

## Effectiveness of Student-Centered Teaching Method on Students Learning Outcome; Role of Teachers' Self-Efficacy; Perception Senior High School Teachers in the Accra Metropolis

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### **Abstract**

*The main purpose of this study is to investigate the effectiveness of student-centered teaching method on students learning outcome; role of teachers' self-efficacy; perception senior high school teachers in the Accra metropolis. A close-ended questionnaire was used to collect the data for our analysis. A total of 200 questionnaires were returned and used for further analysis. IBM SPSS 25 and IBM AMOS 20 software were used to analyze the survey data. The study found that teachers moderately preferred to use collaborative, cooperative, problem-solving, activity-based, role-playing, brainstorming, field trips, projects, debate, demonstrations and simulations student-centered teaching methods in teaching students in senior high school in the Accra Metropolis. The study further found that the use of student-centered teaching produces significant benefits to students such as helps students to have in-depth understanding of subject matter; helps students to acquire inventive problem-solving skills; helps students becomes leaners of knowledge and not rote memorizers and helps students to have a higher and longer retention level. Using the SEM, it was revealed that there is a significant positive effect of student-centered teaching method on teachers' self-efficacy in the Accra metropolis.*

**Keywords:** Student-centered learning, self-efficacy, teaching methods, perception of teachers

### **1.0 Introduction**

#### **1.1 Background to the Study**

The late 18<sup>th</sup> century saw a swing in the educational practices of teaching methodology adopted by teachers in imparting knowledge from the traditional teacher-centered approaches to the modern student-centered approach which paved way for students to become actively involved in the teaching and learning process in the classroom (Muwonge, Ssenyonga, Kibedi & Schiefele, 2020). Therefore, many researchers during this era saw the need to investigate how the use of students-centered teaching method affect students' high -order thinking, self-efficacy, motivation, self-reflection and many more (Collins & O'Brien, 2003; Zimmerman & Schunk, 2001). Researcher such as (Todaro, 1992; Shah & Rehat, 2014; Khan, Muhammad & Ahmed, 2012) have posited that education should be a tool that help equip students with the requisite knowledge, skills, attitude that will make them productive in the subject matter they are taught and even the society as a whole. This can only become possible depending on the quality of the teaching being offered to students. By quality teaching pedagogy implemented, students can have the capacity to interpret issues based on their own practical experiences and own intuition. Research have revealed that it is only students centred teaching method that gives opportunity to students to not become passive receivers in class but actively engaged in their own learning and understanding (Singh, 2011). Armstrong (2011) ignited that teacher-centred teaching method where the teacher directs the teaching and learning process and students becoming receptive of knowledge suppressed student's responsibility while the teacher becomes the centre of learning. Moving away from the inherent nature of the traditional teaching method which led to rote learning, it has become essential for teachers to put away these old practices and use teaching methods that makes students the center of learning by making them aware of how they can acquire knowledge, make it meaningful in their life and use it in solving practical problems (Gelisli, 2009; Senol, Bal & Yildirim, 2007).

The demands of the current job market and global friendliness of the world has led to the mandate students who are self-efficient, self-reliant, motivated (intrinsically and extrinsically) and capable of handling issues on their own without help from others (self-dependent). This is in-line with the findings of Solaiman (2016) that the works of famous theorist such as Jean Piaget, John Dewey, Lev Vygotsky points out how

students should be the center of teaching and learning in the classroom. Student-centered teaching methods creates a practical learning environment which simulates real-world conditions such as environmental commotions, pressure, stress which provides students with authentic learning (Aldrich, 2006; Beaubien & Baker, 2004; Herrington & Oliver, 2000). Therefore, students who are able to understand issues in this practical learning environment and are actively engaged in seeking knowledge under such circumstances can become efficient in the work environment or their educational endeavors (Crossley-Frolick, 2010; Obendorf & Randerson, 2013). The teaching and learning process of students-centered teaching method focuses on learning objectives of creating self-efficacious students known to possess self-motivated skills that enables them to adapt to issues fluctuations as they happen (Cassidy & Eachus, 2002; Schunk & DiBenedetto, 2016; Tang, Addison, LaSure-Bryant, & Norman, 2004). Previous researchers such as (Cassidy, 2015; Duchatelet, Spooren, Bursens, Gijbels, Donche, 2020) argument that self-efficacy contributes significantly to students domains of learning (cognitive, affective and psychomotor) as they learn to become resilient and persistent in overcoming difficulties they possess in learning any new knowledge

The use of student-centered method in engaging students positively influence students' academic performance, motivation level and even teacher's self-efficacy (Bakker, Denessen, Dennissen, & Oolbekkink-Marchand, 2013; Epstein, 2001; Epstein, 2018; Hattie, 2009). The effectiveness of students-centered learning in Ghana has not gain much root and as such helping students in interpreting their learning in a practical natural environment as compared to the abstract teaching environment created by teachers (Granger, Bevis, Saka, Southerland, Sampson, Tate, 2012). The principal aim of every school is to develop students in order to contribute their quota to their nation in diverse disciplines of study under the supervision of their teachers. To attain this objective, it is the prime objective of teachers to effectively integrate modern teaching methodologies such as student-centered teaching in their daily lesson plans for students as enshrined in the main objective for teaching students. From review of literature, among all the potential intermediaries that affects the effect of teaching method on students learning, self-efficacy and motivation are one that deserves much attention by teachers since it develops their efficacy beliefs about what they learn in class, how they should learn and when to apply what they learn to real world practical issues (Bandura, 1977; Fackler & Malmberg, 2016; Ma & Marion, 2019). On the side of the coin, level self-efficacy among teachers appears to be recognized as among the influential factor of the impact of teaching methods on teaching and learning (Cheung, 2008; OECD, 2014). Based on the aforementioned discussions, three research objectives were put forward to guide the current study. This study aimed at filling the methodological, literature gap by investigating the perception of teacher on the effectiveness of student-centered teaching method on students learning, with a focus on self-efficacy of teachers.

