Journal of Instructional Mathematics
E-ISSN 2722-2179

DOI: 10.37640/jim.v5i2.2153
Volume 5, Issue 2; 2024

Teachers' Influence on Students' Mathematics Performance in Zamfara State: Implication for Classroom Practice

Abubakar Kabiru Tsafe[1]*, Saidu Isa Babangida[1], Lawal Chafe Ahmad[2], Bashir Mustapha[3]
[1]Dep. of Science & Vocational Educ., Usmanu Danfodiyo University Sokoto, Nigeria
[2]Dep. of Adult & Non-Formal Educ., Zamfara State College of Education, Nigeria
[3]Dep. of Early Child. Care & Educ., College of Education, Nigeria
*kabiru.tsafe@udusok.edu.ng

Article Info

Received
October 18, 2024

Revised
December 27, 2024

Accepted
January 31, 2025

Keywords

Mathematics Performance; Teachers' Experience; Teachers' Gender; Teachers' Qualification.

Abstract

The purpose of this research was to examine the influence of some teacher variables on students' mathematics performance in Zamfara state. Three objectives, research questions and null hypotheses were formulated to guide the study. A quasi-experimental design was used with a non-randomized sample of three hundred and seventy nine (N=379) students was drawn and distributed over four schools that were purposively selected. Mathematics Teacher Variable Test (MTVT) was used in the collection of data. Mean, standard deviation, and mean difference were for descriptive analysis, while *t*-test was for inferential analysis. Findings of the study revealed that the influence of teacher variables was tremendous. For instance, students taught by teachers with higher qualifications performed better than their counterparts taught by teachers with lower qualifications. Similarly, years of experience played a vital role in students' performance in mathematics better than teachers who are relatively new in the teaching profession. Gender was also found to have influence on students' performance because students taught by male teachers had better performance than their counterparts taught by female teachers. In the end, the study recommends amongst others, the need for sponsoring teachers with lower qualifications to go for in-service training in order to acquire higher qualifications.

How to Cite:
Tsafe, A. K., Babangida, S. I., Ahmad, L. C., & Mustapha, B. (2024). Teachers' Influence on Students' Mathematics Performance in Zamfara State: Implication for Classroom Practice. *Journal of Instructional Mathematics*, *5*(2), 146-156.

INTRODUCTION

The persistent problem of poor achievement of students in mathematics remains very worrisome to stakeholders in most of the countries assessed (Graham, 2023; Tikly et al., 2018). Scholars have attributed the problem to poor handling of the subject by inexperienced teachers who are not well vast in the subject as well as in classroom dynamics (Mandinach & Cline, 2013). As a result, it has been argued that the demand of the syllabus is so high that only experienced teachers can teach the subject effectively by employing a number of strategies and tactics to carry the

learners along. Furthermore, it is observed that previous studies centred attention mainly on establishing the differences or relationship between individual teachers' variables and students' academic achievement (see Fathi & Rostami, 2018; Johnson, 2024). Apparently further studies are required to examine the combined effects of teachers on students' outcome. The dimensions of these effects can be teachers' qualification, years of experience and gender.

In teaching, a number of factors come in to play a role of making the process successful or not. These factors include, but not limited to the time allotted for the teaching, the disposition of the learners and the availability of resources and above all, the teacher factor. Effectiveness in teaching mathematics as viewed by Afe (2003) involves methods of teaching by the teacher. In this regard, the strategy (method) used by teachers also determines their level of efficacy in handling the subject contents allocated to them to cover within a specified period of time. Because of its relevance in teaching and learning process, it has been stressed that the method or strategy to be applied by the teacher should be child-centered which comprises the following names or labels: passel discussion, group discussions, problem solving and research method, demonstration, role playing and guided teaching method (Borko et al., 2010). In terms of teacher factor, a line of distinction can be drawn about what can be expected from the teacher, that will have direct bearing to the outcome of what students learn. Some of these things are pedagogical competence of teacher (Christie & Lingard, 2020; Hakim, 2015), his ability to select and organize teaching materials (Darling-Hammond & Bransford, 2007; Stronge, 2018), ability to select appropriate method of instruction and assessment (Stiggins, 1994, 2010) as well as the interpersonal relationship between him and students (Fan, 2012). Therefore, success in teaching may be contingent upon teacher factor since it's all-encompassing. In line with this, it is argued that one prominent overriding factor for the success in the performance of students is the teacher (Entwistle, 2013; Ramsden, 2003). Similarly, it is believed that teacher's qualification level and exposure can have a discernible difference in the quality of students produced perennially (Hanushek, 2010; Lasagabaster, 2021).

