



Original Article

Influence of Teacher Retention Management Practices on the Educational Outcome of High School Students

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10 May 2022 There is a growing global crisis with teacher retention, where there is extremely high teacher turnover/ low teacher retention in most high schools. This article makes significant advancements in educational management and planning by assessing the relationship between teacher retention and educational outcomes worldwide. The educational outcome comprises students' test scores, transition rates, and cohort wastages. On the other hand, teacher retention is classified into annual teacher retention, specific subject teacher retention, Course duration teacher retention, and administrative teacher retention. The majority of the sources and data gathered indicate that low teacher retention/high turnover results in low educational outcomes. The specific subject teacher retention and annual teacher retention have the most adverse impacts, while the course duration and administrative teacher retention have a mild impact on educational outcomes.

Keywords:
Educational outcome, Teacher Efficacy, Teacher Retention, Teacher Turnover Rate.

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INTRODUCTION

Teacher Retention Management

Teacher retention is defined by Casely-Hayford et al. (2022), as keeping qualified teachers in the profession and in same work station. The study of teacher retention draws its basis from the prevailing association of the success of any organization with the employee's behaviour and job satisfaction. All the foundation for a higher emphasis on analysing employee retention emerges from the long-term attempts by educational managers to offer a relevant explanation of the links between the employees and the success of organizations (Albuquerque et al., 2016). Teacher retention and turnover are not only a Kenyan problem but a developing worldwide matter of concern. In the United States of America (USA), sixteen percent of public-school teachers in the USA are reported to move out of their current stations to others or secure better jobs (Desiree &

Linda, 2017). Teacher turnover is huge to the lowest because of teacher attrition, desertion, job terminations, leavers, mass transfers, and consistent transfers by individuals upon attaining minimum age.

The public teaching sector of many countries is grappling more with staff retention as low as one year and below. Professor Richard Ingersoll of the University of Pennsylvania Graduate School of Education conducted research seeking to establish the changes in education between 1987 and 2016 and made some alarming observations. Based on the 2015-2016 data, the professor observed that 44% of the educators quit the profession in less than five years of practice. Between 1987 and 1988, the most common teacher had 15 years' experience (Ingersoll et al., 2021). However, massive changes have occurred in the experience period for most common teachers across the years, as in the table below.

Table 1: Experience Period for Most Common Teachers Across the Years

Period	Service duration of the most common teacher (years)
1987-1988	15
2007-2008	2
2011-2012	5
2015-2016	3

Source: (Ingersoll et al., 2021).

The statistics indicate that most in-service teachers have experience averaging below three years. Because of this, there is a growing interest in establishing how uniquely developing annual retention could impact the educational outcome.

The situation of Teacher retention in England is no better. 42,830 full-time equivalents (FTE) qualified teachers exited the state-funded sector in twelve months, stretching to November 2017 (Foster, 2018). The loss is similar to that in 2016 and 2015, translating to a 9.9% wastage rate. The rate is an escalation from the 9.2% recorded in 2011 (Foster, 2018). There is a higher 400 teacher exit than enrolment based on prevailing circumstances (Foster, 2018). Therefore, teacher retention is an alarming trend in the education sector, hitting the world. Teacher retention in Kenya is also massively affected by the teachers who willingly or by natural attrition exit service. Kenya records obtained from

the teachers' service commission (TSC) indicate that an average of 44 teachers exit the service daily (Nyaundi, 2019). The current statistics are alarming, revealing that TSC lost 8,018 teachers between June 2018 and January 2019. An implication is that every month, TSC lost about 1,336 teachers. Although the TSC Commissioner indicted that teachers who exit service are replaced on a routine basis as it is the norm, the effect is impulsive, especially on the learner's side. In this line, Kenyan primary school head Secretary-general David Mavuta indicated a massive loss of the best skills as those who exit have the training experience and expertise in DLP and CBC (Nyaundi, 2019). Globally, the number of teachers seeking to exit the teaching service stands at 45 %, according to reports for 123 countries from the Education International (EI) Conference hosted in Nairobi in 2015 (Oduor, 2015). In Kenya, nearly 129,600 teachers out of the total 288,000 show interest in exiting the service because of the poor

working conditions, among other factors. The 45% concern those seeking their way out of the profession. If those seeking transfers are included, Kenya has an unusually low retention rate (Oduor, 2015).