## **1.2 Purpose of the Study**

This study's main drive was to investigate the effect of student-centered learning on students' learning, self-efficacy and motivation, perception of teacher in Senior High School in the Accra Metropolis. To accomplish the main objective, the study specifically sought.

1. Identify the student-centered teaching method preferred by teacher in teaching students in Senior High School in the Accra Metropolis.
2. Examine teacher's perception of the significant benefits of the use of student-centered teaching methods in teaching students in Senior High School in the Accra Metropolis
3. Determine the significant effect of student-centered teaching method on teacher self-efficacy in Senior High School in the Accra Metropolis

## **1.3 Research Hypothesis and Conceptual Model**

Based on the issues discussed in an extensive literature review, researchers were enthused to design and test some hypothesis in order to understand how effective student-centered teaching method has been in affecting teacher's self-efficacy aimed at helping students. The underlisted hypothesis guided the study. Based on the research objectives that govern the study, three research hypotheses were formulated to be tested in order to investigate the issues under study.

1. **H<sub>1</sub>**: Senior High school teachers in the Accra Metropolis have preferred student-centered teaching they adopt in teaching students
2. **H<sub>2</sub>**: There is a significant beneficial use of student-centered teaching method in teaching senior high school students in the Accra Metropolis.
3. **H<sub>3</sub>**: Student centered teaching method significantly affect senior high school teachers' self-efficacy in the Accra Metropolis

A conceptual model was designed to guide the study incorporating the research hypothesis that founded the basis for this paper. This conceptual model sought to establish how the use of activity-based teaching method in social studies benefits students in their academic pursuit, affect their retention level in social studies and the difference between experimental and control group academic performance in social studies. This was illustrated in Figure 1.

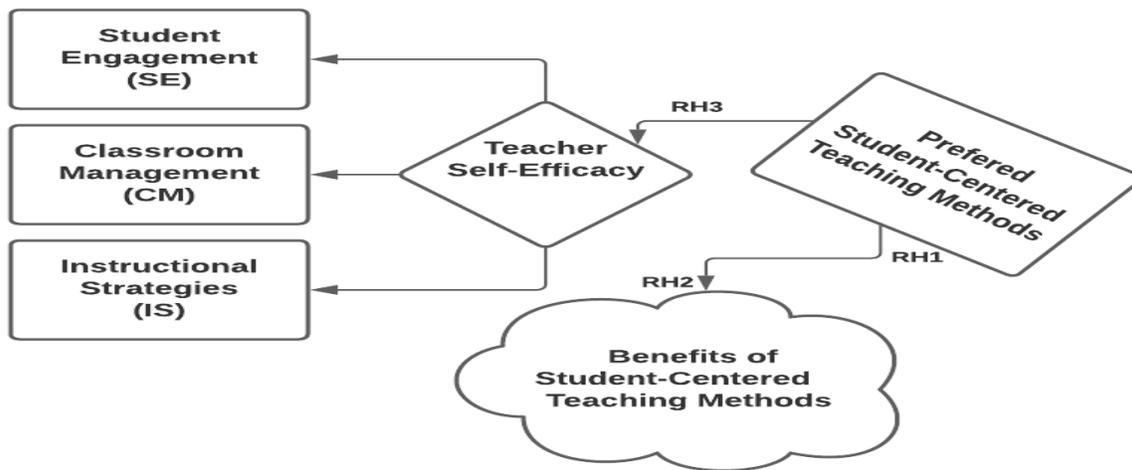


Figure1. Conceptual Model for the study  
Source: Researchers' Own Construct

#### 1.4 Significance of the Study

The findings of this study will be of benefit to literature, teachers, students. This has been clearly illustrated as underlisted below.

The study's findings and recommendation will contribute its quota to literature which will enable other researchers in the field of student-centered teaching methods and its impacts on teacher self-efficacy. Thus, the study will provide foundation for other related studies on the topic under consideration. This is because the findings of the study can be generalized to the population of the study and hence, will provide adequate information for other researchers to use in conducting further studies.

Again, the study would also benefit both students and teachers in general since, the findings of the study will promote the use of student-centered teaching method in imparting knowledge in senior high schools in Ghana. Students will benefit in the sense that the inherent advantages of high use of students centered teaching method will makes the needs and interest of senior high school students as the center of teaching and learning and hence, make them have interest in subject matter taught with such teaching method.

Teacher will also boost their self-efficacy in the course of teaching students. The recommendations of the study of the positive effect of student-centered method on teacher self-efficacy will have powerful effect on teaching to often use this method in teaching students and hence have a greater significant effect on their effectiveness and efficiency to teach in senior high schools

## 2.0 Literature Review

### 2.1 Student Centered-Teaching Method

Student-centered learning is one of the most popular teaching methods that has its theoretic ancestries in the theory of constructivism. In line with (Dewey, 1938), the theory of constructivism views students learning as a process where students assign meaning to learning through their own personal experiences and interactions with the subject matters under discussion. This contradicts the traditional teaching method such as the lecture method by positioning students' interest, autonomy and needs at the center of teaching (Thomas, 2000). Student-centered teaching methods is contingent on student's uniqueness in interests, subject matter, learning style and understanding level instead of adopting a single mode of principles and standards deemed obligatory for all students to accomplish the pre-determined outcome for them (Lambert & McCombs, 1998; McCombs & Whisler, 1997). The student-centered teaching method such as (Collaborative, co-operative, problem-solving, activity class, role-playing, brainstorming and many more) came into the practice of teaching as a result of the inherent limitations associated with the traditional teachers centered learning practiced in schools (Bümen, 2009; Nie, Tan, Liao, Lau, & Chua, 2013).

