

Teaching Qualification As Correlate For Teachers' Effectiveness For Quality Mathematics Instruction: A Study Of Primary Teachers In Fijian Classrooms

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Abstract

The objective of this study is to explore and compare teacher effectiveness of primary school mathematics teachers in Fijian classrooms, with respect to teaching qualification. The study involves a descriptive survey using stratified random sampling technique with a sample size of 370 primary school teachers, which covers each stratum from the four major Education Divisions: Northern, Central, Western and Eastern. The Kulsum's (1971) Teacher Effectiveness Scale was used as a tool and One-way ANOVA is used to analyse the data quantitatively. One of the major findings of this study is that there is a significant difference in 'Preparation and Planning,' 'Classroom Management,' and 'Knowledge of Subject-matter' Components of Teacher Effectiveness among teachers with different levels of teaching qualification. Other findings are being detailed in the paper.

Key Words: Classroom management; quality instruction; Knowledge of Subject Matter; Primary school teachers; preparation and planning; Knowledge of Content and Teaching; teacher characteristics; interpersonal relations

Introduction

Effective teachers have a good command in one's subject area and solid fundamental teaching skills, which can be evident in outstanding instructional planning with effective methods of goal setting, instructional planning and sound classroom organization. Effective teachers have sound strategies to help students become self-motivated to learn. Zimmerman (2000) found out that teachers with enthusiasm contribute positively to teacher effectiveness. Teaching effectiveness is dependent on individuality, teaching strategies, person's intellect, skills, commitment, attitude and complete outlook of teachers.

Literature had also highlighted that teacher's qualification is one aspect that determines teachers' effectiveness in the classrooms. A large-scale study in North Carolina stated that teachers can have large effects on student achievement. That study equally revealed that the differences in achievement gains for students who had the most qualified teachers versus those who had the least qualified (Darling-Hammond, 2010). Effective teaching immensely contributes to the teaching and learning process thus could have a direct impact on the learning outcomes of students. Teacher effectiveness incorporate relationships between what the teacher does while teaching and the outcomes of such actions on the progress and improvement of students.

Some of the basic factors related to teacher effectiveness could be classroom management, appropriate teaching methods, personal characteristics, and good communication skills. An effective teacher knows how to teach effectively in terms of knowledge with relevant skills and the right attitude.

In recent years, the quality of teachers has been the focus of much attention as Fiji's education system faces challenges of maintaining its competitiveness in an increasingly global economy. The government has sought to improve the quality of teachers in the workforce by demanding an upgrade of certification. The current Minister of Education in Fiji during a press conference on the 11th of November 2021 expressed this sentiment. She highlighted the need for teachers to upgrade their qualifications; from a diploma to a bachelors degree or lose their job. She further stated that only 49% of teachers in Fiji have upgraded their qualifications, from their entrance qualification level into the profession. This she rightly pointed out will aid the effectiveness in the teaching and learning processes of Fiji school children. The controversy of teachers' qualification has become a discourse of national significance in contemporary Fiji's educational system. The Ministry of Education drive is ensuring that only qualified teachers are in the employment of sector to facilitate learning in schools. Despite, the strategy incongruity, it can be surmised as a well-intentioned purpose-driven educational decision and as well supported by literature, if Quality Education (SDQ 4) and maximum student learning outcome must be achieved by Fiji.

Fiji Islands has three teachers training institutes registered and licensed by the Fiji Higher Education Commission to educate pre-and in-service teachers and award certificates to students to teach in schools by the end of their years of studies. However, majority of teacher Education institutions; are all located in Viti Levu; the

largest Island in the Fiji Group. In addition to these colleges, The University of Fiji recently commenced the offering of primary teaching courses and The University of the South Pacific, takes the lead role in higher education in the South Pacific. These universities and teacher colleges are avenues for upgrading teacher qualifications from certificate level to achieving a PhD. The creation of new universities and colleges of teacher education in recent years has led to a sharp rise in the number of qualified teachers but despite the good progress made, the shortage has remained a major challenge at all levels.

