TEACHER-STUDENT RELATIONSHIP AND STUDENT LEARNING OUTCOMES IN SENIOR PUBLIC SECONDARY SCHOOLS IN GHANA

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Abstract:
The influence of teaching quality on student outcomes in Ghanaian public senior high schools has dominated education discourse in recent past. However, few studies have attempted to establish how teacher-student relationship influences their classroom engagement and learning outcomes. This study attempted to address this gap by utilizing a sample of 220 students and 160 teachers to establish the perception of teachers concerning their relationship with students and how this perception of teacher-student relationship influences student learning outcomes. The study established that teachers with a minimal conflicting relationship with students experienced positive learning outcomes. The study further found that teachers who are professionally close with their students and have made their students professionally dependent on them experienced an increase in their level of student behavioural and instructional engagement. This study recommends that teachers must inculcate a positive teacher-student relationship which will improve both school and classroom learning environment as well as student academic achievement.

Keywords: teacher-student relationship, learning outcomes, senior high schools

1. Introduction

Education is an integral part of human development. Where an effective learning environment is provided, a positive educational outcome is achievable. At the centre stage of all educational systems are students and teachers who form a learning relationship in a learning environment to produce desired learning outcomes (Verger, Altinyelken, & Novelli, 2018). Students form and maintain relations with peers and teachers in school, and the former has been demonstrated to be related to learning outcomes. While factors influencing academic performance are multifaceted, recent literature alludes that teacher quality and teaching quality influence learning outcomes

(Verger et al., 2018). Historically, self-determination theory (Reeve, Deci, & Ryan, 2004) has been used to connect teacher-student interactions with students' achievement. Such is further envisioned in the UNICEF guideline on Child-Friendly Schools (CFS) which envisages a school environment that works for all students and enables them to achieve their full potential (Osher, Kelly, Tolani-Brown, Shors, & Chen, 2009). It is against this backdrop that scholarly studies on education process research are paying much attention to the nature of the teacher-student relationship (TSR).

Evidence on learning and school environment intimates that learning occurs within a school environment as well as outside school environment (Lorsbach & Jinks, 1999). As per Wang and Holcombe (2010), the school environment encompasses the physical, social and cultural aspects of the school. However, Ponomareva and Khuziakhmetov (2017), argue that the school environment is broadly categorised into the classroom environment and out-of-class but within the school environment. As per Ponomareva and Khuziakhmetov (2017), classroom environment entails activities revolving round the nature of the relationship among learners, between learners and the teacher as well as the physical environment within the classroom. These aspects range from the sitting space, nature of peers, proportional of students from low social, economic status, students' engagement, students' level of motivation, etc. Empirical evidence suggests that school environment (both in-class and out of class) has a significant impact on students' academic success, as well as their social and psychological wellbeing (Zullig, Huebner, & Patton, 2011).

Schools with good learning environment cater for student specific learning needs. These learning needs range from conducive teaching and learning environment within the class, minimal indiscipline issues within the class, teaching and learning practices which promote student positive psychological satisfaction to the school, learning engagement as well as self-efficacy. Ghana provides three levels of education; primary education, secondary education, and University/Tertiary education levels. Secondary education is provided in Senior High Schools, both private and public. Such schools provide curriculums composed of core subjects and elective subjects (Ghana Education Strategic Plan, 2018). Within the secondary education curriculum, schools are classified into boarding schools and day schools. These schools are further ranked into various categories based on the population of their students as well as general academic performance. Based on such a classification, there is within-schools and within-classroom as well as out-of-classroom variance in the learning environment (Amponsah, Kwesi, & Ernest, 2019; Mensah, 2017).

Education economists argue that the expectation of the learning process is the realisation of the planned learning outcomes. These learning outcomes range from the targeted academic achievement, value addition from previous performance, retention and transition of students from one level to the other. Such outcomes are achievable in a friendly school environment. One of the factors attributable to the achievement of the student-friendly school environment is the teacher-student relationship (Schweisfurth, 2015). While most studies have concentrated on the student-teacher relationship at lower

levels of education, this study looks at the influence of student-teacher relationships on students' academic performance in Public Senior High Schools in Ghana.