Researchers such as (Tsybulsky & Muchnik-Rozanov, 2019; UNESCO, 2000, 2008) have argued that student-centered teaching method has become of the necessities needed for students to succeed in developing relevant skills which are essential in this early 21<sup>st</sup> century job requirement. This will enable students to possess skills such as team spirit, harmony and cooperation, independent self-thinkers, communication, intercession, partnership skills (Bell, 2010). This methodology has informed the objectives behind many educational reforms in the world and even Ghana. The major student-centered teaching strategies method adopted for use by teachers include discussion, simulation, collaborative, field trips, project, debate, demonstration, dramatization, questioning, and role-playing. Studies by (Kaka, 2007) revealed that this method involve active participation of students in the teaching and learning process in any abstract free teaching of subject matter that involves students to become self-thinkers, collaborators and problem-solvers. Ahlfeldt, Mehta, and Sellnow (2005) opined that the benefits of learner centered-teaching method warrant a good rapport between teachers and students, team-work spirit and strong desire to learn subject matter. The use of student-centered learning appears to shape the learning experience of students by giving them the opportunity to acquire new knowledge and skills through the use of innovative up-to-date self-thinking skills (Thomas, 2000). In student-centered teaching method such as the problem-solving approach the teacher initially explains the problem to be addressed to students as team project-work, or individual project. The teacher provides explain the synopsis of the project to students stating the background information, objective of the project and gives directives on the responsibilities required of student's tasks to accomplish. Students draws plans for the project through brainstorming, discussions, gathering of information, collecting data, organize their work and many more (Helle, Tynjala, & Olkinuora, 2006).

Experiential studies (Al-Balushi & Al-Aamri, 2014; Geier et al., 2008; Hernandez-Ramos & De La Paz, 2009; Karaçalli & Korur, 2014; Kokotsaki, Menzies, & Wiggins, 2016) on the effect of student-centered teaching methods on teachers' self-efficacy revealed that student-centered positively improves students' attitude, motivation towards the learning of content knowledge in a given subject matter. The studies found that students developed theoretical understandings that requires high-order thinking level and ability to recall what they are taught in class at a fast pace than students taught with traditional teacher-centered teaching approaches.

## **2.2 Benefits of Student-centered Teaching Method**

Student-centered teaching method refers to an approach of teaching methods which makes students interest the focus of learning (Ercan, 2004). Student-centered teaching methods limits the activities performed by teachers by giving students the chance to actively engage in the teaching and learning process. The methods preferably used during this mode of teaching include active learning, in which students brainstorm, explain, discuss, formulate question, answer questions, debate among themselves and work in team in reaching instructional objectives and projects assigned to them under settings that guarantee positive self-reliance of own knowledge and experience and accountability (Huba & Freed, 2000; Korkmaz, 2007).

Student-centered teaching method is considered as greater than the traditional teacher-centered method as a result of the benefits students derives from it. These benefits include helping students to have a higher and

longer retention level, in-depth understanding of subject matter, attainment of inventive problem-solving skills, increased opportunities to demonstrate mastery of subject matter, becomes learners of knowledge and not rote memorizers, involving students to use their higher imaginative skills to solve problems. With the help of teachers, students can make use of valuable skills that will enable them to achieve ultimate learning goal line, motivate them to be less stressed in the learning environment. Learning will become enticement to students and not punishment because they will have high desire to learn subject matter. This will make students' learning to be seen as a form of personal evolution of personal growth and encouragement and motivation for students exploit self-regulation practices in order to understand issues brought up in the classroom. This will enable students to identify their own strength and weakness to harness opportunities that life presents to them.

Researchers such as (Hamza, & Kharusi, 2013; Kramer et al., 2007; Lea et al., 2003) have found the use of student-centered teaching method as effective in achieving students' outcome. The studies found that students become further self-determining and independent self-learners in their learning and appear to be accountable to their own ability to learn new knowledge, practices and experiences. The students developed after school skills that helps them perform well in their respective jobs. Students develop better understanding of subject matter taught in class as compared to being taught with traditional teacher-centered teaching method. Teacher in the short or long-run benefit from the use of learner-centered teaching method. The method indorses teachers' creativity in class to make lessons taught lively and significant to students' experiences. Teachers style of teaching, lesson planning, preparations, communications skills, management skills, evaluation skills and content delivery all improves in order to meet the needs of students in the classroom (Kilic, 2010)