Educational Outcome

Educational outcome entails the quality and quantity of students who go through a given education system in a country. Quality of students is often a measure of the academic grades achieved, while quantity measures the number of students who satisfactorily completed an academic program (Bagrova, Kruchinin, & Nazarenko, 2018). Furthermore, Educational outcome is a measure of all the skills, knowledge, and behaviours acquired during the learning process (UNESCO, 2022). Therefore, it can be concluded that an excellent educational outcome is simply a measure of the high completion rates, quality of academic certificates achieved, and low cohort wastages.

Factors Affecting Educational Outcomes Across the World

Educational outcomes of students are affected by many factors within and outside the school. According to Kapur (2018), the educational outcome is determined by; the attitude of the students, school resources, leadership aspects, skills and abilities of the teachers, classroom environment, role of parents, social circle, psychological and health-related factors, student's motivation, approachability and professionalism, time management, and home environment. Regarding the same, Sakız (2015) asserts that perceived teacher affective support (PTAS), perceived teacher mastery goal orientation (PTMGO), sense of belonging, academic emotions, academic self-efficacy, and behavioural engagement affect educational outcomes. Assuming neutral ground, most factors by Kapur (2018) and Sakız (2015) are teacher-related factors, and only a few are school factors, home, and environmental factors.

There is a consensus view that teacher attitude factors like regular teacher absence, lateness from school, teacher-student interpersonal relationship,

and instructional procedures affect the student's educational outcome (Alshammari et al., 2017). Additionally, Alshammari et al. (2017) reveal that teacher factors, Student Factors, and School-Related Factors affect the educational outcome at Grand Mean values of 4.16, 3.85, and 3.54 consecutively. Further results from Waseka et al., (2016) shows significance ($r = .546$) between teacher factors and education outcome at ($P < .05$). Again, teacher-related factors' role in educational outcomes seems superior to other factors determining educational outcomes. The teacher's influence and school factors seem to be domineering in determining educational outcomes. Hence, very critical to consider when the intention is to improve the educational outcome. Also, effective teaching is highly influenced by the class size, mode of course delivery, and instructors' experience (Cho & Baek, 2019). The instructor's experience and mode of course delivery are teacher retention factors. Therefore, this research explores the teacher retention aspects, which seem to matter more regarding educational outcomes.

METHODOLOGY AND DATA ANALYSIS

The research adopts a descriptive study design, where sampling of secondary sources and analysis and report of previous research is made to give qualitative data. The reports from the various previous researches are compared under themes created before concrete conclusions about the variables.

FINDINGS FROM RESEARCH

Educational Outcomes as Influenced by Annual Teacher Retention

Annual teacher retention studies the impacts of having the same teacher at a specific grade level versus having multiple teachers in the same grade. Student-teacher demographic characteristics are crucial in the investigation of the annual teacher retentions. Students who spend more extended time with similar teachers have higher educational outcome achievements (Hill & Jones, 2018). Furthermore, the findings from the study on fourth and fifth grades in the USA by Hill & Jones (2018) reported in the table below ascertain the same.

Table 2: Fourth and Fifth grades USA Student-teacher Demographic Characteristics

Repeat student-teacher effect	Result without control	Result with school fixed effect	Results with teacher fixed effect	Result with student fixed effect	Result with both teacher and student fixed effect	Result with the teacher, students, and school fixed effect
	0.123 (***0.015)	0.149 (***0.011)	0.129 (***0.006)	0.036 (***0.005)	0.024 (***0.004)	0.021 (***0.004)
Fixed effect of the school	No	Yes	No	No	No	Yes
Fixed effect of the teacher	No	No	Yes	No	Yes	Yes
Fixed effect of the student	No	No	No	Yes	Yes	Yes
Number of observations	5,122,520	5,122,520	5,122,520	5,122,520	4,689,819	4,689,800
Regression squared	0.000	0.114	0.181	0.895	0.902	0.903

Source: (Hill & Jones, 2018).