Although it might be insufficiently plausible to evaluate the effectiveness of teachers objectively and empirically through certain means, several studies have generally found a positive relationship between teacher's academic abilities and student's achievements (Greenwald et al., 1966; Hanushek, 1971; Strauss & Sawyer, 1986 as cited by Bolyard & Moyer-Packenham, 2008, Tambunan, Sinaga, & Widada, 2021; Kawuryan, Sayuti, & Dwiningrum, 2021, Myers, Redding, Brownell, Gage & Leite, 2022, Myers, 2022). Zhu et al (2018) carried out a survey, comparing Chinese teachers into two categories; well qualified as expert teachers, and unqualified as non-expert teachers and findings revealed that the expert group tried to identify and understand students' thinking from multi-perspectives and made necessary adjustments from the initial teaching plans being prepared, and tried to connect and use previous teaching experience to better understand students' mathematical thinking, compared to the non-expert group.

Researchers, policymakers, educators and parents have historically viewed teacher effectiveness and quality from different perspectives, but all agree that the key to improving education is placing highly skilled and effective teachers in all classrooms. Lopez-Agudo & Marcenaro-Gutierrez (2017) carried out an experiment on

students' engagement on teacher effectiveness, revealed that effective use of resources during students' engagement increases teacher effectiveness and collaborative interaction amongst teachers in sharing content knowledge and scaffolding gives teachers the confidence to teach, thus the study highlights that students' engagement is one of the approaches for effective teaching. Bhargava & Gupta (2017) carried out a survey on teacher effectiveness through professional development for pre-service degree teachers revealed that male teachers are more effective than female counterparts therefore, females are to be encouraged to attend more professional development sessions and marital status has no significant effect of teacher effectiveness.

In another dimension, Bature & Atweh (2016) used the Productive Pedagogies Framework (PPF) that incorporated reflective interviews and observation of problem-solving approach in mathematics lessons, for Nigerian teachers and students, and the findings revealed that the framework brought about quality instruction for teachers and students were able to effectively interact with peers and teachers, and such interactions bring about meaningful learning. A thorough knowledge of the PPF is needed by the teachers to effectively carry out the process for meaningful mathematics teaching and learning. Also, Yanisko (2016) examined the impact of professional support on novice teachers using tracked students in a case study which revealed that mentoring and using support reflective group are helpful for improvement of instruction and lowers the influence of tracking during productive mathematics discussions and such professional support contributes positively to effective teaching. Conversely, Schuls & Tivitt (2015) studied the relationship between observable teacher abilities and students' performances using value-added approach. Findings revealed teacher qualification has no

direct effect on students' performance; however, the higher ability teachers have their students getting higher levels.

On the other hand, the action research carried out by Chaseling (2014) on the significance of professional learning communities on the improvement of numeracy results in New South Wales, Australia revealed that such interactive collaborations are essential for effective teaching of mathematics and teachers were able to share openly about the realities of mathematics instruction with effective interaction. Muijs (2014) explored teacher effectiveness with respect to process-using secondary data revealed that effective teachers' practices have contributed positively to students' higher achievement. However, there is a need to extend the focus on issues related to modern reforms such as the technology-inclusive and new teaching approaches experimented on small scale, which is cost effective, before being piloted on a bigger scale.

Abebe and Woldehanna (2013) stated that investment in human capital through training and educational programmes is seen as a determinant to the increase in the value of that capital. It is widely recognized that the quantity and quality of human capital accumulation are essential determinants of the productivity of any economy." Furthermore, they stated that in order to maximize the usage of human capital in an increasingly technological work environment, training is believed to be critical. In this context teachers' effectiveness can be measured through the comparison of qualification levels of teachers in response to the three components of teacher effectiveness in terms of, preparation and planning, classroom management and Knowledge of Subject-matter. Newton et al (2012) investigated the impact of mathematical content knowledge on teacher efficacy for prospective teachers in an elementary mathematics methods course and findings revealed a positive

relationship between mathematical content knowledge and teacher efficacy, whereby sound content knowledge builds confidence in teaching and raises self-efficacy.

