Scientific Research Publishing

Open Journal of Social Sciences, 2023, 11, 243-269
https://www.scirp.org/journal/jss
ISSN Online: 2327-5960
ISSN Print: 2327-5952

The Mediating Role of Self-Esteem on the Relationship between Teachers Students Interaction and Students Academic Achievement of Wolaita Sodo University Students

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How to cite this paper: Gebresilase, B. M., & Zhao, W. (2023). The Mediating Role of Self-Esteem on the Relationship between Teachers Students Interaction and Students Academic Achievement of Wolaita Sodo University Students. *Open Journal of Social Sciences, 11,* 243-269.
https://doi.org/10.4236/jss.2023.111019

Received: December 1, 2022
Accepted: January 17, 2023
Published: January 20, 2023

Abstract

This study examined the meditational role of self-esteem on the relationship between student teacher interaction and academic achievements in the graduating class students of Wolaita Sodo University, Ethiopia. A survey-based study was performed among 313 students, randomly selected from four colleges and one school, by using a well-established questionnaire. To analyze the data, a confirmatory factor analysis and structural equation modeling procedure was used. The analysis result revealed that student teacher interaction has a positive and significant relationship both with self-esteem and academic achievement. Further, self-esteem played a mediating role in the relationship between student teacher interaction and academic achievement. Thus according to the analysis finding, all hypothesis of the present study were supported. Based on the findings of the present study, Ministry of Education of Ethiopia and Wolaita Sodo University leaders can review the display rules, designed for teachers, in a way that teachers can perform appropriate care and emotional attachment strategies while interacting with the students. Besides by using the model of the present study, the university leaders and practitioners can identify core area to be considered in hiring teachers, in giving life skill training, interpersonal relationship training, and self-esteem building workshops for all students and teachers as well.

Keywords

Student Teacher Interaction, Self-Esteem, Academic Achievement, Mediation

1. Introduction

Education is a simple foundation for world development in general, and for developing countries like Ethiopia in particular, as it brings about changes in human existence, societal configuration, economics, and overall governmental approach. Education is critical for a country's development in all aspects, including knowledge and economics, and its fundamental foundation is to improve associated problems and speed up the flow of students' motivation to acquire knowledge and skills (Jill, 2001). It enables students to become familiar with innovative approaches and methods for national development that are tailored to social needs. Learning in a classroom is heavily reliant on the structure and patterns of inter-personal relationships, particularly pupil-pupil relationships, which exist within the learning group at any one time. For many youth, the transfer from high school to a higher education institution is a significant life adjustment and a period of adjusting to new interpersonal relationships while living away from their parents and in a new environment (Jill, 2001).

The quality of education is the foundation for any society growth, and it requires the quality of teachers, students, and effective parental involvement in school (Mahona & Demetria, 2020). Teaching necessitates fresh teaching techniques, perspectives from teachers, teaching methodologies, and classroom value. Until now, many educational institutions and their leaders have placed a heavy emphasis on assessing instructors' efficacy and students' achievement in schools (Burke, 2010). Teachers play a crucial role in facilitating learners' education, learning, and professional development. It is thought that strong teacher-student relationships are responsible for learners' and schools' academic performance. Some authors have demonstrated that a positive relationship between teachers and students is critical to learning.

According to Whitaker (2004), the teacher is the most important variable in the classroom. Great instructors have high expectations not only for their students, but also for themselves (Whitaker, 2004). These educators understand the necessity of emotionally connecting with their students and that if they are unable to do so, influencing their minds may be impossible. "Good teachers create snags in the flow of youngsters passing by, redirecting hundreds of lives over time... There is an innocence that works together to keep humanity together..." (Bolman & Deal, 2002: p. 124). Classrooms become supportive settings in which students can engage in academically and socially useful ways when teachers create positive ties with students (Hamre & Pianta, 2001). Teachers' emotional, verbal, and behavioral responses to students' behaviors during the teacher-student interaction process have an impact on students' experiences and play an important role in the development of psychological traits such as self-concept, self-confidence, motivation, and self-esteem (Cui et al., 2020).

Academic accomplishment, particularly at the university level, is not only a sign of efficacy, but also a major predictor of youths' lives and the nation's des-

tiny. Since they arrived from all across the country, university life is a fresh experience for each student. There are numerous psychosocial factors that can influence university students' academic progress on any given campus.