### **2.3 Teachers' Self-Efficacy**

Self-efficacy according to (Bandura, 1997; Woolfolk Hoy & Burke Spero, 2005) is a perception of one's own confidence in his or her peculiar capacity and competency to accomplish responsibilities excellently. Teacher self-efficacy is defined as the belief a teacher has about his/her competency to effectively and efficiently teach a particular subject matter to students in such a way that fetches anticipated results of students learning and engagement in the classroom (Tschannen-Moran & Woolfolk Hoy, 2001). Teachers self-efficacy has been considered as an important element that strongly affects their philosophy and direction during teaching and learning process in the classroom (Caprara, Barbaranelli, Steca, & Malone, 2006). Some social cognitive theorists posit that a teacher's self-efficacy is deep-rooted in the way they see and understand their own practices and experiences. Bandura revealed the four major foundations of teacher self-efficacy in teaching in the classroom. This included mastery experience, vicarious experience, verbal persuasion, and physiological state. Mastery experience can be defined as how fruitful the teacher has been on a given task performed in and out of the classroom. Vicarious experience of teachers also refers to the secondary and unintended experience of the success teachers achieve by witnessing the success of other teachers in and out of the classroom while Verbal persuasion denote how other people judge and evaluate the effectiveness of a teacher. Physiological state can be defined as the mental make-up of a teacher and how his emotions affect his ability to teach effectively in the classroom (Choi, Lee & Kim, 2019; Evers, Brouwers, & Tomic, 2002; Nie et al., 2013). There has been greater emphasis on how teacher's self-efficacy governs constructivist instructional practices in schools.

There has been research that have revealed that teacher self-efficacy is linked with many parts of teaching instructional sessions such as the students' academic achievement, learning. engagement in classroom and learning, accomplishment, retention level, and job satisfaction teacher derive from teaching outcomes (Ashton & Webb, 1986; Caprara et al., 2006; Skaalvik & Skaalvik, 2007). Other studies viewed self-efficacy of teachers as a factor of the behavior and practices expected from instructional sessions of teachers (Suprayogi, Valcke, and Godwin, 2017; Zee & Koomen, 2016). There have been several contentions in literature as to on the relationship between self-efficacy and instructional outcome particularly students learning (Bümen, 2009; Holzberger et al., 2013). Some studies have found that teacher's self-efficacy improves instructional practices especially the use of student-centered teaching approach. That is, researchers have tried to determine whether variations in instructional practices of teachers distress teacher's self-efficacy in the classroom. For instance, Holzberger et al. (2013) in his study on teacher self-efficacy, found that instructional quality predicts teacher

self-efficacy and that the success of a teacher in effectively implementing student-centered teaching method boost the self-efficacy of teachers. found that previous success in the implementation of innovative teaching practices enhanced teacher self-efficacy but found limited evidence of the latter affecting the former.

## **2.5 The impact of teaching method on Teachers' Self-efficacy**

Since the 1980's research on self-efficacy of teachers has increased rapidly (Zee & Koomen, 2016). This attention has been aligned with the fulfilment, engagement and commitment teachers put in maximizing their effectiveness in using student-centered teaching method to increase students' performance in class and in the real world (McIlveen & Perera, 2016; McIlveen et al., 2019). Self-efficacy of teacher lies at the core of responsiveness to teaching methods specifically designed to teachers make their students have faith in their own capabilities and strengthen their overarching self-commitment, motivation, learning (Smith et al., 2016; Vattoy & Smith, 2019). According to (Bandura, 1989) self-efficacy is a belief about one's own capability to attain one's goal line which are measured as fundamental to effective teaching and learning. This implies that any student who does not believe in his or her own capability to wield inspiration on their attainment of his or her goals is likely to fail (Holzberger et al., 2013; Tschannen-Moran & Woolfolk Hoy, 2001). It is estimated that teacher self-efficacy is a critical feature that strongly stimulates a teacher's overall positioning to informative educational development (Woolfolk & Hoy, 1990). The teacher's facilitation and encouragement within a learning environment that supports high self-efficacy are important, as people with high efficacy approach difficult tasks as challenges to be mastered rather than threats to be avoided' (Bandura, 1993, p. 144).

Research (Perera & John, 2020) have shown that "self-efficacy ensures higher job satisfaction, better classroom management and teaching support for students, greater students' motivation and academic achievement). Expectation of teachers in implementing student-centered learning have been found to have a significant positive effect on students' academic performance, motivation and self-efficacy (Gamlem et al., 2019; Rubie-Davies, Hattie, & Hamilton, 2006), In some instances, the implementation of a particular teachers does not always lead to positive outcomes. Responsiveness of teaching pedagogy highpoints the uniqueness of the potentials that teachers have for their students as center for teaching and learning, as well as how teachers interconnect students' expectations and believe in themselves in order to attain higher academic excellence (Gamlem et al., 2019; Smith et al., 2016).

Research by (Zee & Koomen, 2016) has established the fact that teacher self-efficacy affect students learning outcome to a greater degree. This link between teacher's self-efficacy and students learning outcome either positive or negative is known as the process-oriented model. The process-oriented self-efficacy of teachers is the ability of teacher to cause increment in students' academic achievement by motivating and psyching students mind having the belief that they can achieve desired high academic success (Woolfolk et al., 2009). This proposed pathway indicates that efficacious teachers' who use student-centered teaching methods make decisions influence the decisions about selecting, devoting efforts in students learning and persevering activities that aim at helping students to achieve high academic excellence (Bandura, 1997). Teachers with high self-efficacy creates a learner-centered favorable instructional environment that aims at promoting students' mastery of any subject they are taught in class. Studies such as (Cho & Shim, 2013; Deemer, 2004; Holzberger et al., 2013; Nie et al., 2013; Wolters & Daugherty, 2007) revealed that high self-efficacious teachers implement a high number of student-centered teaching methods in teaching students in order for students to masters their subject master in a classroom environment This is consistent with the findings of (Caprara et al., 2006; Thronsen & Turmo, 2013) that teachers' self-efficacy positively affects students' academic achievement in examinations.