Bolyard & Moyer-Packenham (2008) highlighted that teacher quality as the most significant recognized determinant of academic success. Substantial doubt remains, however, concerning exactly which aspects of teachers are important, whether those aspects can be measured, and whether that effectiveness differ by qualification. Ideally, certification weeds out individuals who would be of low quality and allows individuals who would be satisfactory teachers to enter the teaching arena. The area of teacher effectiveness is well documented internationally however, there has not been much done within the Fiji and Pacific in this regard; to which end Sanga (2012) opined that such studies could be used as building blocks of local and international literature in teacher effectiveness in mathematics education. This research focused on the effectiveness of mathematics teachers in primary schools with respect to their qualifications.

After a critical analysis of the related literature findings, the following research gaps have been identified by the researchers; even though teacher effectiveness is well covered in international literature, there is hardly any literature in teacher effectiveness for mathematics teaching conducted in Fiji. Therefore, this study is situated within that premise of closing that gap. Hence, this present study, titled Teaching qualification as correlate for teachers' effectiveness for quality Mathematics Instruction: A study of primary teachers in Fijian classrooms, was undertaken.

Objectives of the study

The following research questions guided the study:

- To compare the components of teacher effectiveness among primary school

mathematics teachers of Fiji with respect to teaching qualification

Research hypothesis

The research was predicated on the following research hypothesis and tested using one-way analysis of variance (ANOVA) with the level significance fixed at 0.05 level:

H₁: Primary school mathematics teachers having Certificate, Diploma, B.Ed., and PG qualifications differ significantly in components of teacher effectiveness.

To test the hypothesis, it was changed into null hypothesis as stated below:

H₀: Primary school mathematics teachers having Certificate, Diploma, B. ED, and PG qualification do not differ significantly in Components of Teacher Effectiveness.

Methodology

The number of primary school teachers in Fiji, according to data collected from the MOE in 2020 was about 9 000 teachers. The sample size was calculated from Krejcie and Morgan (1970) sample size table. The research design used was descriptive survey and the sampling technique used was stratified random sampling in which a stratum from each of the four major Education Division was selected from the Western, Eastern, Central and Northern divisions.

Analysis of Data and Results

The collected data were tabulated, analysed and interpreted using SPSS Version 16. The data was collected by administering the tool 'Teacher Effectiveness Scale' prepared by Kulsum (1971), a standardised tool.

Analysis and interpretation of data to test hypothesis on components of teacher effectiveness with respect to teaching qualification

Table 1.1: ANOVA Details of Components of Teacher Effectiveness among Primary School Teachers of Fiji with respect to Teaching Qualification

Source of Variation		Sum of Squares	df	Mean Square	F-value	P-value	Results
PP	Between Groups	16683.945	3	5561.315	38.411	.000	S
	Within Groups	51977.168	359	144.783			
	Total	68661.113	362				
CM	Between Groups	7116.382	3	2372.127	15.126	.000	S
	Within Groups	56301.089	359	156.828			
	Total	63417.471	362				
KS	Between Groups	2948.458	3	982.819	17.817	.000	S
	Within Groups	19802.837	359	55.161			
	Total	22751.295	362				
TC	Between Groups	860.069	3	286.690	1.369	.252	NS
	Within Groups	75177.435	359	209.408			
	Total	76037.504	362				
IR	Between Groups	746.666	3	248.889	2.565	.054	NS
	Within Groups	34839.538	359	97.046			
	Total	35586.204	362				

*Significant at 0.05 Level

S-Significant, NS- Not Significant

Table 1.1 shows that for Preparation and Planning (PP), 1 and P-value of .000, which is significant at .05 level, thus the null hypothesis, is rejected and the research hypothesis, is retained. Therefore, it can be concluded that there is a significant difference in Preparation and Planning, among teachers with respect to Teaching Qualification. For Classroom Management (CM), P-value of .000, which is significant at .05 level, thus the null hypothesis is rejected and the research hypothesis, is retained.