Many studies currently emphasize on teacher quality, curriculum, parent follow-up, and facility relevance as the primary issues affecting academic attainment. When students enroll in university, they leave behind their friends, parents, and even their home, and begin a new set of interpersonal relationships with teachers, classmates, and others. Because they are no longer under the control of their families, students are exposed to negative peer pressure, new teachers with new curricula, and students' conviction in their own abilities in this new environment. Although there has been a lot of research on the interaction between teachers and students and their academic accomplishment, the majority of it has concentrated on the impact of the teacher-student relationship on students' academic achievement (e.g. Fowler, Banks, Anhalt, Der, & Kalis, 2008; He, & Qi, 2018; Zeng, Zhao, Luo, & Xin, 2012) or the association between students' self-esteem in learning and their academic achievement (e.g. Kukulu, Korukcu, Ozdemir, Bezci, & Calik, 2013; Zhu, 2014). Very few had examined the mediating effect of self-esteem in learning for the associations between teacher-student relationship and students' academic achievement in tertiary level of education. This research tries to fill the gap by examining the association of students' self-esteem and academic achievement, the relationship between student teacher interaction and academic achievement and the mediating effect of students' self-esteem on the relationship between teacher student interaction and academic achievement at wolaita sodo university, Ethiopia. Therefore, the following variables were the focus area of this research.

TEACHER-STUDENT RELATIONSHIP AND ACADEMIC ACHIEVEMENT

The term "student-teacher interaction" refers to the caring and genuine relationships that exist between teachers and pupils. "Emotions-based experiences that result from teachers' ongoing interactions with their students" is what it is (Pianta, 1999). According to Whitaker (2004), instructors are a student's first and arguably most essential point of contact. Despite the numerous reforms, educational movements, and initiatives aimed at improving education, no other factor can compare to the human factor. "It's the people, not the programs," he insists (Whitaker, 2004: p. 9). He goes on to say, "There are essentially two ways to really enhance a school: Get better instructors and improve the teachers in the school" (p.9). "For a student, one of the most important questions is, 'Does my teacher like me?' The answer to that basic question is our best predictor of student progress, given a demanding, linked curriculum"—(Terry, 2008: p. 1). Classrooms become supportive settings in which students can engage in academically and socially useful ways when teachers create positive ties with students (Hamre & Pianta, 2001). Closeness, warmth, and cheerfulness are all characteristics of positive teacher-student interactions (Hamre & Pianta, 2001).

Students who have positive relationships with their instructors use them as a

safe haven from which to explore the classroom and school setting academically and emotionally, taking on academic challenges and working on social-emotional development (Hamre & Pianta, 2001). This involves peer connections as well as self-esteem and self-concept development (Hamre & Pianta, 2001). Students learn about socially proper actions as well as academic standards and how to meet them through this comfortable relationship (Hamre & Pianta, 2001). The core interpersonal contact between instructors and students in universities are also one of the main social relationships in the process of children's socialization throughout their educational development," according to the teacher-student relationship (Zou, Qu, & Ye, 2007: p. 77).

Many researchers have attempted to relate student-teacher interaction to different educational, social, and psychological factors. Teacher-student relationship is an important, although complicated, interpersonal relationship in education (Cui et al., 2020).

Cui et al. (2020) conducted empirical study on the relationship between teacher student interaction and academic achievement (Chinese language class, English language class and Mathematics lesson) and found that significant and positive relationship of teacher student interaction and Language achievement, significant relationship between student teacher interaction and mathematics achievement. Research findings shows that there is significant and positive relationship between teacher student interaction and mathematics achievement, significant relationship between teacher student interaction and student's self-efficacy and significant positive relationship between self-efficacy and mathematics achievement (Xu & Qi, 2019).

In research that has examined the relationship between student-teacher interaction and academic achievement of students at different levels of education, with the exception of a few studies (Pianta, 1994; Lee, 2007), it has been consistently documented that students with higher levels of interaction with their teachers have significantly higher academic performance compared to their counterparts who are low in interaction with their teachers. That is, when students have strong beliefs toward their teachers and the subject to perform well, they will have higher academic achievement than their counterpart students with low beliefs in their teachers and subjects well academically. Several studies conducted in colleges/universities have found that student-teacher interaction had a significant and positive effect on academic achievement (for review, see Noddings, 2000; Lyubomirsky, King, & Diener, 2005; Birch & Ladd, 1997; Miller, 2000).

A study conducted with a sample of 264 (172 females and 92 males) undergraduate students at a major university in southwestern United States also demonstrated that student-teacher interaction positively and significantly predicted academic performance (Hughes & Cavell, 1999). Elias and MacDonald (2007) assessed the ability of prior academic performance and student-teacher interaction in predicting college academic performance with a sample of 202

(115 females and 87 males) undergraduate students at a large university in the Rocky Mountain region of the United States. These authors found that prior performance had a significant and positive effect on both students' beliefs and college academic performance and academic interaction beliefs accounted for a significant amount of unique variance beyond prior performance in predicting college academic performance.