A teacher, regardless of his educational attainment and the level of his operation is incredibly crucial in teaching and learning process (Evers et al., 2002). Thus, teacher could be considered an intermediary between teaching and learning process culminating in either proper assimilation of the subject matter or otherwise by the student (Wood & Ashfield, 2008). Hence, the relevance of teacher to teaching and imparting of knowledge to learners cannot be overemphasized. This is why Ogunkunle and George (2015) said teacher is the most significant factor in an instruction process. Instruction as such can only be effectively carried out if the person to deliver it is fully prepared for the gesture. In a nutshell, teacher must be well trained and acquired required skills to be used in dealing effectively with his subjects (students). Effectiveness or rather efficacy in teaching Mathematics and other areas of human endeavor has, on various occasion been stressed by scholars to indicate how crucial the efficacy of teacher may mean to the students' achievement especially in mathematics; an area considered by all and sundry, not to be easily understood by everybody within the formal education setting.

Teachers' efficacy is the confidence in their ability to promote students' learning (Hoy & Spero, 2005; Onafowora, 2005). Hoy and Spero (2005) was believed to be the first to have used the concept over 30 years ago. It is argued that

when it comes to teacher efficacy, a teacher cannot really do much to make students to learn because most of students' motivation and performance depends on his or her home environment. In response to this, some teachers were found to have said if I try really hard, I can get through to even the most difficult or unmotivated students (Henson, 2001). Later when teachers were asked to express their degree of agreement or disagreement with each of the statements made above and their responses initiated the concept of teacher efficacy. Before mathematics could actually be taught to intending learners; or those already in the education system, teachers' efficacy (competence) would determine the success or otherwise of the process (Goddard et al., 2000).

Besides, curriculum plays a significant role in influencing teacher efficacy especially when there are alterations, when the need to make adjustment by the teachers to embrace the new changes is glaring. In Turkey for example by the year (2004), the Ministry of National Education initiated mathematics curriculum reform for elementary and middle grades whereby after piloting, a new curriculum was developed to be implemented in public and private schools throughout Turkey (Altinyelken, 2011). Contrary to what is obtainable in other countries of the world, the new elementary and middle grades mathematics curriculum requires significant shift in the teaching and learning of mathematics within the classroom. Contrary to its precursor, the new Turkish curriculum includes larger emphasis on learner-centered instruction, problem solving, open-ended explorations, modelling real life situations and the use of the technology as a tool to support mathematics learning (Aksit, 2007). To be effective and efficient in discharging this mandate, teachers are considered to have a critical role in implementing the new curriculum's ideas.

The study was viewed from the lens of 'teacher efficacy construct' which emerged recently as an important aspect of teacher education over the past few years. The concept has been defined as teachers' beliefs in their ability to actualize the desired outcomes expected of a student (Caprara et al., 2006). Thus, teacher efficacy has been linked to teacher effectiveness and appears to influence students in their achievement, attitude and affective growth (Bizimana, 2023; Blazar & Kraft, 2017; Zee & Koomen, 2016). Founded in social cognitive theory, teacher's self-efficacy beliefs have repeatedly been associated with positive teaching behaviours and students' learning outcome (Tsafe, 2015; Tuchman & Isaacs, 2011). An important factor in the determination of a teachers' sense of efficacy is experience (Brown et al., 2015) or what Bandura (1978), a leader in the development of self-efficacy theory, calls performance accomplishment. In this regard, Tschannen-Moran and Hoy (2007) suggested that some of the most powerful influences on the development of teacher efficacy are mastery experiences during students' teaching experience and foundation year. As such, the first years of teaching could be critical to the long term development of teacher efficacy beliefs in young teachers. To be effective in teaching mathematics by teachers, there must be a mastery of the subject matter so much so that the concepts would be delivered to the students efficaciously.

