathematics in the Uasin Gishu County, Kenya

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Abstract:

Mathematics is a very crucial subject in the school curriculum especially being a compulsory subject since the adoption of 8-4-4 system in Kenya. Mathematics is rated a very important subject because it makes a man methodical or systematic which depends on teacher's qualification. The study sought to identify the effect of teacher qualification on students' performance in Mathematics in the Uasin Gishu County. The study used descriptive survey design. The target population for this study consists of teachers of mathematics of two hundred and sixteen secondary schools in Uasin Gishu County. A sample of forty two secondary schools was purposively selected from the two hundred and sixteen schools. Simple random sampling technique was used to select 126 teachers. Primary data collected using questionnaires. Data collected was analyzed using inferential statistics using the Statistical Package for Social Sciences (SPSS). There was a positive significant relationship between teacher's qualification and mathematics performance. From the linear regression model, ($R^2 = .092$) showed that teachers qualification account for 9.2% variation in mathematics performance. The teacher's qualification positively influenced the mathematics performance in secondary school. The Ministry of Education should offer an opportunity for further teacher training through workshops, seminars and short courses.

Keywords: Teacher, qualification, students, performance, mathematics

1. Introduction

Mathematics has been perceived as an imperative region of learning went for driving economies and mechanical change of any general public. Mathematics is an epitome of information, aptitudes and methods that can be utilized as a part of an assortment of ways. It can be utilized to depict, outline and translate, foresee, clarify examples and connections in numbers keeping in mind the end goal to pass on and clear up importance of different issues throughout everyday life (National Council for Curriculum and Assessment, 2005). Thusly, the advancement of the subject is of fundamental significance to the improvement of mankind. Created countries appear to have exceptionally solid Mathematics arrangements which have moved them to higher statures of advancement. It creates the impression that no nation has achieved any leap forward in its monetary advancement without the improvement of least Mathematics base. Be that as it may, in their progression in these zone schools are looked with the test of execution (Carroll, 2011).

In Jamaica, poor state of mind to mathematics as a subject is obvious among numerous understudies and some view the subjects as being of almost no utilization to them outside schools as confirmed by the Ministry of Education Youth and Culture (2003). An investigation by Kaur (2004) uncovered that in Singapore the issue of showing mathematics required qualified teachers/instructors and prescribed that the Ministry of Education outfit mathematics teachers with the important abilities through in-benefit courses.

In South Africa, Mji and Makgato (2006) called attention to that couple of understudies take mathematics and the individuals who do as such don't perform well since they are not persuaded which at last may prompt mass disappointments. Mji and Makgato (2006) recognize that in South Africa built up numerous schools did not offer mathematics and those that offer don't have sufficient offices for viable educating and learning. Understudy reading material proportion has been high particularly in provincial and urban ghettos where understudies don't perform to desires. Adeyemi (2008) sought to decide the connection between teacher experience and understudies' execution in mathematics found that teacher experience and capability were the prime indicators of understudies' execution in all subject in auxiliary schools in Ondo state Nigeria. Accessible writing in Nigeria has not possessed the capacity to distinguish a solitary heading of contrast in execution in mathematics amongst male and female understudies (Kadiri, 2004). This view was bolstered by Alao and Adeleke (2000) that

young ladies recorded low execution than young men in scientific exercises in Nigeria auxiliary schools. Young ladies were found to show more mathrophobias than young men.

As indicated by Passos (2009) skill is created through teacher instruction, work understanding and at work preparing in view of an introduction to an assortment of exercises that test a person's capacity to adapt to various circumstances. Showing background picked up likewise enhances the teachers' capacity to adapt to unordinary conditions while instruction gives the teacher strong comprehension of the topic. Training and business related experience likewise upgrade the teacher's comprehension of the standards and ideas fundamental productive and viable conveyance of scientific substance.

Makewa et al., (2012) then again in their investigation assessed teacher factors related with mathematics execution in broad daylight elementary schools in Nandi Central Sub district Kenya yet focused on mathematics utilization of learning assets, showing assets, showing strategy, teacher preparation, duty, appraisal together with demeanor yet not the individual characteristics age, sexual orientation, number of years of educating and qualification. An examination by Odhiambo (2006) demonstrated that urban schools are not gravely hit by teacher deficiencies the same number of incline toward educating in urban regions. Right now, KCSE examinations are taken under exceptionally strict supervision from the invigilators to abstain from deceiving. With these measures, there can be exactness in expectation of understudies' execution basing on teachers characteristics.

Since the selection of 8-4-4 framework, Mathematics has been a mandatory subject and there has not been a decent execution in KCSE by both young men and young ladies when contrasted with alternate subjects. Being a basic subject that is required in all profession fields, there is need the correct teacher trademark mix. In Kenya, mathematics is a center subject in school educational modules for both essential and auxiliary schools but then the execution is exceptionally terrible. While poor execution is relevant to most parts of the nation, a few territories have a record of perpetual mass disappointments in mathematics. This is particularly so in Uasin Gishu County. This investigation tried to set up the impact of teacher qualification on understudies' mathematics execution in Uasin Gishu County utilizing 2016 KCSE comes about.

2. Literature Review

The effect of teacher characteristics is vital for instruction arrangement. The current research along these lines abandons us with few responses to inquiries concerning the connection between teacher qualifications and understudy execution. It appears to be then that the proof in regards to the effect of teacher content information on understudy results is blended.