A continuous match between students and teachers results in higher performances at 0.123 standard deviations at the end of grades four and five than the other students with multiple teachers during the same grade. Furthermore, the results show that the schools with multiple teachers that teach different grades over the years perform better than others, given that all have more flexible administrations. Additionally, the student with the same teacher per grade scores higher than the rest by the difference of 0.024 standard deviations in the rematch test, as seen in column five of the table. The results are more convincing that the same students having the same teachers in a grade tend to score higher than the rest.

Another study by Kini and Podolsky (2016), reveals that retaining the same teacher in a previous subject area, grade level, or district has a higher output effect than the other teachers with no experience in the grade. In a review of a study in North Carolina dated 2007–2011 on, 1.2 million middle school students revealed an excellent return from the teacher’s experience but a higher return when the teacher taught the same grade as previously (Kini & Podolsky, 2016). On the other hand, an investigation of the impacts of the within- and end-of-year teacher turnover on the student’s achievements in the elementary and middle school by Henry and Redding (2018) suggested that there

is indeed an adverse impact on the educational outcome. Grade-level teacher turnover negatively affects English Language Arts (ELA) achievement in elementary and middle schools in one year. Loss of all teachers for students of given grade in elementary schools results in a reduction in performance by an average of 0.071 standard deviations (Henry & Redding, 2018). The effect is more adverse in mathematics since it reduces performance by 0.089 standard deviations. A similar impact is felt on the ELA achievement for the middle school. The overall impact on ELA achievement is 0.045 standard deviation, while it is as high as 0.065 standard deviations (Henry & Redding, 2018).

In a study reported by Redding (2018), 32 to 72 days of instruction in a year are lost when a teacher exits service. The number of days lost translates to a sixth and almost half of the school year. A decade’s study on 1.1 million New York elementary school students reveals that learners in grades experiencing high turnover rates scored poorly in ELA and math. The research further indicates that through low turnover/ High teacher retention, performance in math can increase by 2-4% (Redding, 2018). These findings seem to be in line with the advocacy by Grissom and Bartanen (2018), that turnovers in the mid-year alter the pattern in the learning experience in various subjects.

Also, earlier research shows that a higher annual turnover of 10% in specific grades results in a 0.005 standard deviation reduction in the reading scores and a 0.009 standard deviation in the math subject (Sorensen & Ladd, 2020, pp. 13). From the findings, it can be concluded that the longer the teacher teaches the same class and the same subject, the higher the students' performance. Retaining the same teacher for an academic year is more crucial to the overall learner performance.

Assuming neutral grounds, most studies suggest that annual teacher retention impacts the educational outcome. Therefore, it allows for the census view that retaining teachers in class in the same academic year will positively impact the educational outcome.

Educational Outcomes as Influenced by Specific Subject Teacher Retention

The aspect of teacher retention does have specific impacts on educational outcomes in given subjects. A decade's researches reveal that classroom-level factors are more crucial in determining the student results than the school-level factors (Toropova et al., 2019). Specific Subject teacher retention assesses the impacts of a teacher maintained to teach the specific subject(s) for the given course duration versus varying the subject teachers during the various grades of the course. Specific subject teacher retention matters because it is a crucial area for educational managers and planners who mandate policy formulation and curriculum implementation design in their schools. Despite its prominence in management, limited research has been conducted. However, from the few studies, there is an impact on tests scores of all subjects resulting from the teacher fixed effects.

While pursuing the effect of turnover on student performance, the research by Sorensen & Ladd (2020) sought to establish the specific effects on math and reading subjects. A turnover increase of 10% translates to a reduction of 0.007 standard deviations in reading performance and a 0.013 standard deviation in Math subjects, all done at a significance level of 0.01 (Sorensen & Ladd, 2020). The results were confirmation that there is indeed an adverse effect on student outcomes caused by high

turnover. The results, however, were limited to three years of turnover in specific subjects.

Nonetheless, another study by Toropova et al., (2019) reveals that the subject-and grade-specific experience determines a teacher's knowledge. A teacher's experience of 19 years increased the student achievement in Mathematics with a linear coefficient of 1.93 constantly, which dropped drastically with a coefficient effect of $-.05$ after 19 years (Toropova et al., 2019). The results imply that as teachers gained experience, the performance in mathematics by their students increased until the 19th year when it started dropping—the same study linked teacher efficacy to the experience of the teachers at a standard deviation of 0.23. The study supports that teachers' efficacy increases with more years of teaching, consequently affecting educational outcomes. Therefore, it implies that retaining the more experienced teachers will positively impact the educational outcome far more than retaining the less experienced teachers.