Based on this background, the following objectives guided the study. They are to: (1) examine the influence of teachers' qualification on students' performance in mathematics; (2) examine the influence of teachers' years of experience on students' performance in mathematics; and (3) examine the influence of teachers' gender on students' performance in mathematics.

Research Questions

The following research questions were asked in the study: (RQ1) What the influence of teachers' qualification on students' performance in mathematics?; (RQ2) What is the influence of teachers' years of experience on students' performance in mathematics?; (RQ3) What is the influence of teachers' gender on students' performance in mathematics?

Research Hypotheses

The following null hypotheses were stated in line with the objectives and research questions of the study: (H01) There is no significant mean difference in the performance of students taught by teachers with high qualification and those taught by teachers with lower qualification; (H02) There is no significant mean difference in the performance of students taught by experienced teachers and those taught by newly employed teachers; (H03) There is no significant mean difference in the performance of students taught by male teachers and those taught by female teachers.

RESEARCH METHODS

This study is quantitative in nature. Therefore, quantitative research focuses on quantifying the collection and analysis of data (Rahman, 2020; Apuke, 2017). To achieve this, quasi-experimental research design, involving pretest-posttest, non-randomized assignment of subjects was employed in the research. Subjects were assigned into experimental and control groups respectively.

The subjects in the study were senior secondary school I (SS I) students in Zamfara state. The total number of this category of students for the 2021-2022 academic year when the study was conducted was put at 22,707 students distributed across the four Education Zones of the state. The sample selected for the research was 379 (200 experimental and 179 control) SS I students. The procedure used in the selection of the samples was a multi-stage sample selection. In the first stage, stratified was used in the selection of eight schools cutting across the four education zones of the state. The second stage involved the use of simple random sampling approach in the selection of four schools, one from each of the education zones in the state and one intact class from the selected schools that participated in the study. In the third stage, simple random sampling approach was used to assign experimental and control group to the intact classes selected.

The instrument used in data collection was MTVT. The instrument was developed by the researchers using the content of the revised mathematics curriculum developed by Nigerian Education Research and Development Council. The test items were developed drawing from the provision of the SSI aspect of the curriculum. The instrument was validated by experts in mathematics education and it was found to be content-valid and norm-referenced. Using split-half, the reliability index of the instrument was found to be 0.67 and thus reliable to be used in the research. Table 1 shows the distribution students according to the sampled school from each Education Zone of the state.

Table 1 is the summary of the sample of the study. It shows that GSS Tsafe (Raka) had 97 (25.6%) students, GGC Talata Mafara had 94 (24.8%), GSS Anka had 94 (24.8%) and GTC Kaura Namode had 94 (24.8%) students respectively. The

sample studied mathematics in class with teachers categorized by qualification, experience, and gender, whose distribution is summarized in Table 2.

Table 1. Summary of Sample Distribution

Sample School	Number of Students	%
GSS Tsafe (Raka)	97	25.6
GGC Talata Mafara	94	24.8
GSS Anka	94	24.8
GTC Kaura Namoda	94	24.8
Total	379	100.0

Table 2 summarizes the distribution of teachers by qualification in terms of *f* (Frequency) and % (Percentage). It shows that 10 (50%) of the teachers used in the study had Bachelor's Degree; whereas 3 (15%) had Higher National Diploma (HND). Furthermore, 5 (25%) of the teachers used in the study had Nigeria Certificate of Education (NCE) whereas 2 (5%) of the teachers had Ordinary National Diploma (OND) Thus, a total of 20 (100%) teachers, with varying qualifications were used in the study. About summary of teachers' distribution by experience in the job, it shows that 13(65%) of the teachers used in the study were highly experienced; whereas 7(35%) were newly employed in the system. Thus, a total of 20(100%) teachers were used in the study. About the summary of teachers' distribution by gender, it shows that 15 (75%) of the teachers used in the study were male; whereas 5 (25%) were female. Thus, a total of 20 (100%) teachers were used.