Korkmaz (2007) opined that learning theories where student is active such as the student-centered teaching method, all students unsurprisingly possess the attitude of self-esteem, self-learning and the wisdom that offer lively, self-arranging and become attentive in and outside the classroom. Hence, this is the basic need of students and therefore, educators should prioritize students in such an angle. One may think that the teacher has no responsibility in students learning since the onus of learning lies on the students, however, with student

centered learning, both the teacher and student become active in ensuring that students accomplish the required predetermined goals expected of them (Ercan, 2004).

### **3.0 Research Methodology**

#### **3.1 Research design**

The study will adopt the quantitative research approach using the cross-sectional survey design. The cross-sectional design was chosen for the study because it provides a strong and rich picture of events and phenomenon based on data collected during the research process (Fraenkel & Wallen, 1990). Again, this research design also enables making interpretations from data collected easily.

#### **3.2 Participants of the Study**

The population of the study will consist of all teachers in the ten selected senior high in Accra Metropolis. A total of 200 teachers were purposively chosen for the study. Only core subject teacher who teaches English, Science, Mathematics and Social Studies will be chosen for the study to ensure uniformity in all the ten schools selected. Elective- subject teachers were not chosen because of the disparity in elective subject taught by schools. From a population of 350 teachers, 200 will be chosen based on recommendations by Gay (1996), using a sample size of 20% and above is appropriate for any study. Hence researchers will choose a number more than 60 % of total respondents for the study. Stratified random sampling will be adopted to categorize respondents into divisions of schools. In getting the sample for each stratum, the total number of teachers in the stratum is divided by the overall population and multiplied by the sample size of 200. Ogah (2013) opined in his study that, stratifies sampling guarantees equal and fair representation of each stratum according to its measure in the population. Simple random sampling was then used select the teachers in each stratum.

#### **3.3 Data Collection Instrument**

The most appropriate instrument that will be employed for data collection is questionnaire (quantitative data gathering) which is an informant-completed instrument (Frankel & Wallen, 1996). The use of questionnaires will be more appropriate for this research because it allows for larger sample collection of information at a minimum cost and at the provisional of greater anonymity to respondents. The questionnaire will be structured in four parts. The first section will elicit information from teachers on their demographic variables such as gender, level of experience, and level of qualification. The second section will collect information on teachers perceived self-efficacy. The self-efficacy of high school teachers will be measured with the Teacher Self Efficacy Score (TSES) 12-item adapted from (Tschannen-Moran & Woolfolk Hoy, 2001) short form questionnaire. The 12-item will be put into three dimensions, namely, Teacher efficacy for student engagement (SE), efficacy for instructional strategies (IS) and efficacy for classroom management (CM). Each dimension has four (4) items to measures teacher self-efficacy. Teachers mark their responses to item on a Likert scale of 1(Nothing) to 5(Great deal). The TSES scores from the three dimensions of efficacy will be checked for reliability and validity using Cronbach's alpha as underlined in preceding studies on teacher self-efficacy (Tschannen-Moran & Woolfolk Hoy, 2001). The third section will collect information on the preferred student-centered teaching method by teachers. Ten items were structured based on literature for respondents to mark their level of preference of teaching method on a Likert scale (1= least preferred to 5= most preferred). The last section also will collect information on the benefits teachers and students derive from student-centered teaching method on a scale of (1= strongly disagree and 5 = strongly agree).

#### **3.4 The Teachers' Self-Efficacy Scale**

The study will make use of Teachers' Self-Efficacy Scale (TSES) for measuring teacher's self-efficacy of senior high school teachers in the Accra Metropolis. Tschannen-Moran & Woolfolk Hoy (2001) opined that the Teachers' Self-Efficacy Scale (TSES) is a degree of measure of other assessments of teacher success in teaching. Using this scale of measurement, teaching is hypothesized as a multifaceted activity and hence

teacher-efficacy is seen as multi-faceted. The TSES More specifically, teacher efficacy as measured by the TSES (12 test-item) which is seen to represent three separate latent factors allied with three zones of teaching and learning. This includes Efficacy for Classroom Management (CM), Efficacy to promote Student Engagement (SE), and Efficacy in using Instructional Strategies (IS). There have been several studies on Confirmatory Factor Analysis (CFA) of teachers' self-efficacy using teachers' TSES countries such as Cyprus, China, Korea, Canada, United Kingdom, United States and many developed countries which offer a solid score validity indication to back the use of CFA structure (Heneman et al., 2006; Klassen et al., 2009; Tsigilis et al., 2010).

Researchers such as (Capa Aydin & Woolfolk Hoy, 2005; Fives & Alexander, 2004; Fives & Buehl, 2010; Knoblauch, 2006) revealed that The TSES is now regarded as the prime measure of efficacy of teachers in the classroom. There has become a need for researcher to make enquiries about teacher self-efficacy more specifically looking at their teaching schedules before, during and after teaching and learning process (Bandura, 1997). The eminence of teaching and learning especially the use of student-centered teaching method is its ability to deliver instructional opportunities to students, pragmatic teaching activities and prompt feedback to students where students interest and needs are the center of attraction (Gordon & Debus, 2002; Lin et al., 2002; Woolfolk Hoy & Burke Spero, 2005).