Therefore, it can be concluded that there is a significant difference in Classroom Management (CM), among teachers with respect to Teacher Qualification.

For Knowledge of Subject-Matter (KS), P-value of .000, which is significant at .05 level, thus the null hypothesis, is rejected and the research hypothesis, is retained. Therefore, it can be concluded that there is a significant difference in Knowledge of Subject, among teachers with

respect to teaching qualification. For Teacher Characteristics (TC), P-value of .252, which is not significant at .05 level, thus the null hypothesis is retained, and the research hypothesis is rejected. Hence it can be concluded that there is no significant difference in Teacher Characteristics (TC) among teachers with respect to teaching qualification, hence Teacher Characteristics (TC) is equal among primary school mathematics teachers in Fiji with different levels of teacher qualification.

The table also shows the F-value of Interpersonal Relations (IR) is 2.565 and P-value of .054 which is not significant at .05 level, thus the null hypothesis, is retained and the research hypothesis, is rejected. Hence it can be concluded that there is no significant difference in Inter-

personal Relations (IR) among teachers with Certificate, Diploma, Bed and PG qualification, hence Interpersonal Relations (IR) is equal among Primary School Mathematics Teachers with different levels of teacher qualification.

Hence it can be concluded that teachers with different levels of qualifications differ significantly with respect to 'Preparation and Planning,' 'Classroom Management,' and 'Knowledge of Subject' components of teacher effectiveness. This indicates that at least one group is significantly higher than other groups with respect to teacher qualification.

To compare the differences, individual means are identified and summarized in Table 1.2.

Table 1.2: Mean and Standard Deviation of Teacher Effectiveness Components with respect to Teaching Qualification

		Mean	Std. Deviation	Std. Error
	B.Ed.	74.2477	13.33691	1.27744
	Certificate	60.3308	10.72008	.92955
PP	Diploma	74.0357	12.36817	1.16868
	P.G.	78.7778	8.78604	2.92868
	Total	69.1956	13.77213	.72285
	B.Ed.	93.4312	11.89099	1.13895
	Certificate	88.4962	11.79665	1.02290
CM	Diploma	83.0893	14.08440	1.33085
	P.G.	100.0000	8.95824	2.98608
	Total	88.5950	13.23580	.69470
KS	B.Ed.	62.9541	7.47636	.71611

Certificate	63.6842	7.92710	.68737
Diploma	58.1607	6.91591	.65349
P.G.	71.5556	4.50309	1.50103
Total	61.9559	7.92773	.41610

To find out which group differences in terms of Preparation and Planning (PP), Classroom Management (CM) and Knowledge of Subject-

Matter (KSM), post hoc tests was done. The details are given in Table 1.3, 1.4 and 1.5, respectively.

Table 1.3: Post-hoc Test Results of Preparation and Planning with respect to Teaching Qualification of Primary Teachers of Fiji

Teaching Qualification Compared	Mean Difference	Std. Error	P-value	Results
B.Ed. & Cert.	13.91688*	1.55463	.000	S
B.Ed. & DIP	.21199	1.61895	.999	NS
B.Ed. & P.G.	4.53007	4.17317	.758	NS
Cert & DIP	13.70489*	1.54315	.000	S
Cert & P.G.	18.44695*	4.14435	.000	S
P.G. & DIP	4.74206	4.16890	.731	NS

S-Significant, NS- Not Significant

Table 1.3 shows for Preparation and Planning (PP) the highest mean difference is between teachers with PG and Certificate which is 18.447, and P-value of .000 which is significant at .05 level using Scheffe's Post hoc. It can be concluded that there is a significant difference in 'Preparation and Planning' between teachers with PG and Certificate qualification. From the table it is also evident that teachers with PG qualification is higher than teachers with Certificate qualification. Hence it can be concluded that Preparation and Planning of teachers with PG qualification is significantly higher than that of teachers with Certificate qualifications. Table 1.3 also reveals that there is a significant difference between teachers with B.Ed. and Certificate with mean difference of 13.917, and P-value of .000.