2. Literature Review

The literature on the variables of the teacher-student relationship and academic performance revolves around how teacher-student relationships influence school classroom learning environment, how student level of discipline influences their relationships with teachers and how a combination of the two alongside other student level and teacher level, as well as classroom level factors, influences student learning outcomes.

2.1 School classroom environment and teacher-student relationships

The role of education in transforming lives is hinged on the assumption that students are taught by teachers who expect success and therefore teach curricula necessary for progress (Schleicher & Zoido, 2016). Such curricula are implemented in the context of an enabling school environment. An enabling school environment is the extent to which school settings and student-teacher engagement promote student expectations, level of self-belief and motivation to learn even on their own. This may encompass the physical learning ambience, classroom academic settings, physical and mental health support from teachers and peers as well as fairness in the administration of disciplinary procedures (Palmer, 2019). School environment thus implies the total whole of educational institutions including social, economic and physical fabrics within which the vision, standards and aim of the school are hinged. This study, therefore, argues that teacher-student relationships are the sum of the activities which characterise in-class, and out of class teacher-student interactions.

The academic environment in the context of this study can be defined as the extent to which a school best prepares students for their future professional life and contributes towards their personal development, psychosomatic and social well-being. A study by Pianta, Hamre, and Allen (2012) alludes that a good school environment increases student sense of belonging and ownership of the school which positively influences positive teacher-student relationship. The study argues that teachers with good mastery of pedagogical content, and level of classroom instructional preparedness increases student level of learning engagement. Learning engagement that is fostered by positive teacher-student relationship reflects students' cognitive, emotional, behavioural, and motivational states and capacities but is conditioned in part on interpersonal relationships as activators and organisers of these states and capacities in the service of some larger developmental task or aim (Ponomareva & Khuziakhmetov, 2017). From this perspective, engagement is best understood by understanding relationships and their behavioural expression in interpersonal interactions in the classroom through observation of exchanges and interpretation of their value and meaning about fostering the opportunity to learn and develop.

2.2 Student perception of the teacher-student relationship

Perceptions are beliefs and opinion people hold in explaining phenomena based on a subjective view of how things are (Wyer Jr & Carlston, 2018). In the school context, both students and teachers form beliefs and opinions about each other. Such beliefs and perceptions may form institutional cultures which have a bearing on teacher-student relationships and ultimate learning outcomes. Social motivational theories (Khan et al., 2018) provide that autonomy, competence and relatedness are basic psychological needs of an individual in the learning process. As such, when students view their relationship with teachers as positive and close, their interpersonal ability and perceived competence may be promoted and established. Thus, Students base their perceptions on the established learning environment. According to Blegur (2019), self-perception provide motivation for students to strive to achieve their academic endeavours. A study conducted by Bartholomew et al. (2018) revealed that students are more likely to seek assistance when they perceive teachers as supportive and available.

Another study conducted by Harper, Weston, and Seymour (2019) on effective teacher-student relationship for STEM teaching established that students' perceived teacher quality arises from their level of confidence on the teacher as being instrumental in their learning. The study revealed that unavailable and demotivated teachers create a feeling of learners' disconnection from the learning process and expected outcomes. Their study concludes that positive student perceptions must be rooted in the context of teacher-student engagement, interactions and expectations. This underscores the goals of educational reforms which historically have focused on student-centred pedagogical approaches for building positive student perceptions for better learning outcomes (Schneider, Krajcik, & Marx, 2013). A study conducted by Blegur (2019) argues that students' educational perceptions of their classroom experiences and experiences with their teachers greatly influenced their academic performance and drop out. Such findings demonstrate that student perceived student-teacher relationship plays a key role in their intrinsic value and decision making.