Table 2. Teachers' Distribution Categories

Category	*f*	%	Category	*f*	%
Experience			Qualification		
Highly Experienced	13	65	Bachelor's Degree	10	50
Newly Employed	7	35	HND	3	15
Gender			NCE	5	25
Male	15	75	OND	2	10
Female	5	25			

RESULTS AND DISCUSSION

The findings of the study are presented in descriptive and inferential levels. At descriptive level, it were presented containing mean (M), standard deviation (SD), and mean difference, while at inferential level; hypothesis testing was presented containing mean, standard deviation *t*-test, *p*-value and decision.

Teachers' Qualification on Students' Performance

Based on RQ1, the results of data analysis at the descriptive level are summarized in Table 3.

Table 3 showed that the experimental group taught by teachers with higher qualifications had mean (M=30.79) and standard deviation (SD=6.40), while the control group taught by teachers with lower qualifications had mean (M=19.02) and standard deviation (SD=6.50). Thus, the mean difference between the two groups stands at 11.77. Therefore, experimental group probably performed better than

control group. However, hypothesis (H01) testing revealed the extent of the difference between the performances of the two groups and the result is on Table 4.

Table 3. Descriptive Statistics of Student Performance by Teacher Qualification

Subjects	N	M	SD	Mean Difference
Experimental	200	30.79	6.40	11.77
Control	179	19.02	6.50	

Table 4 showed the *t*-test summary of H01. The result indicated that the calculated *t*-value is 17.74 (*df*=377). This is greater than *p*-value of 0.00 at α=0.05 level of significance (i.e. *p*-value<0.05). Thus, the hypothesis which stated that there is no significant mean difference in the performance of students taught by teachers with higher qualification and those taught by teachers with lower qualification is rejected. Therefore, it can be concluded that the experimental group of students taught by teachers with higher qualification outperformed their control group counterparts taught by teachers with lower qualification. Hence, qualification can influence students' performance in mathematics.

Table 4. The *t*-test Summary of Student Performance by Teacher Qualification

Subjects	N	M	SD	*df*	$t_{calc.}$	*p*-value	Decision
Experimental	200	30.79	6.40	377	17.74	0.000	H01 is rejected
Control	179	19.02	6.50				

In their study on impact of teachers' qualification on students' academic performance in public secondary schools in Rwanda, Casian et al. (2021) found that teachers' qualification plays a vital role in students' performance academically. The study targeted a population of 137 respondent, out of which a sample of 121 was drawn. Correlation survey design was used; and the finding of the study revealed that teachers' qualification significantly affects students' academic performance. The *r*-correlation coefficient used revealed that teachers' qualification affects students' performance by up to 36.5%; while the remaining percentage used other variables. The findings of research which is about teachers' qualification is corroborated by Zuzovsky (2009) and Jega and Julius (2018) who both found that students' achievement and interest in mathematics are positively related to teachers' qualification.

Teachers' Years of Experience on Students' Performance

Based on RQ2, the results of data analysis at the descriptive level are summarized in Table 5.

Table 5. Descriptive Statistics of Student Performance by Teacher Experience

Subjects	N	M	SD	Mean Difference
Experimental	200	34.06	5.00	15.04
Control	179	19.02	6.50	

Table 5 showed that the experimental group taught by teachers who are highly experienced had mean (M=34.06) and standard deviation (SD=5.00) while the control group taught by teachers who are newly employed had mean (M=19.02)

and standard deviation (SD=6.50). Thus, the mean difference between the two groups stands at 15.04. Therefore, experimental group probably performed better than control group. However, hypothesis (H02) testing revealed the extent of the difference between the performances of the two groups and the result is on Table 6.

Table 6. The *t*-test Summary of Students' Performance by Teacher Experience

Subjects	N	M	SD	*df*	$t_{calc.}$	*p*-value	Decision
Experimental	200	34.06	5.00	377	25.37	0.002	H02 is rejected
Control	179	19.02	6.50				

Table 6 showed the *t*-test summary of H02. The result indicated that the calculated *t*-value is 25.37 (*df*=377). This is greater than *p*-value of 0.000 at α=0.05 level of significance (i.e. *p*-value<0.05). Thus, the hypothesis which stated that there is no significant mean difference in the performance of students taught by experienced teachers and those taught by newly employed teachers is rejected. Therefore, it can be concluded that the experimental group of students taught by highly experienced teachers outperformed their control group counterparts taught by newly employed teachers. Hence, teachers' years of experience can influence students' performance in mathematics.