Proof from Pakistan recommends that teacher qualifications are to be sure critical for understudy execution. A four year college education or higher is definitely and measurably fundamentally connected with understudy execution in dialect, mathematics and general learning and also a measure catching execution in each of the three (Arif and Saqib, 2003).

In numerous nations certain qualifications should be acquired before teachers are allowed to enter the educating power. A great part of the writing encompassing teacher characteristics and understudy execution is contained investigations of the effect of these and different qualifications. The connection between teacher characteristics and understudy execution is shockingly subtle, be that as it may. Analysts have thought that it was hard to discover parts of teacher preparing that relate with understudy execution in a measurably huge manner (Chingos and Peterson, 2011). Clashing or vague outcomes happen regularly.

Concentrate by Darling-Hammond (2000) demonstrated that having higher request academic accomplishments, for example, a graduate degree had no effect on understudy execution. The outcomes indicated accomplishment picks up for understudies with knowledgeable teachers. They additionally demonstrated that accomplishment was identified with teachers' learning of the subjects educated. In an examination including 7000 understudies Naoreen, Aslam, Nausheen and Arshad (2011) found that the nature of the showing power comparably affects understudies' test scores as financial status. Mohamed (2006) in his investigation discovered that 56.25% of Banadir district mathematics teachers were professionally met all requirements to mathematics but then the examination comes about were poor, demonstrating that for an upgraded accomplishment in mathematics teachers require something beyond a qualification. Results appeared, in any case, that secondary school understudies' scientific accomplishment enhanced when their teachers had standard accreditation.

From the findings by Ojimba (2013) that the teacher is a major factor in the teaching of mathematics at the senior secondary school level and therefore should be qualified before being engaged in the teaching and learning processes, teacher qualification is emphasized as a contributor to students' performance. Qualified teachers use different methods to enhance students' performance. This study attempted to shed more light on the influence of teacher qualification and students' academic performance in mathematics. This study aimed to fill the knowledge gap on teacher qualification effect on student's mathematics performance in Uasin Gishu County.

3. Theoretical Framework

The study was based on Vygosty's theory of social constructivism development. The theory focused on relation between people and their social cultural context. The theory provided a strong argument for using appropriate models and concrete material to illustrate mathematical concepts and for actively involving students in learning process. A teacher should collaborate with their students in order to facilitate learning mathematics. Learning mathematics according to Reys (2001)

involves the following principles: actively involving students built on their previous knowledge and use of resources learning process. Actively involving students in learning mathematics leads to retention of information for long term.

3.1. Research Methodology

The research design used for this study is the descriptive survey design. The target population for this study was teachers of mathematics from 216 secondary schools in Uasin Gishu County. A sample of 126 secondary schools purposively selected from 216 schools. Primary data was collected using questionnaires. Data collected was analyzed using inferential statistics using the Statistical Package for Social Sciences (SPSS).

4. Results

Correlation between Teachers Qualification and performance in Mathematics The teacher's qualification effect on performance in mathematics was investigated using Pearson product moment correlation as summarized in Table 1. There was a positive relationship between teachers qualification and performance in mathematics [$r=.303$, $n=126$, $p<.05$]. An increase in teacher's qualification led to an improvement in mathematics performance.

		Performance	Teacher's Qualification
Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
Teacher's qualification	Pearson Correlation	.303**	1
	Sig. (2-tailed)	.001	

Table 1: Correlation between Experience and Performance in Mathematics

** Correlation Is Significant at the 0.01 Level (2-Tailed).

N=126

4.1. Regression Model

A linear regression model was used to explore the relationship between teacher's qualification and mathematics performance. From the model, ($R^2 = .092$) shows that teachers qualification account for 9.2% variation in mathematics performance. The teachers qualification predictor used in the model captured the variation in the mathematics performance as shown in Table 2.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.303 ^a	.092	.085	2.46796	.092	12.570	1	124	.001

Table 2: Model Summary on Teachers Qualification

A. Predictors: (Constant), Qualification

The regression model with teachers qualification as a predictor was significant ($F=12.57$, p value =0.001) shows that there is a significant relationship between teachers qualification and mathematics performance.

4.2. Teacher's Qualification Coefficients

The β -value for teacher's qualification had a positive coefficient, depicting positive relationship with mathematics performance. There was a positive significant relationship between teachers qualification and mathematics performance ($p<0.05$). Therefore, a unit increases in teacher's qualification led to a rise in mathematics performance by 0.878 as shown in table 3. There was a positive significant relationship between teachers qualification and mathematics performance ($p<0.05$). The null hypothesis (H_0) was rejected and the alternative hypothesis accepted.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.511	.524		6.697	.000					
	Qualification	.878	.248	.303	3.545	.001	.303	.303	.303	1.000	1.000

Table 3: Teachers Qualification and Mathematics Performance Coefficients

A. Dependent Variable: Performance

Teacher's qualification had a positive significant relation with mathematics performance.

5. Conclusion

The teacher's qualification positively influenced the mathematics performance in secondary school.

Recommendation

The Ministry of Education should offer an opportunity for further teacher professional training through workshops, seminars and short courses. The study further recommended that principals should provide on the job training for newly employed teachers for improved performance. The government should encourage in-service training and education on pedagogy and attitude change in Mathematics at County levels for practicing teachers.

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