2.3 Student-teacher relationship and at-risk students

Student success, as measured by learning outcomes, has become a mirage in most educational settings (Bell, Bayliss, Glauert, Harrison, & Ohan, 2019). This presents a dichotomy pitting successful and at-risk students in the opposite poles. At-risk students are those unable to experience success in school and are, therefore, potential (Palmer, 2019). Such students normally experience low academic achievements characterised by low self-esteem. Multiple factors, including socio-economic, developmental and societal structures, may contribute to this. At-risk students require more support from the teachers. Teachers must develop positive attitude towards them for better educational outcome (Moeyaert, Klingbeil, Rodabaugh, & Turan, 2019). The centrality of the teacher attitude in the case of at-risk students is emphasised in student-teacher relationship in effective teachers, caring teachers and cultural sensitivity teaching as important components of teacher's expectations (Verger et al., 2018). Studies

conducted in integrated schools in developing countries indicate a strained relationship between teachers and students living with disabilities (Khan et al., 2018).

Other students with learning challenges have also not been adequately cared for in the student-teacher relationship equation. Learning difficulties and inability to be at par with fast learners have been misconstrued in the learning process as a lack of discipline and thus punishable by high handedness schoolmasters. Such strains student-teacher relationships in that context (Bartholomew et al., 2018). A positive school environment presupposes efforts by the school system to develop structures to ensure that at-risk students, on the other hand, also develop positive attitude towards their teachers. Such teachers should be viewed by the students as caring and ready to assist them whenever they need assistance (Pianta et al., 2012). Other studies indicate that such relationships in the case of at-risk students go beyond the school environment to include home and society at large (Schweisfurth, 2015), limited by the scope of this study, it is imperative that such relationships outside the school environment could also be influenced by the school as a socialising agent.

2.4 Student-teacher relationship and student outcomes

Student outcome can be ascertained in two phases: the first phase involves intended goals of a learning curriculum while the second phase is the actual results that students either achieve or fail to achieve in their educational life (Panigrahi, Srivastava, & Sharma, 2018). Student transition and retention rates could be considered as the superficial indicators of student outcome. A positive teacher-student relationship created in a student-centred environment results into ideal student outcome since such environments motivates students to effectively perform tasks they find personally important and interesting (Lee, Worthington, & Wilson, 2019). Students begin to feel a sense of control when learning takes place in a warm and caring environment with supportive autonomy and self-determination (Schweisfurth, 2015). A student-teacher relationship should thus provide a respectful, caring, and positive learning environment that enhances the joy of learning. Studies indicate that good student-teacher relationship promotes meaningful interest in the academic engagement at all developmental levels (Lee et al., 2019)

A study conducted by Canales and Maldonado (2018) indicated that students with positive relationships with their teachers posted better academic outcomes. The inverse is also true according to a study conducted by André and Hastie (2018). Such findings demonstrate that when learning is interesting, challenging, fun, and relevant students put more effort in the learning process. Conceptually, motivation to learn derives thoughts and actions, which in turn stimulates efforts to learn, perform and behave (Coffey, 2013). Students' motivation to learn and receive an education drives their thoughts and actions. This motivation plays an important role in their efforts to learn, perform, and behave (Lee et al., 2019)

3. Methodology

3.1. Purpose of the study

The primary purpose of the study was to ascertain how teacher-student relationships in senior high schools in Ghana influences student academic achievement. Two specific objectives were utilised, namely:

1) To ascertain teachers' perception of their student-teacher relationships
2) To ascertain how perceived teacher-student relationship influences the level of classroom student engagement.

3.2 Measurements and Variables

This paper contained three key variables, namely: student perception of teacher-student relationships, student engagement, and student discipline.

A. Perceived teacher-student relationship

Perceived student-teacher relationship scale was measured using the scale of Pianta (2001). The instrument assesses three elements: Closeness, Conflict and Dependency, which define the behaviour patterns that characterise the relationship between teacher and student. These dimensions are consistent across child age, ethnicity, and socioeconomic status; they remain stable from kindergarten to secondary school. More precisely, they constitute a sort of conceptual map of relationship perception (Pianta, 2001). Closeness is a warm affective relationship with a teacher, capable of promoting positive attitudes toward school, open communication, involvement, and engagement. Students that display Closeness tend to use the teacher as a resource for facing and overcoming their problems; they are also more inclined to share their own emotions and experiences, especially in moments of strife/discomfort (Settanni, Longobardi, Sclavo, Fraire, & Prino, 2015).