The difference is in favour of teachers with B.Ed. qualification. Hence it can be concluded that Preparation and Planning (PP) of teachers with B.Ed. is significantly higher than teachers with Certificate qualification.

The Table also shows that there is a significant difference between teachers with Diploma and Certificate with mean difference of 13.705 and P-value of .000. It is evident from the Table that teachers with Diploma qualification is higher than teachers with Certificate Qualification. Hence it can be concluded that Preparation and Planning of teachers with Diploma qualification is significantly higher than teachers with Certificate qualification.

Table 1.4: Post-hoc Test Results of Classroom Management with respect to Teaching Qualification of Primary Teachers of Fiji

Teacher Qualification Compared	Mean Difference	Std. Error	P-value	Results
B.Ed. & Cert	4.93495*	1.61800	.027	S
B.Ed. & DIP	10.34191*	1.68494	.000	S
B.Ed. & P.G.	6.56881	4.34328	.516	NS
Cert & DIP	5.40695*	1.60605	.011	S
P.G. & Cert	11.50376	4.31329	.070	NS
P.G. & DIP	16.91071*	4.33884	.002	S

*Significant at 0.05 Level

Table 1.4 shows for Classroom Management (CM) the highest mean difference is between teachers with PG and Diploma which is 16.911, and P-value of .002 which is significant at .05 level using Scheffe's Post hoc. It can be concluded that there is a significant difference in 'Classroom Management' between teachers with PG and Diploma qualification. From the table it is also evident that teachers with PG qualification is higher than teachers with Diploma qualification. Hence it can be concluded that Classroom Management (CM) of teachers with PG qualification is significantly higher than that of teachers with Diploma qualification. Table 1.4 also reveals that there is a significant difference between teachers with B.Ed. and Certificate with mean difference of 4.935, and P-value of .027. The difference is in favour of teachers with B.Ed. qualification. Hence it can be concluded that Classroom Management (CM)

of teachers with B.Ed. is significantly higher than teachers with Certificate qualification.

The Table also shows that there is a significant difference between teachers with B.Ed. and Diploma with mean difference of 10.342 and P-value of .000. It is also evident from the Table that teachers with B.Ed. qualification is higher than teachers with Diploma Qualification. Hence it can be concluded that Classroom Management (CM) of teachers with B.Ed. qualification is significantly higher than teachers with Diploma qualification. Table 1.4 also reveals that there is a significant difference between teachers with Diploma and Certificate with mean difference of 5.401 and P-value of .011. The difference is in favour of teachers with Certificate qualification. Hence it can be concluded that Classroom Management of teachers with Certificate qualification is significantly higher than teachers with Diploma qualification.

Table 1.5: Post-hoc Test Results of Knowledge of Subject-matter with respect to Teaching Qualification of Primary Teachers of Fiji

	Teacher Qualification Compared	Mean Difference	Std. Error	P-value	Results
KS	B.Ed. & Cert	.73008	.95959	.901	NS

B.Ed. & DIP	4.79341*	.99929	.000	S
B.Ed. & P.G.	8.60143*	2.57586	.012	S
Cert & DIP	5.52350*	.95250	.000	S
Cert & P.G.	7.87135*	2.55808	.025	S
P.G. & DIP	13.39484*	2.57323	.000	S

*Significant at .05 Level

Table 1.5 shows for Knowledge of Subject-Matter (SK) the highest mean difference is between teachers with PG and Diploma which is 13.395 and P-value of .000 which is significant at .05 level using Scheffe's Post hoc. It can be concluded that there is a significant difference in 'Knowledge of Subject-matter' between teachers with PG and Diploma qualification. From the table it is also evident that teachers with PG qualification is higher than teachers with Diploma qualification. Hence it can be concluded that 'Knowledge of Subject-matter' of teachers with PG qualification is significantly higher than that of teachers with Diploma qualification. Table 1.5 also reveals that there is a significant difference between teachers with B.Ed. and Diploma with mean difference of 4.973, and P-value of .000. The difference is in favour of teachers with B.Ed. qualification. Hence it can be concluded that 'Knowledge of Subject-matter' of teachers with B.Ed. is significantly higher than teachers with Diploma qualification.