A more recent study shows growing evidence that specific subject teacher retention levels have varied impacts on various subjects. For instance, the study by Sorensen & Ladd (2020) on the hidden cost of high teacher turnover in math and ELA classes in North Carolina between the late 1990s and 2016 reveals sufficient evidence of the effects on subjects' educational outcomes. There was an increase in teacher turnover within the period, which increased the less experienced teachers without full license and certification in their subjects. Consequently, these effects affected the students' scores in all subjects and yielded varied effects in specific subjects. For instance, the overall impact on all test scores at three-year turnover was 0.11 standard deviation ($p < .01$). When the turnover was increased by 10%, there was an improvement of 0.011 in test scores (Sorensen & Ladd, 2020). The impacts of three years of turnover are more pronounced in the math subjects. An increase in the turnover by 10% reduced performance in Math test scores by 0.013 standard deviations (Sorensen & Ladd, 2020). Similarly, increasing turnover by 10% reduces performance in reading test scores by 0.007 standard deviations (Sorensen & Ladd, 2020).

In a review of 30 studies by Podolsky, Kini, & Darling-Hammond (2019) seeking the link between

the teacher's experience and the education outcome, 28 of the studies prove a positive influence of teacher experience on student's educational outcome. The reviews associated the teacher's experience with a teacher's effectiveness and efficacy, which are fundamental determinants of the educational outcome. Also, the teacher's experience improved the learner's performance in ELA tests by 0.08 standard deviations. But for math, it raised performance by 0.18 standard deviations (Ladd and Sorensen, 2017, as cited in Podolsky, Kini, & Darling-Hammond, 2019).

Additionally, a study in Northern Carolina on 1.2 million middle school students seeking to explore the teacher experience and how it impacts test scores also yielded similar findings. The study also included non-cognitive measures comprising time for pleasure reading, absences, time to complete homework, and disciplinary offenses. It reveals that the teacher's experience positively impacted test scores and non-cognitive educational outcomes (Kini & Podolsky, 2016). Furthermore, it was found that as the teacher gains the experience, the lesser it is likely for their learners to miss school. A teacher's 21 years' experience reduces absenteeism by 14.5% (Kini & Podolsky, 2016). It is more critical to retain subject teachers with more teaching experience than those with limited experience. Therefore, it is extensively researched and proven that specific subject teacher retention matters more if higher educational outcomes are expected.

Course Duration Teacher Retention and How it Impacts Educational Outcome

Course-duration teacher retention concerns the having same teacher teaching same subjects during the timeframe for course pursued by a student. A high teacher turnover/low teacher retention during the students' course can affect the student's educational outcome negatively or positively. According to Adnot et al. (2016), most teachers who leave are ineffective teachers that negatively influence the educational outcome. For such teachers, a positive deviation of 20 percent of a standard deviation in education outcome in math subjects is expected upon leaving. This outcome translates to 35% to 65% of the academic years of learning.

On the other hand, when the exiting teachers are the most effective, a negative impact of 14 percent of a standard deviation is expected on the learners' performances. The negative deviation can imply a decrease between 35% and 55% of a year's learning. The study seems to suggest a double effect on students when teachers leave. The findings show that there is a need to retain only the most effective teachers.

According to Dayna Jean et al. (2017), teacher turnover/ retention affects instruction quality by impacting individual teacher quality and creating curriculum planning and implementation challenges. New teachers' massive improvements in the instruction process and procedures are more pronounced during the first and the second year of service. A peak in service is attained after five years of teaching since recruitment. Although other researchers suggest that some teachers reach their peak between five and ten years, some show improvements in the 20th year of service (Dayna Jean et al., 2017). Nonetheless, professional teacher improvement continues as long as the teacher is in active service.