The Conflict dimension measures the negative aspects of the relationship, such as discordant interactions and the absence of a satisfying teacher-pupil relationship. These aspects act as important stress factors for students in a school setting; student-teacher conflicts constitute a situation of tension and favour negative behaviours. Finally, the Dependency dimension measures possessive, "clingy" behaviour and subjectiveness of the child in relation with the teacher. A child that depends on a teacher in an excessive manner tends to inhibit his or her behaviours and, consequently, hesitates in exploring the class/school environment (Settanni et al., 2015). The items were measured on a 5-Likert scale of 1-strongly disagree, and 5-strongly agree in response to items testing on TSR.

B. Discipline levels

This was measured in line with the discipline scale that was adopted and modified by Emmer and Hickman (1991). The items measuring this variable were measured on a five

Likert scale of 1=strongly disagree, and 5-strongly agree. A sample of the items measuring this variable includes: 'Students in this class are quite disruptive during lessons.

C. Perceived student classroom engagement
Perceived student engagement was measured using the scale developed by Fredricks et al. (2011).

3.3 Sampling Design and Sample Size
A sample of 220 students and 160 teachers were sampled through proportionate stratified sampling to represent different categories of school in Ghana. Data collection was done using a semi-structured questionnaire. Quantitative data were analysed descriptively and inferentially.

3.4 Control variables
This study controlled for teachers years of teaching experience, teachers gender and age. Evidence on STR indicates that learners resonate well with young teachers than old teachers since they tend to perceive them as their peers. Evidence also shows a gender stereotype between female teachers and boys as well as male teachers and girls (Dee, 2007; Settanni et al., 2015).

4. Results

4.1. Item Fitness
The first objective of this study was to establish teacher perception of their teacher-student relationship within the classroom. 12 items for measuring STR were adopted from previous 28 items used by Pianta (2001) scale. The Student-Teacher Relationship Scale is a self-report instrument consisting of 28 items developed with reference to the Attachment Theory, especially the Attachment Q-set. Items are evaluated on a five-point Likert scale, ranging from 1 (definitely does not apply) to 5 (definitely applies). The final form of the scale presents three factors, identified as Conflict, Closeness, and Dependency subscales. These items are those that were relevant to the Ghanaian educational environment. The 8 item version of the STRS is rated on a five-point Likert type scale. Previous validity studies have reported sufficient internal consistency, thus validating the scale as an effective and reliable measure for the teacher's perception of the relationship with his or her pupils. Upon carrying out an exploratory Factor Analysis (EFA) on the 12 items used in the scale for this study, only 9 items loaded well.

Upon carrying out confirmatory factor analysis (CFA) with Varimax rotation, only 6 items loaded well and were adapted for data analysis. In selecting the items suitable for removal, we considered two different criteria: item fit and measurement invariance. Concerning fit statistics, items were considered for removal when they did not show sufficient compliance to the Rasch model as valued through In fit and Outfit statistics, which are the mean square fit statistics most commonly used by scholars (Smith, Rush,

Fallowfield, Velikova, & Sharpe, 2008). Regarding the items on the conflict sub-scale of TSR, none of the 10 items exhibited fit issues. Item in fit and Outfit are inside the acceptance interval (0.60–0.30), therefore none of the items had to be removed for a poor fit. For the closeness sub-scale, we used the same analysis procedure employed for the conflict subscale. The 8 items did not show any fitness issue since the in fit and Outfit were inside the acceptance interval (0.60–0.30). The same was observed with the closeness sub-scale. However, only 4 items for conflict sub-scale, 3 items for closeness, and 4 items for dependence sub-scales fitted into the Ghanaian setting and hence were adopted in the study.

The teacher demographic results are as shown in Table 1 below.

Table 1: Demographic variables of Teachers

Control variable		Percentage
Gender	Male	65.5
	Female	34.5
Age	18-30	29.8
	31-40	42.1
	41-50	24.4.
	51-60	3.8
Teaching experience	1-5	15.5
	6-10	20.5
	10-15	32.4
	15-20	20.6
	Above 20 years	11

N/B: Teacher retirement age in Ghana is 60 years, and many teachers above 20 years of teaching experience are already holding administrative duties.