Fives and Buehl (2010) lately found that both CFA and EFA produced similar results in using TSES to measure teacher self-efficacy echoing the findings and conclusions revealed by Tschannen-Moran and Woolfolk Hoy's (2001) that TSES's total score ought to be used for measuring self-efficacy of teachers as a unidimensional latent construct. This current sought to contribute to literature on the validity of TSES in measuring teachers' self-efficacy using exploratory factor analysis to confirmatory factor analysis. Byne (1998) echoed that the use of help to identify the unidentified associations that exist among observed and latent variables. On the other hand, after conducting EFA to identify the unidentified links, the CFA is used to test the relationships between that exist between the observed and latent variables. The CFA offers a robust validity suggestion compared to EFA (Thompson, 2004).

### **3.5 Data Processing and Analysis**

Data gotten from the cross-sectional survey will be checked for errors. The data will then be coded and entered into the Statistical Product and Services Solution (SPSS) version 25 and afterwards into the AMOS version 22 software. The first section which sought information on demography of respondents will be analyzed using frequencies and percentages. The first research hypothesis will also be analyzed using descriptive statistics (Bar graph, Mean and Standard deviation). Means and standard deviation will be used to analyze the second research hypothesis. The Structural Equation Model (SEM) specifically Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) will be used to measure the third research hypothesis. The models' fitness will also be examined using Variance Inflation Factors such as the (VIF), NFI, GFI, RMSEA,  $X^2/df$ , CFI, and AGFI as hinged by (Thompson, 2004).

### **3.6 Sample Distribution of Respondents**

This section dealt with the information collected on the background of the respondents. The demographic features of the teacher-respondents discussed in this section include the gender, level of qualification and teaching experience. Table 1 summarises the demographic information of the respondents.

**Table 1: Demographic Information of Respondents**

Variable	Sub-scale	Frequency	Percentage
Gender	Male	138	69
	Female	62	31
Level of Qualification	Bachelors' Degree	155	77.5
	Masters' Degree	45	22.5

Teaching Experience	Below 1-5 years	105	52.5
	6-10 years	55	27.5
	Above 11 years	40	20

Information in Table 1 reveals that male teachers involved in the study were (138) representing 69% of the total number of teacher-respondents while (62) 31% of the respondents were females. This demonstrates that there were more male teachers involved in the study than female counterparts. This reflects the disparity between male and female teachers in the Ghanaian education system. Again, it was found from the teachers that majority (155) 77.5% of them possessed bachelor’s degree in the field of expertise and hence had acquired all the necessary knowledge that is required for them to be effective teachers who have adequate knowledge of student-centred teaching methods. Only (45) 22.5 % of the teachers had gone further to attain master’s degree. Table 1 further shows that a significant number (105) 52.5% of the teachers had taught between 1-5 years. This was followed by (55) 27.5% of teachers having a teaching experience. Out of the 200 teachers, (40) representing 20% had a longer teaching experience of more than 11 years.

**4.1 Main Results and Discussions**

***Research Hypothesis One: Senior High school teachers in the Accra Metropolis have preferred student-centered teaching they adopt in teaching students***

The use of student-centered teaching method has been propagated by many researchers because of its significance in positioning the interest of students first in order for learners to assign their meaning to what they learn in class. Research hypothesis One was formulated to be tested to ascertain whether there is indeed a preference by teachers in the use of student-centered teaching method is teaching senior high school students within the Accra Metropolis. Table 2 summarizes the respondents of teachers on their level of preference for the use of student-centered teaching methods.

**Table 2: Preference for Student-Centered Teaching Method**

Teaching Methods	Mean	SD	Rank
Collaborative	3.66	.51	5
Co-operative	3.67	.89	4
Problem-Solving	2.88	.56	7
Activity -based	3.25	.54	6
Role- playing	4.53	.67	1
Brainstorming and Discussion	4.51	.59	2
Field Trips	2.62	.64	8
Projects	2.42	.87	9
Debate	2.25	.51	10
Demonstrations and Simulations	4.22	.67	3
<b>Mean of Means/Average Standard Deviation</b>	<b>3.40</b>	<b>.65</b>	

Scale: *Least Preferred (0.5-1.4), Not Preferred (1.5-2.4), Moderately Preferred (2.5-3.4), More Preferred (3.5-4.4), Most Preferred (4.5-5.0)*

Table 2 summarizes the student-centered teaching methods preferred by teachers in the Accra Metropolis in teaching students in diverse field of study. From Table 2, a significant number of teachers overwhelmingly consented to the fact that they moderately preferred to use collaborative, co-operative, problem-solving, activity-based, role-playing, brainstorming, field trips, projects, debate, demonstrations and simulations in teaching students in senior high school. This was amply reflected in the overall (Mean of means = 3.40, Average St. Dev. = .65). The remaining paragraphs describe in detail the level of preference of teachers.

Majority of the teachers most preferred (Mean = 4.53, St. Dev. = .67) to use role-playing as a student-centered teaching method in teaching high school students. This was followed by brainstorming & discussion and demonstrations & simulations with respective means of (4.51) and (4.22). This reveals that teachers more likely preferred to use the aforementioned approaches in teaching students in the Accra Metropolis. Information from Table 2 further revealed that debate, field trips, problem-solving and activity-based teaching

method are moderately preferred by teachers in teaching high school students. This was reflected in their respective mean scores of 2.25, 2.42, 2.62, 2.88 and 3.25. The finding of this study is in tandem with the findings of (Tsybulsky & Muchnik-Rozanov, 2019; UNESCO, 2000, 2008; Thomas, 2000; Bell, 2010; Geier et al., 2008; Hernandez-Ramos & De La Paz, 2009; Karaçalli & Korur, 2014) that majority of teachers prefers to use collaborative, co-operative, problem-solving, activity-based, role-playing, brainstorming, field trips, projects, debate, demonstrations and simulations in teaching students in senior high school.