In a study by Ewaten and Ewaten (2015) on teachers' teaching experience and academic performance in mathematics and English language in public secondary schools in Ogun state, Nigeria, it was found out that teachers' teaching experience significantly influenced students' performance in mathematics and English language; which is in line with the findings of research hypothesis two of this study.

Teachers' Gender on Students' Performance

Based on RQ3, the results of data analysis at the descriptive level are summarized in Table 7.

Table 7. Descriptive Statistics of Student Performance by Teacher Gender

Subjects	N	M	SD	Mean Difference
Experimental	200	32.69	5.75	10.44
Control	179	22.25	8.45	

Table 7 showed that the experimental group taught by male teachers had mean (M=32.69) and standard deviation (SD=5.75), while the control group taught by female teachers had mean (M=22.25) and standard deviation (SD=8.45). Thus, the mean difference between the two groups stands at 10.44. Therefore, experimental group probably performed better than control group. However, hypothesis (H03) testing revealed the extent of the difference between the performances of the two groups and the result is on Table 8.

Table 8 showed the *t*-test summary of H03. The result indicated that the calculated *t*-value is 14.20 (*df*=377). This is greater than *p*-value of 0.00 at α=0.05 level of significance (i.e. *p*-value< 0.05). Thus, the hypothesis which stated that there is no significant mean difference in the performance of students taught by male teachers and those taught by female teachers is rejected. Therefore, it can be concluded that the experimental group of students taught by male teachers outperformed their control group counterparts taught by female teachers. Hence,

teachers' gender can influence students' performance in mathematics. Similarly, in China, female teachers have a slightly negative impact on mathematics grades compared to male teachers, although this effect is not significant (Feng, 2023). The effect of student–teacher gender congruence can vary in magnitude and direction depending on the context (Doornkamp et al., 2024).

Table 8. The *t*-test Summary of Students' Performance by Teachers' Gender

Subjects	N	M	SD	*df*	$t_{calc.}$	*p*-value	Decision
Experimental	200	32.69	5.75	377	14.20	0.001	H03 is rejected
Control	179	22.25	8.45				

CONCLUSION

Findings of this study suggests that teacher variables such as qualification, years of experience in the service and gender influence students' performance in mathematics in Zamfara State. Therefore, the conclusion drawn from the study was that the potential for better mathematics performance from the students lies in their teachers' qualification, their years of experience in the service as well as their gender.

Below are some of the implications drawn from the study: (1) the believe that teachers' qualification has influence over students' performance in mathematics means that it be considered when teachers are employed to teach, such that the higher the qualification one acquires the more chances they have in getting employed, (2) the believe that teachers' experience influence students' mathematics performance means that it be given consideration when assigning teachers to various classes to teach, (3) the believe that teachers' gender influence students' mathematics performance means that female teachers be encouraged to catch up with their male counterparts in teaching mathematics for a better students' performance in the subject.

In line with the findings of the study, the following recommendations are put forward: (1) Since teachers' qualification has influence on students' performance in mathematics, priority should be given to qualification when recruiting mathematics teachers; (2) Experience teachers should be allocated to senior classes to teach mathematics since it helps students in their performance and especially to the graduating senior students who are about to write their external examinations such as West African Examinations Council (WAEC), National Examinations Council (NECO), National Business and Technical Examinations Board (NABTEB), etc; (3) Female mathematics teachers should be encouraged to put extra effort in their teaching through giving them some incentives and verbal praises so as to get their students to learn mathematics better.

REFERENCES

Afe, J. O. (2003). Teacher Effectiveness: Imperative for Implementing Universal Basic Education in Nigeria. *Journal of Nigeria Academy of Education*, *1*(1), 1–9.