The age distribution and the years of experience (see Table 1) of the sample mirror the characteristics of the population of teachers in the Ghanaian education sector. The majority of the teachers involved in the study (57%) had spent more than 18 teaching hours per week in the classroom from which the children were selected; all the teachers had worked with the class since the beginning of the school year through majority had not taught the same students for at least one year. Since the internal turn-over in senior high schools in Ghana is quite high, the propensity of retaining only teachers who have taught same learners for one year non-stop was quite hard, so we randomly included teachers who have taught such class for a minimum of one term (3 months). The results in table 1 above also indicated that majority of the teachers were of mature age implying they could be having good parenting skills. Since majority were female, this study may hypothetically report that their overall parenting skills were also good. Parenting skills are endogenous in assessing teacher-student relationship using the TSR Scale (Pianta, 2001).

4.2. Teacher perceptions concerning TSR

Having ascertained the fitness levels of three measurements of TSR, it was pertinent for the study to establish how teachers perceived their classroom relationship with students. Studies have shown that perceived teacher-student relationship influences the level of teacher-student engagement which ultimately influences academic achievement. The mean and standard deviation for their perceptions in line with the three sub-scales is as shown in Table 2 below.

Table 2: Teacher perceptions of TSR

Subscale and measurement items	Mean	SD
Conflicting		
Children in this class drains my energy	4.73	0.98
Students in this class are disruptive	3.93	0.56
Students in this class are always complaining over little things	4.29	0.97
Students in this can never learn unless pushed to do so.	3.29	0.76
Closeness		
My student and I get along well together.	6.98	1.01
My students genuinely like me.	2.37	0.87
My teacher students are appreciative of every effort I make to help them learn.	4.85	0.86
Dependency scale		
My students depend on me as their subjects	2.65	0.98
My students cannot initiate any learning without my help	1.67	0.92
I would love to change teaching class for another	2.87	0.91
Whenever they have any learning difficulty, my students will always come to seek help	1.86	0.99

From the results in Table 2 above, all the items measuring the conflict scale had a higher mean (above 4) implying that the perceived relationship between students and teachers was perceived like elements of conflict. For further analysis, all these items were put together to generate a composite variable abbreviated as 'conflict' to be used in further analysis. Items measuring the closeness dimension of TSR were also having a high mean implying that teachers felt they had a closer relationship with their students which will increase 'student freeness to approach their teachers', which minimises learning barriers. Conversely, items for the dependency dimensions of the TSR scale were having the lowest mean. This may literally imply that teachers perceived their learners as not too dependent on them which may also imply that learners are intrinsically motivated to initiate, manage and control their learning activities in the absence f the teachers. A composite variable was generated for all items for the closeness and dependency scale and used for further analysis.

4.3. Influence of perceived TSR on Student Classroom Engagement

Scholarly evidence indicates that those students are more engaged in classrooms with teachers who are not only paying keen interest to their learning needs but also demonstrating that they care for the current learning needs of their students and they are doing everything they can to help them (Marshall, 2011; Pianta et al., 2012). To establish this relationship, a composite variable was generated for 3 items measuring each

dimension of student engagement. This paper used three measures each for behavioural engagement and instructional engagement. By behavioural engagement, it entails all the activities students are engaged in which manifest key behaviours that encourage learning, while instructional engagement is the activities in which student are engaged in which maximise learning during and after an instructional process. The two dimensions of engagement were treated as outcome variable in the analytical model below.

$$Y_{ij} = B_{oij} + Con_{ij} + Cl_{ij} + dep_{ij} + TB_{ij} + \alpha$$

Where, Y_{ij} is the level of engagement of student *i in* class j as influenced by the various dimensions of TSR namely conflict (Con), closeness (Cl), and dependency (dep) while controlling for teacher background variables (TB). B_{oij} is the intercept, while α is the error associated with the estimation of student classroom engagement. Y_{ij} is measured on a continuous scale hence could be interpreted on '1 unit increase principle of regression output' interpretation. The results of the regression analysis are shown in Table 3 below.