**Research Hypothesis Two: There is a significant beneficial use of student-centered teaching method in teaching senior high school students in the Accra Metropolis.**

In current times, many educational stakeholders have advocated that teachers adopt teaching methods that makes students the center of teaching and learning thereby making students’ interest the focus of learning. Research hypothesis two was also formulated to reveal the benefits both teachers and students derive from teachers use of student-centered teaching methods in the classroom. Table 3 summarizes the benefits of the student-centered teaching methods aforesaid.

**Table 3: Benefits of Student-Centered teaching Methods**

Statement	Mean	SD	Rank
Helping students to have a higher and longer retention level	4.32	.63	4
Helping students to have in-depth understanding of subject matter	4.41	.84	1
Helps students to acquire inventive problem-solving skills	4.37	.78	2
Helps students to acquire increased opportunities to demonstrate mastery of subject matter,	3.98	.88	7
Students becomes leaners of knowledge and not rote memorizers	4.33	.91	3
Helps to involve students to use their higher imaginative skills to solve problem	3.94	.97	8
Students developed after school skills that helps them perform well in their respective job	4.31	.78	5
Students become further self-determining and independent self-leaners in their learning	4.11	.59	6
<b>Mean of Means/Average Standard Deviation</b>	<b>4.22</b>	<b>.79</b>	

Scale: *Strongly Disagree (0.5-1.4), Disagree (1.5-2.4), Uncertain (2.5-3.4), Agree (3.5-4.4), Strongly Agree (4.4-5.0)*

Table 3 revealed that both students and teachers derive certain benefits from teachers use of student-centered teaching methods in teaching high school students in Accra Metropolis. The overall mean of the analysis revealed that majority of the teacher-respondents overwhelmingly agreed (Mean of means = 3.94, Average Std. Dev. = .97) to the fact that students as center of teaching greatly derive benefits from the use of student-centered teaching method. The remaining paragraphs give vivid explanations of the stance of teacher-respondents on the benefits of their use of student-centered teaching methods.

Information in Table 3 revealed that a significant number of respondents agreed that the use of student-centered teaching method helps students to have in-depth understanding of subject matter; helps students to acquire inventive problem-solving skills; helps students becomes leaners of knowledge and not rote memorizers and helps students to have a higher and longer retention level. This was shown in their respective mean scores of 4.41, 4.37, 4.33 and 4.32. This amplifies the fact that the use of student-centered teaching methods helps teachers to utilize the skills of experiencing learning by themselves and be able to apply them in real life in order to exploit their own strengths and weakness in order to harness opportunities that life might present to them. The findings of this study are in line with the findings of studies such as (Ercan, 2004; Huba & Freed, 2000; Korkmaz, 2007; Hamza, & Kharusi, 2013; Kramer et al., 2007; Lea et al., 2003) that students-centered teaching method provides significant benefits to students within the Accra Metropolis within the Accra Metropolis.

#### **4.2 Structural Equation Model (Confirmatory Factor Analysis)**

**Research Hypothesis Three: Student centered teaching method significantly affect senior high school teachers’ self-efficacy in the Accra Metropolis.**

The study adopted the Structural Equation Modeling (SEM) to estimate the positive effect of student-centered teaching methods on teacher self-efficacy in the Accra Metropolis of Ghana. Structural Equation

Modeling can be defined as the statistical tool that uses complex series and statistical estimates with the nature of multivariate variables by establishing the degree of relationship between one or more exogenous variables and one and more endogenous variables. In line with the findings of (Arbuckle & Worthke, 1999; Joreskog & Sorbom, 1999) suggested that SEM is among the most widely multivariate statistical tools that many researchers choose for investigating phenomenon model because of its widespread application in countless fields of study and studies and its effectiveness and hence, the decision by researchers of this study to choose SEM to investigate the positive effect of student-centered teaching method on teachers' self-efficacy. The use of SEM permits researchers to measure constructs of variables under consideration using observed(manifest) constructs and unobserved(latent) constructs. Table 4 provides the results of SEM.

**Table 4: Results of Structural Equation Modeling**

Latent Variable	Items	Standardized Factor loading	t- value	Average Variance Extracted (AVE)	Composite Reliability (CR)	Cronbach's Alpha Coefficient
<b>STUDENT ENGAGEMENT (SE)</b>	SE4	0.78	8.13	0.65	7.03	0.65
	SE5	0.85	7.25			
	SE6	0.78	a			
	SE7	0.85	7.51			
<b>CLASSROOM MANAGEMENT (CM)</b>	CM8	0.88	7.27	0.66	0.81	0.89
	CM9	0.67	7.36			
	CM10	0.72	a			
	CM11	0.82	7.89			
<b>INSTRUCTIONAL STRATEGIES (IS)</b>	IS12	0.87	6.92	0.64	0.81	0.89
	IS13	0.74	7.83			
	IS14	0.80	a			
	IS15	0.76	7.50			
<b>STUDENT CENTERED TEACHING METHOD (TM)</b>	TM16	0.86	7.45	0.58	0.88	0.87
	TM17	0.91	7.41			
	TM18	0.77	7.06			
	TM19	0.89	a			
	TM20	0.78	7.16			
	TM21	0.69	8.20			