Aksit, N. (2007). Educational reform in Turkey. *International Journal of Educational Development*, *27*(2), 129–137.

https://doi.org/10.1016/j.ijedudev.2006.07.011

Altinyelken, H. K. (2011). Student-centred pedagogy in Turkey: conceptualisations, interpretations and practices. *Journal of Education Policy*, *26*(2), 137–160. https://doi.org/10.1080/02680939.2010.504886

Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change. *Advances in Behaviour Research and Therapy*, *1*(4), 139–161. https://doi.org/10.1016/0146-6402(78)90002-4

Bizimana, E. (2023). The interplay between Teachers' Efficacy, Effectiveness, Attitudes and Students' Academic Achievement in Biology. *African Journal of Educational Studies in Mathematics and Sciences*, *18*(2), 79–99. https://doi.org/10.4314/ajesms.v18i2.7

Blazar, D., & Kraft, M. A. (2017). Teacher and Teaching Effects on Students' Attitudes and Behaviors. *Educational Evaluation and Policy Analysis*, *39*(1), 146–170. https://doi.org/10.3102/0162373716670260

Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary Approaches to Teacher Professional Development. *International Encyclopedia of Education*, *7*(2), 548–556.

Brown, A. L., Lee, J., & Collins, D. (2015). Does student teaching matter? Investigating pre-service teachers' sense of efficacy and preparedness. *Teaching Education*, *26*(1), 77–93. https://doi.org/10.1080/10476210.2014.957666

Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*, *44*(6), 473–490. https://doi.org/10.1016/j.jsp.2006.09.001

Casian, M., Mugo, L., & Claire, M. M. (2021). Impact of teachers' qualification on students' academic performance in public secondary schools in Rwanda. *Journal of Education*, *4*(2), 75–88.

Christie, P., & Lingard, B. (2020). *Teachers and schooling making a difference: Productive pedagogies, assessment and performance*. Routledge.

Darling-Hammond, J., & Bransford, L. (2007). *Preparing Teachers for a Changing World: What Teachers should Learn and be Able to do* (J. Darling-Hammond & L. Bransford (eds.)). John Wiley & Sons.

Doornkamp, L., Doornkamp, F., Van der Pol, L. D., Groeneveld, S., Mesman, J., & Groeneveld, M. G. (2024). Student–teacher gender congruence and student performance: The role of context. *Social Psychology of Education*, *27*(6), 3299–3328. https://doi.org/10.1007/s11218-024-09922-2

Entwistle, N. J. (2013). *Styles of Learning and Teaching: An Integrated Outline of Educational Psychology for Students, Teachers and Lecturers*. David Fulton Publishers.

Evers, W. J. G., Brouwers, A., & Tomic, W. (2002). Burnout and self-efficacy: A study on teachers' beliefs when implementing an innovative educational system in the Netherlands. *British Journal of Educational Psychology*, *72*(2), 227–243. https://doi.org/10.1348/000709902158865

Ewetan, T. O., & Ewetan, O. O. (2015). Teachers' teaching experience and academic performance in mathematics and English language in public secondary schools in Ogun State, Nigeria. *International Journal of Humanities, Social Sciences and Education*, *2*(2), 123–134.

Fan, F. A. (2012). Teacher: students' interpersonal relationships and students'

academic achievements in social studies. *Teachers and Teaching*, *18*(4), 483–490. https://doi.org/10.1080/13540602.2012.696048

Fathi, J., & Rostami, E. S. (2018). Collective teacher efficacy, teacher self-efficacy, and job satisfaction among Iranian EFL Teachers: The mediating role of teaching commitment. *Teaching English as a Second Language Quarterly (Formerly Journal of Teaching Language Skills)*, *37*(2), 33–64. https://doi.org/10.22099/jtls.2019.30729.2572

Feng, J. (2023). The Impact of Teacher Gender on Students' Academic Performance: Evidence from China. In H. Kassim, N. Malik, P. Rajagopal, & M. K. M. Singh (Eds.), *Proceedings of the 2023 8th International Conference on Modern Management and Education Technology (MMET 2023)* (pp. 323–333). Atlantis Press. https://doi.org/10.2991/978-2-38476-146-3_36

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective Teacher Efficacy: Its Meaning, Measure, and Impact on Student Achievement. *American Educational Research Journal*, *37*(2), 479–507. https://doi.org/10.3102/00028312037002479

Graham, M. A. (2023). Traditional bullying and cyberbullying as main drivers of low mathematics achievement in South African schools: Evidence from TIMSS 2019. *Education Inquiry*, 1–20. https://doi.org/10.1080/20004508.2023.2173122

Hakim, A. (2015). Contribution of competence teacher (pedagogical, personality, professional competence and social) on the performance of learning. *The International Journal of Engineering and Science*, *4*(2), 1–12.