Moreover, low retention/ high turnover is more associated with inexperienced teachers, who ultimately result in low educational outcomes in their subjects of instruction. The same applies to the teachers experienced but in new environments. They would still be ineffective as they readjust according to the new working climate. A study on schools in Alaska in 2013 showed that the student's proficiency in reading in Alaska, the state with the highest teacher turnover, was 46.9%, while the student's proficiency in reading in the five states with the lowest teacher turnover was 85.8% (Diane et al., 2017). The correlation is highly compelling and raises the intuition to establish the extent of these effects on the other subjects, including mathematics, sciences, languages, humanities, and applied disciplines.

Another study by Donley et al. (2019) shows that high teacher turnover leads to teacher shortages and inevitabilities, lower student learning and achievement, poor school organization, and higher financial costs, which impact negatively on educational outcomes. At the same time, a study by Adnot et al. (2016) shows that positive and negative

impacts are expected when teachers leave, resulting in low teacher retention. Assuming neutral grounds, course duration teacher's turnover/ retention negatively affects students' performances.

Based on the prevailing evidence, there are all reasons to argue that teacher turnover (low retention) affects the student's mean grades. But mean grades are the basis upon which transition to subsequent levels of studies is established. For instance, in Kenya, students who achieve a mean grade above C+ are admitted to the university. The rest are admitted to the middle colleges and technical institutions for diplomas and certificate courses. In contrast, the students who score Es can only be admitted to certificate courses with low cognitive skills (KUCCPS, 2022). Based on the 2020 Kenya Certificate of secondary education (KCSE), 143,140 students out of 747,161 candidates scored a mean grade of scored C+ and above. The statistics imply a low transition rate to universities and a higher transition to middle colleges. However, the students who scored Es were 28,046 (Ambani, 2021). But it is in the exact count, TSC loses over 1,336 teachers per month. It is plausible that the low transition rate to higher learning institutions goes in line with the low teacher retention.

Furthermore, students who sat for the Kenya certificate of primary education (KCPE) in 2017 in Kenya were 993,718 students (Ngechu, 2017). When the same cohort sat for KCSE four years later, only 747,161 candidates were available for the examination. Assuming consensus position, Kenya recorded cohort wastage of 24.8116%. During the same period, the teacher's service commission recorded a high exit rate for the teachers. It is probable that the higher the teacher exit rate, the higher the cohort wastages.

Administrative Teacher Retention and the Impact on Educational Outcome.

Administrative teachers assume managerial and leadership purposes in schools in various capacities, especially the school principals. Donley et al. (2019) assert that the schools and districts of Alaska are bound to continuous hiring amid high turnover/ low retention. Yet, they are constantly hit with perpetual instability that restructures the school climate because of the increasing impossibility of

creating a stable community. The instability is mainly generated by the previous teachers relinquishing their former positions and seasoned teachers compelled to mentor the new teachers again. The mentors suffer burnout other than taking the most precious time meant for teaching. Also, the collaboration and collegial relationships need a long time to be created, a scenario that destroys the school's climate.

The worst happens when the principals of the schools are transferred. Research in Alaska USA shows that the impact of administrators affects both the students and the school as a whole. Within Alaska, with the worst teacher retention/high turnover of 16% to 12%, 72% of Alaska school districts experience Superintendent Turnover (Donley et al. 2019). School climates are consequently affected, leading to deficient performance aforementioned.

Another study by Mills (2017) shows that 90% of the variance in proficiency tests for mathematics and languages links the Principal Longevity in high schools in New Jersey USA and Continuity on Student Achievement between 2011-2012. The study shows a variation of 13.1% in the language arts portion because the principals stay in their schools. That means a transfer in the principals results in 13.1% lower language arts performance. The impact of transferring a principal is more adverse on the performance in mathematics. From the results, 14.9% variation is witnessed due to the principal's longevity in the school. These results were far beyond the expected threshold; hence, a further refined analysis included other variables. Again, a loss of a principal could suddenly translate to a reduction of performance in mathematics by about 14.9%. The inclusion of district experience overall experience in education was included in the variation inflation factor (VIF). The result showed that a variation of 3.0% is experienced in student performances in arts. In comparison, 3.5% variation in mathematics subject are witnessed if the principals were retained in the New Jersey high schools. Earlier findings show significant impacts, whereas later findings show mild impacts of principals' longevity in the schools on students' performance.