Table 3: Teacher-student relationship and student classroom engagement

Variables /outcomes variable	Behavioral Engagement		Instructional Engagement	
	Model 1	Model II	Model I	Model II
Intercept	2.12**(.48)	2.76**(.45)	2.76**(.45)	2.45**(.48)
Age	.03**(.01)	.03**(.01)	.03**(.01)	.03** (.01)
Gender	-.08(.13)	-.14(.11)	-.14(.11)	-.07 (.14)
Education level	.01 (.11)	.01 (.11)	.02**(.01)	-.05 (.09)
Closeness		.01* (.02)		.04*(.06)
Conflict		-.03(.05)		.045(.02)
Dependency		.41 (.09)		-.28(.11)
Interaction of Classroom size* TSR	.04(.06)	.03(.05)	.03(.05)	.03(.04)
Model Deviance	558.34	548.62	542.24	298.62

4.4. Interaction between classroom size and composite value for teacher student relationship

The findings from Table 3 above indicate that the teacher's gender was negatively associated with both student behavioural engagement (β= -.14(.11)) and instructional engagement (β=.-.07 (.14)). This result indicated that the level of student behavioural engagement and instructional engagement is negative for male teachers than female teachers. These findings are partially supported by literature which alludes a gender disparity with regard to how male and female teachers manage classrooms to elicit meaningful student engagement (Peterson & Fennema, 1985). In relation to the three dimensions of student-teacher relationships (STR), the conflict dimension of TSR was negatively associated with both behavioural and instructional engagement ((β=.-.03(.05). and (β=.-. 045(.02)) respectively. These findings insinuate that when teachers perceive

their relationship with students as conflicting, such as scenario will negatively influence student behavioural and instructional engagement.

These findings concur with those of Spilt and Hughes (2015) who established that student engagement thrives well in classroom environments which are considered learner-friendly where every learner feels part and parcel of teaching and learning process. Concerning how close a teacher and student are (teacher-student professional distance), the study established that both are significantly associated to student behavioural and instructional engagement, ((β= .01(.02) and ((β= .04(.06)) respectively.

These findings imply that teachers should encourage a reasonable professional distance with their students to cultivate the spirit of friendship with their learners which will increase their level of engagement with learning. Lastly, about the dependency dimension of TSR, the study established that it was negatively associated with instructional engagement, but positively associated to behavioural engagement and instructional engagement, ((β= .41 (.09) and ((β= -.28(.11). Student-teacher dependency has been described by some educational scholars as depriving learner's ability to use enquiry-based learning thus placing them on the receiving end in the instructional process. However, with regard to behavioural engagement, increased learning behaviour engagement is higher among those learners with good teacher-student dependency (Baker, Grant, & Morlock, 2008).

5. Conclusions and Suggestions

Having established that effective teacher-student relationship as depicted by a reasonable professional distance which does not appear to create a gap between learners and teachers, little conflicting teacher-student relationships as depicted by level of student discipline during the instructional process, and some aspect of teacher-student dependency in the instructional process as being instrumental in overall student engagement, this study draws the following conclusions:

1. Teachers should always inculcate an aspect of good professional relationship with their students which will minimise gaps in teacher-student engagement. These gasps have been established to influence student learning outcomes by creating negative student attitude towards the subject and even disruptive behaviours during the instructional process.

2. Teachers with a few years of professional experience should handle small class sizes as this will increase their level of both behavioural and instructional engagement. This is because novice teachers may not have sufficient experience in dealing with disruptive students and in most cases end up suspending students from class during the instructional period making them lose from the instruction process as well as creating a conflicting future student-teacher relationship. Therefore, teachers should devise alternative punishments in cases of student disruptive behaviour during the instructional period.

3. Student behavioural and instructional engagement should be inculcated in schools by addressing key policy gaps of gender gaps in the teaching workforce. Evidence has alluded that the presence of many female teachers in primary schools has increased the participation, completion and event transition rates of the girl-child. Other evidence has indicated that female teachers may understand how to increase instructional engagement of disruptive minority students, those at-risk of dropping out, and those from lower social and economic status than their male counterparts. It therefore advisable to the policymakers to further address gender gaps in the recruitment and selection of mathematics and science teachers into various secondary schools to improve the rate of both behavioural, emotional and instructional engagement in public senior high schools in Ghana.

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