Hanushek, E. A. (2010). *Making Schools Work: Improving Performance and Controlling Costs*. Brookings Institution Press.

Henson, R. K. (2001). *Relationships between Preservice Teachers' Self-Efficacy, Task Analysis, and Classroom Management Beliefs*. https://files.eric.ed.gov/fulltext/ED450084.pdf

Hoy, A. W., & Spero, R. B. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, *21*(4), 343–356. https://doi.org/10.1016/j.tate.2005.01.007

Jega, S. H., & Julius, E. (2018). The effects of teachers' academic qualification and experience on students' achievement and Interest in mathematics in Kebbi state. *International Journal of Advanced Academic Research*, *4*(6), 15–29.

Johnson, K. (2024). Teachers' Characteristics and Academic Performance of Students in Secondary Schools in Calabar South Local Government Area of Cross River State, Nigeria. In *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4691947

Lasagabaster, D. (2021). Team Teaching: A way to boost the quality of EMI programmes. In F. D. Rubio-Alcalá & D. Coyle (Eds.), *Developing and Evaluating Quality Bilingual Practices in Higher Education* (pp. 163–180). Multilingual Matters & Channel View Publications. https://doi.org/10.2307/jj.22730526.13

Mandinach, E. B., & Cline, H. F. (2013). *Classroom dynamics: Implementing a technology-based learning environment*. Routledge.

Ogunkunle, R. A., & George, N. R. (2015). Integrating ethnomathematics into secondary school mathematics curriculum for effective artisan creative skill development. *European Scientific Journal*, *11*(3), 386–397.

Onafowora, L. L. (2005). Teacher efficacy issues in the practice of novice teachers. *Educational Research Quarterly*, *28*(4), 34–43.

Ramsden, P. (2003). *Learning to Teach in Higher Education*. Routledge.

Stiggins, R. J. (1994). *Student-Centered Classroom Assessment*. Merrill.

Stiggins, R. J. (2010). Essential formative assessment competencies for teachers and school leaders. In H. Andrade & G. J. Cizek (Eds.), *Handbook of formative assessment* (pp. 233–250). Routledge. https://doi.org/10.4324/9780203874851-16

Stronge, J. H. (2018). *Qualities of Effective Teachers*. ASCD.

Tikly, L., Joubert, M., Barrett, A. M., Bainton, D., Cameron, L., & Doyle, H. (2018). *Supporting secondary school STEM education for sustainable development in Africa* (#05/2018; 05).

Tsafe, A. K. (2015). Influence of MDGs capacity building workshop on pupils' performance in learning Mathematics in Zamfara State, Nigeria. *Research on Humanities and Social Sciences*, *5*(12), 143–148.

Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, *23*(6), 944–956. https://doi.org/10.1016/j.tate.2006.05.003

Tuchman, E., & Isaacs, J. (2011). The influence of formal and informal formative pre-service experiences on teacher self-efficacy. *Educational Psychology*, *31*(4), 413–433. https://doi.org/10.1080/01443410.2011.560656

Wood, R., & Ashfield, J. (2008). The use of the interactive whiteboard for creative teaching and learning in literacy and mathematics: a case study. *British Journal of Educational Technology*, *39*(1), 84–96. https://doi.org/10.1111/j.1467-8535.2007.00699.x

Zee, M., & Koomen, H. M. Y. (2016). Teacher Self-Efficacy and Its Effects on Classroom Processes, Student Academic Adjustment, and Teacher Well-Being. *Review of Educational Research*, *86*(4), 981–1015. https://doi.org/10.3102/0034654315626801

Zuzovsky, R. (2009). Teachers' qualifications and their impact on student achievement: Findings from TIMSS 2003 data for Israel. In P. Wagemaker (Ed.), *IERI Monograph Series: Issues and Methodologies in Large-Scale Assessments* (Vol. 2, pp. 37–62). IEA-ETS Research Institute.