However, earlier studies still confirm that the principal's turnover/ longevity/ retention impacts the students' achievement (Donley, Keyworth, Detrich, & States, 2019; Mills, 2017). The study by Institute for Education and Social Policy at New York University in 2009 revealed a decrease in the graduation rates at a significance of (Beta = -5.52, $p < 0.10$) (Mills, 2017). A later study by Center for Applied Research and Educational Improvement (CAREI) shows that a 24% variation in student achievements is witnessed due to the principal's turnover (Mills, 2017). The three studies seem to lend concrete support to the influence of principal retention on students' performances and graduation rates.

SUMMARY OF THE FINDINGS

From the results, the impacts of low teacher retention comprise the following:

Financial Constraints to Schools

Donley et al. (2019) research indicates that it costs more to replace the vacancy left by the teachers who exit service or leave their schools. The financial strain on school resources affects the resources meant for other functions like motivation and provision of teaching resources which in the long run affects the educational outcome.

High Cohort Wastages

According to the information from Ambani (2021) and Ngechu (2017), a high cohort wastage of 24.8116% in Kenya during the same period when the Kenya teacher commission was indicating that over 44 teachers were exiting serving daily and nearly 129,600 teachers out of the total 288,000 seeking to move out of teaching service according to report from Education International (EI) Conference hosted in Nairobi in 2015.

Low Transition Rate

Also, Ambani (2021) indicates a low transition rate of 19.16% to the university by Kenya students in the same period when teacher retention was extremely low. Therefore, when teacher retention is lowered, there will be an extremely low transition to the next grades or even levels of study.

Low Teacher Efficacy

According to Toropova et al. (2019), teachers' self-efficacy increases with more teaching time in the same environment. It can be concluded that the teacher's self-efficacy increases with more adaptability to the environment. Teachers' self-efficacy is essential and affects the student's outcome, as indicated by Kapur (2018) and Alshammari et al. (2017).

Change in School Climate

Donley et al. (2019) indicates that when the superintendent principals are transferred from schools, the climate of the school changes with the new managers. Due to the change students and teachers takes time to adapt. But in most cases, people tend to resist change; therefore, instability will be experienced for some time. That instability takes away most precious time for teaching and learning, affecting educational outcomes. Also, some teachers and students may seek transfer from their current institutions due to the transfers causing lower student outcomes.

Low Student Test Scores

The majority of the research indicates that the student's test scores majorly affect the educational outcome when the teacher retention is low. Kini and Podolsky, 2016); Hill and Jones (2018); Henry and Redding (2018), and more source have a census view that students test score outcome drops with the low teacher retention or rather increase in teacher turnover.

Burn Out of Mentors

There is a need for mentorship for every new teacher's recruitment before the teachers become fully effective in performing some school functions. But when the fully mentored teachers keep exiting and new teachers are brought in, the mentors, mostly administrators, suffer burnout and give up on the mentorship programs, as indicated by Donley et al. (2019), which eventually affects educational outcomes.

Loss of Teaching Time

According to Redding (2018), 32 to 72 days of instruction in a year are lost when a teacher exits service. Also, Toropova et al. (2019) indicates that a teacher's self-efficacy increases the teacher's teaching time. Therefore, low retention, which overly lowers the teacher's efficacy and teaching time, will lower the educational outcomes.

CONCLUSION

Based on the prevailing research done, there is enough evidence to support the claim that teacher retention has an adverse impact on educational outcomes. The most affected education outcome is the students achieved scores and mean grades. However, cohort wastages and transition rates have limited research, pointing towards negative influences. Also, all the research indicates that subject-specific retention, administrative teacher retention, and annual teacher retentions negatively impact educational outcomes. However, annual teacher retention is the most impacting type on the educational outcomes, followed by subject-specific retention.

Recommendations

Teacher retention should aim for any educational manager in a learning institution. The strategies adopted should ensure that students have the same teacher for an academic year. It is both beneficial to the teachers and the students. But most importantly, it impacts the overall educational outcome.

More research should be done to investigate the specific teacher retention aspects of cohort wastes and transition rates to help support the limited existing research.

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