The Table also shows that there is a significant difference between teachers with B.Ed. and PG with mean difference of 8.601 and P-value of .012. It is also evident from the Table that teachers with PG qualification is higher than teachers with B.Ed. Qualification. Hence it can be concluded that 'Knowledge of Subject-matter' of teachers with PG qualification is significantly higher than teachers with B.Ed. qualification. Table 1.5 also reveals that there is a significant difference between teachers with Diploma and Certificate with mean difference of 5.524, and

P-value of .000. The difference is in favour of teachers with Certificate qualification. Hence it can be concluded that 'Knowledge of Subject-matter' of teachers with Certificate qualification is significantly higher than teachers with Diploma qualification. Table 1.5 also reveals that there is a significant difference between teachers with PG and Certificate with mean difference of 7.871, and P-value of .025. The difference is in favour of teachers with PG qualification. Hence it can be concluded that 'Knowledge of Subject-matter' of teachers with B.Ed. is significantly higher than teachers with Diploma qualification.

Discussion

The review of literature revealed that there is a positive relationship between sound content knowledge which build up confidence and raises self-efficacy in teachers as highlighted by Newton et al (2012). This could be achieved by having qualified training, which was supported by Zhu et al (2018) as qualified expert teachers' ability to identify and understand students' thinking from multi-perspectives and make necessary adjustments from the initial teaching plans being prepared, and in making connections with prior knowledge. As well as Hartiwi et al (2020) who opined that certified teachers have a positive disposition and significant influence on teacher performance. The more positive the teacher has been certified, the higher the teacher's performance. Conversely, if the teacher is certified negative, the teacher's performance will be lower. This is one of the areas that has continued to build up among policy makers and

researchers. Therefore, investment in human capital; the teachers, in terms of quantity and quality, truly drive the productivity of any economy of a nation, as highlighted by Abebe and Woldehanna (2013). The authors also raised the components of Teacher Effectiveness need to be preparation, classroom management and knowledge of subject.

This study revealed that from teacher effectiveness components, there is significant difference for preparation and planning, classroom management and knowledge of subject matter for primary school mathematics teachers, which had similar components as earlier explored by Abede and Wolderanna (2013). The findings also revealed that higher levels of teacher qualification are significantly higher than the lower levels in terms of planning and preparation, classroom management, and knowledge of subject matter, which supports earlier findings of Newton et al (2012) and Zhu et al (2018), resulting in confidence in planning and preparation, higher efficacy, understanding students' thinking from different perspectives, making connections, which all contributes to quality instruction and student engagement which surely bring about meaningful learning and improves students' performance in mathematics. Teachers would also try to build on students' experiences, motivation and related skills in learning. A similar study conducted by Holtzman, et.al (2005) confirms that uncertified teachers generally had a negative impact on teaching preparation, students' achievement and class management. While teacher qualification is only a representation of the whole gamut of factors contributing to teacher effectiveness, the other variables of content knowledge, pedagogical knowledge, classroom management and relationship with the students and their parents, continue to be the other significant areas of focus. They all contribute to teacher effectiveness.