TM22	0.89	7.37
TM23	0.78	7.71
TM24	0.89	7.67
TM25	0.95	7.89

\*\*\*P-value < 0.001 (2-tailed)

a: Unitized parameter

Table 4 revealed the results for the structural model for the study. The standardized factor loadings are all statistically significant at the 95% confidence interval with P-values less than 0.05 ( $P < 0.05$ ) and T-values greater than 1.96 ( $t_{cal} > t_{critical}$ ). Factor loadings of at least 0.60 are considered as reliable indicators or satisfactory items (Field, 2009; Hair Jr. et al., 2006). Standardized factor loadings presented in Table 2 are all greater than the minimum threshold recommended indicating that our items load satisfactorily. The construct validity of the model was

Ascertained using (Bagozzi & Yi, 1998) Composite Reliability (CR) index and Average Variance Extracted (AVE). Chin and Yao (2014) revealed that a minimum AVE value of 0.50 is required to achieve convergent validity. Result in Table 4 shows that convergent validity was achieved since all AVE values are greater than the minimum 0.50 value. Though Composite reliability is a less bias estimate of internal consistency, Cronbach's alpha is the most preferred (Devon et al., 2007). (Fornell & Lacker, 1981; Bagozzi & Yi, 1998) recommended a minimum Composite reliability value of 0.60 and Bland & Altman (1997) recommended a minimum Cronbach's value of 0.70 for good or acceptable reliabilities. Result in Table 4 indicates that the estimated Cronbach's alpha and Composite reliability values are above the minimum threshold to achieve construct liability, therefore the reliability of our constructs was achieved. The fitness of the model was tested and summarized in Table 5. The results of the Table 4 further denote the acceptance of the research hypothesis that there is a positive effect of student-centered teaching method on teacher, self-efficacy. This denotes that student-centered teaching methods such as collaborating, role-playing, brainstorming and discussion, co-operative learning, problem solving and others used by teachers significantly affect teachers' student engagement, classroom management and instructional strategies of teachers. The findings of this study are in connection with prior findings that teachers with high self-efficacy creates a learner-centered favorable instructional environment that aims at promoting students' mastery of any subject they are taught in class. Studies such as (Cho & Shim, 2013; Deemer, 2004; Holzberger et al., 2013; Nie et al., 2013; Wolters & Daugherty, 2007) revealed that high self-efficacious teachers implement a high number of student-centered teaching methods in teaching students in order for students to masters their subject master in a classroom environment This is consistent with the findings of (Caprara et al., 2006; Thronsdon & Turmo, 2013) that teachers' self-efficacy positively affects students' academic achievement in examinations.

**Table 5. Fitting Indices for Individual Constructs and Overall Structural Model**

Model	Variables	Fitting Parameters						
		x/df	RMSEA	CFI	TLI	GFI	NFI	SRMR
	SE	2.451	0.055	0.922	0.871	0.981	0.909	0.049
Individual	CM	2.095	0.059	0.928	0.852	0.971	0.933	0.048
Construct	IS	1.809	0.067	0.945	0.918	0.951	0.951	0.036
	TM	1.781	0.078	0.939	0.966	0.959	0.968	0.031
Overall Structural Model		1.678	0.041	0.938	0.926	0.922	0.918	0.039

**Table 6: Hypothesis Testing and Decision.**

Hypothesis	Relationship	Path Coefficient	SE	t-value	p-value	Hypothesis Decision
H3a	TM → SE	0.82	0.19	6.67	***	Supported
H3b	TM → CM	0.71	0.12	3.38	***	Supported
H3c	TM → IS	0.67	0.21	2.26	***	Supported

Model fitness refers to the extent to which the SEM matches the observed data. The evaluation of model fit is to confirm the theoretical model by method of fitting parameters (Benah & Li, 2020). For this study, the following fitting indices were employed to measure the model fitness: Chi-square ratio ( $\chi^2$  -ratio), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Goodness of Fit Index (GFI), Normed Fit Index (NFI) and Standardized Root Mean Square Residual (SRMR). Kline (2005) suggests that a minimum of the following indices: the model  $\chi^2$ , RMSEA, CFI, SRMR, should be reported for model fit. The analysis of the study found model for the study both the individual construct and overall was acceptable and hence, the authenticates the findings of the study as indicated in Table 5.

## 5. Conclusion

Based upon the findings of the study, it can be concluded that high school teachers in the Accra metropolis in Ghana have realized the essence of the use of student-centered teaching methods in teaching students to understand concepts in diverse field of study in a way that will elicit self-learning and in-depth understandings of subject matters. Looking at the rate at which majority of respondents moderately preferred role-playing, brainstorming and discussion, demonstration and simulations, and many more, it appears teachers plan to involve students in teaching and learning so that students can acquire and develop skills from learning which can help them perform well in the practical social environment. There is still more room for improvement on the part of the use of teaching methods such as projects, debates, field trips which might be as a result of the cost involved in planning and use of such methods and hence, educational stakeholders can come to the aid of teachers in that angle to help them achieve the object of making students the center of learning. Teachers also should attend seminars organized by school heads and the Ghana Education institutions on referral trainings that aimed at reforming teachers to cultivate the habit of making students the center of learning. The study further revealed a positive relationship between student-centered teaching method on teachers' self-efficacy. It can be implied that teachers' instructional strategies, classroom management and student's engagement correlate with the use of student-centered teaching method. Hence, teachers' continuance to use teaching methods such as brainstorming, discussions, activity-based also make teacher's effective in the controlling students in class, helping students value learning and assisting students to do well in general. This in the long and short run makes teacher self-efficacious and efficient in achieving predetermined goals set for the students.

### Conflict of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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