

# TEACHER QUALIFICATION AND STUDENT ACHIEVEMENT IN JAMAICAN HIGH SCHOOLS IN CSEC ENGLISH A AND MATHEMATICS

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## Abstract

In this study we examined effect of teacher quality on students' performance in the Caribbean Examination Council' (CXC), exit examination in the Caribbean Secondary Education Certificate (CSEC) in 167 secondary school mathematics and English Language departments. As the main core subjects for students exiting secondary school at grade eleven, the performance of Jamaican students lag behind that of their counterparts in rest the Commonwealth Caribbean. Among the factors considered to the inhibiting of students' performance is teaching and teacher quality. This study examines the influence of teacher quality on student's achievement in mathematics and English Language.

The study employed the general linear model (GLM) analysis to provide insight of the likely influence of the independent variables on the dependent variable, CSEC mathematics and English Language GPA (GPAM and GPAE). The independent variable teacher quality was conceived of as a multi-dimensional variable that include, the number of teachers in the department (ND); the teacher qualification in the subject area, a quality index (QI) was created based on teachers' level of qualification (Diploma, Bachelors, Masters); and teachers' experience, which was defined as two-fold – years teaching the subject in their current department (TC), and overall years teaching the subject (TO).

Using data from the Ministry of Education (MOE) Teachers' Census 2011 to determine teachers' qualification, a Quality Index (QI) based on teachers' qualification was developed and 1737 teachers of English A and the 1359 teachers of Mathematics in the 167 secondary schools identified. The QI ranged from a low of zero if the teacher holds no qualification to teach the content of the subject, to a high of 5 if fully qualified with a minimum of a bachelor's degree and a teacher's diploma (trained graduate). Qualifications among teachers of English Language were much higher than teachers of mathematics. Each department was rated based on their average English Language and mathematics GPA.

We found no significant relationship between the average English Language GPA for the departments and the number of teachers in the departments ( $N= 162$ ,  $M= 11$ ;  $SD=4.2$ ],  $t=.244$ ;  $p=.807$ ;  $\text{partial } \eta^2 = 0$ ). In contrast, significant relationships were found between the English GPA and, i) average years teaching English Language in the department ( $N= 162$ ,  $M=10$ ;  $SD=4$ ;  $t=-2.64$ ;  $p=.009$ ; 95% CI (-.123, -.018),  $\text{partial } \eta^2 = 0.042$ ; ii) average years teaching English Language ( $N= 162$ ,  $M=14$ ;  $SD=4.2$ ]  $t=2.1$ ;  $p=.037$ ; 95% CI (.003, .096),  $\text{partial } \eta^2 = .027$ ; The most significant relationship observed was between the GPA and the quality index (QI), ( $N= 162$ ,  $M= 3$ ;  $SD=.842$ ],  $t=6.5$ ;  $p=.000$ ; 95% CI (.323 to .604),  $\text{partial } \eta^2 = .212$ .

Similar to the GPA for English Language, there was no significant relationship between the mathematics GPA and the number of teachers of mathematics in the departments. Teachers' experience in their current department was significant ( $N= 164$ ,  $M=10$ ;  $SD=.3.8$ ),  $t=-2.4$ ,  $p=.019$ ; 95% CI (-.108, -0.010),  $\text{partial } \eta^2 .035$ ; However, teachers' years of experience teaching mathematics was shown to be statistically insignificant or not likely to have an effect on students' performance. The QI was shown to be the most significant variable influencing students' mathematics performance ( $N=164$ ,  $M=4$ ;  $SD=.845$ ),  $t=4.6$ ;  $p=.000$ ; 95% CI: .191 to .478),  $\text{partial } \eta^2 =.11$ .

For both mathematics and English Language, the most significant variables influencing students' performance were teacher qualification and the years of teaching in the department. With more than a two-thirds of the teachers in both areas not suitably qualified to teach these subjects, the results show that the effect size in the teaching of English

Language has a larger impact on student performance compared to mathematics. We contend that while qualifications in English Language might be sufficient to prepare teachers to deliver the curriculum, in the case of mathematics, qualifications only are not sufficient, and that these variables are not captured in the QI. Further research is required to understand what variables are critical, we also need to understand school effects on performance in these two core subjects. The current study provides a basis for the Ministry of Education to examine teachers' qualifications and competencies through its policy on pre and in-service training, tenure, and hiring. In addition, the study points to urgent need to fast tracking the introduction of the licensing of teachers to ensure that the best qualified teachers are employed and retained in these two core areas.