Major findings of the study

Therefore, the findings of this study are delineated into the following:

- i. There is a significant difference in 'Preparation and Planning,' 'Classroom Management,' and 'Knowledge of Subject-matter' Components of Teacher Effectiveness among teachers with different levels of teaching qualification.
- ii. There is no significant difference in 'Teacher Characteristics' and 'Interpersonal Relations' Components of Teacher Effectiveness hence equal among teachers with different levels of teaching qualification.
- iii. Preparation and Planning of teachers with PG is significantly higher than that of teachers with Certificate qualification.
- iv. Preparation and Planning of teachers with B.Ed. is significantly higher than teachers with Certificate qualification.
- v. Preparation and Planning of teachers with Diploma is significantly higher than teachers with Certificate qualification.
- vi. There is no significant difference in Preparation and Planning among teachers with B.Ed. qualification and Diploma, B.Ed. qualification and PG, and PG qualification and Diploma qualification.
- vii. Classroom Management of teachers with PG is significantly higher than that of teachers with Diploma qualification.
- viii. Classroom Management of teachers with B.Ed. is significantly higher

- than teachers with Certificate qualification.
- ix. Classroom Management of teachers with B.Ed. is significantly higher than teachers with Diploma qualification.
 - x. Classroom Management of teachers with Certificate is significantly higher than teachers with Diploma qualification.
 - xi. There is no significant difference in Classroom Management among teachers with B.Ed. and PG qualification, and PG and Certificate qualification.
 - xii. Knowledge of Subject-matter of teachers with PG is significantly higher than that of teachers with Diploma qualification.
 - xiii. Knowledge of Subject-matter of teachers with B.Ed. is significantly higher than teachers with Diploma qualification.
 - xiv. Knowledge of Subject-matter of teachers with PG is significantly higher than teachers with B.Ed. qualification.
 - xv. Knowledge of Subject-matter of teachers with Certificate is significantly higher than teachers with Diploma qualification.
 - xvi. Knowledge of Subject-matter of teachers with B.Ed. is significantly higher than teachers with Diploma qualification.
 - xvii. There is no significant difference in Knowledge of Subject-matter among teachers with B.Ed. and Certificate qualification.

Educational Implications

To improve the planning and preparation, classroom management, knowledge of subject matter for Primary School Mathematics teachers

in Fiji with Certificate and Diploma qualification, the Ministry of Education, as employers for teachers needs to:

- i. Conduct workshops for teachers with Certificate and Diploma qualification on Preparation and Planning (PP), Classroom Management (CM), and Knowledge of Subject Matter (KS).
- ii. Organize modeled lessons conducted by expert teachers Teacher Effectiveness for teachers with Certificate and Diploma qualifications to observe and analyze collaboratively during post lesson discussions
- iii. Give opportunity to teachers with Certificate and Diploma qualification to organize a school-based Mathematics Education Day and the focus needs to be on the following: Preparation and Planning (PP), Classroom Management (CM), and Knowledge of Subject Matter (KS).

The overarching quest to improve classroom management for primary school mathematics teachers in Fiji with Certificate and Diploma qualification, there are further implications for Teacher Education Institutions. As trainers of teachers in Fiji, they need to:

In addition to the above, teacher education institutions, as trainers for teachers need to:

- i. Conduct workshop on effective mathematics Teaching in aspects of Preparation and Planning for Teaching, Classroom Management and Knowledge of Subject Matter for both pre-service and in-service teachers
- ii. Assess pre-service teachers' micro teaching using the following criteria for effective teaching, in Preparation and Planning for mathematics Teaching,

Classroom Management and Knowledge of Subject Matter, and

- iii. Organize a Primary Mathematics Education Exhibition covering aspects of Preparation and Planning for Teaching, Classroom Management and Knowledge of Subject Matter

Conclusion

Teacher effectiveness is significant when dealing with quality mathematics teacher instruction. If more emphasis is placed in all aspects of effective teaching, there would be positive changes as teachers' cognitive level of teaching in terms of planning and preparations, classroom management and subject matter, resulting in bringing a great impact on students' learning outcomes which further bring about students' higher achievement in mathematics. Teachers would bring get to understand the students' multi perspectives in mathematical thinking, and simultaneously learning from contexts. This would also contribute to general knowledge about teaching. With appropriate support from the MOE and Teacher Education Institutions; primary school teachers would be well equipped with proper knowledge and related skills of teaching and adjust to teaching approaches to effectively meet the diverse needs of the students one teaches, hence indirectly improved students' performances in mathematics.

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