In a similar Robbins, Lauver, Davis, Langley, & Carlstrom (2004), in their meta-analysis of 109 early studies, reported that academic interaction beliefs had a significant and positive effect on the academic achievement of college students. These investigators concluded that teacher and student interaction is highly related with both retention and college academic achievement beyond that explained by more traditional (i.e., cognitive) academic predictors such as high school performance and standardized test scores. Interestingly, an empirical study in Africa has also documented similar findings. That is, Doll, Zucker and Brehm (2004) study with a sample of 300 undergraduate first and second year students at the University of Ibadan, Nigeria, demonstrated that student-teacher interaction had a significant and positive effect on academic achievement.

Studies conducted with a sample of high school students have also demonstrated consistent findings that student-teacher interaction has a significant and positive effect on academic achievement. Griggs, Gagnon, Huelsman, Kidder-Ashley and Ballard (2009) summed this best stating, "student-teacher relationships matter and may reduce the risk of negative behavioral outcomes…" (p. 562). Study in Canada by similar researchers, for instance, reported that student positive interaction with mathematics teacher had a significant and positive effect on mathematics achievement of high school students. Furthermore, these researchers revealed that interaction of mathematics teacher was found to be a mediator between mathematics attitudes and mathematics achievement. Howes, Hamilton and Matheson (1994), in a meta-analysis of 39 students-teacher interaction studies comprising 41 different data sets, also found that students-teacher interaction had a significant and positive effect on the academic performance and persistence of students by explaining approximately 14% and 12% of the variances in academic performance and academic persistence, respectively.

In general, researchers have concluded that an abundance of studies have consistently demonstrated that student-teacher interactions are strong determinants of academic accomplishments (Griggs, Gagnon, Huelsman, Kidder-Ashley, & Ballard, 2009). Specifically, these authors have suggested that the findings of empirical studies adequately support the argument that students' interactions with their teachers strongly influence their academic performance in different ways. The mechanism behind this relationship appears to be that interaction has its most potent motivational influences via the process of organized goals (Bandura, 2012), which lay the foundation for self-regulation of efforts by providing a standard for judging the sufficiency and effectiveness of goal relevant efforts and strategy (Bandura & Cervone, 1983), and thus student-teacher inte-

raction affects academic motivation, learning, and achievement (Pajares, 1996; Schunk, 1995).

While there is consensus among researchers that student-teacher interaction has a strong positive effect on the academic achievement of college/university students, some researchers (Rockwell, 1997; Spencer, 2006) have expressed concern regarding the problem of timing of measuring student-teacher interaction and academic achievement. These researchers suggested that care should be taken concerning the time when teachers contact and respond students and the nature of the criteria used, since these factors have a strong influence on the relationship among student-teacher interaction and academic achievement. This researcher justified this by saying that interaction experienced college/university students are more strongly related to their academic achievement and persistence than are the new for interaction college/university students (i.e., when students have long stay in colleges/universities and experience in the academic arena, their student-teacher interaction are expected to be more accurate).

In sum, it is evident from the preceding review that student-teacher interaction has a significant and positive effect on academic achievement of college/university students.

Therefore, the current study is aimed to examine the mediating role of self-esteem on the relationship between student-teacher interaction and academic achievement of university students in a developing African country, Ethiopia, where there is no intensive research in this area, by employing a prospective research design.

SELF-ESTEEM AND ACADEMIC ACHIEVEMENT

Self-esteem and academic achievement have close relationship and have a lasting impact each other (Iqabal et al., 2013). According to Sirin & Jackson (2001) self-esteem affects a variety of developmental outcomes, such as making decisions and performing challenging task.

High self-esteem plays a highly important role not only in academic achievements of students but also in social and personal development as well (Pullmann & Allik, 2008). Anthony et al. (2007) argue that students with high self-esteem have comparatively high academic achievements than students with low self-esteem (Hadinezhad & Masoudzadeh, 2018). Self-esteem affects all aspects of the life of an individual, such as, job success, school achievement, social development and professional development. However, there is a close relationship between self-esteem and level of educational attainment of learners (Wiggin et al., 1994). For example, in one their studies Maruyama et al. (2008) have found that students who generally feel confident show better performance in all areas of their studies and those who demonstrate less confidence show low performance. According to Miraei (2005) students who feel inadequate or shy cannot participate in the learning activities more actively. Such students often remain hesitant and dejected which ultimately lowers their level of self-esteem. This lowered self-esteem does not allow them to excel in life (Baumeister et al., 2016). Students with low self-esteem not only feel dejected or discouraged, rather such students cannot

solve their problems at school whenever they face it, whether it is academic or social (Zeinvand, 2006). On the other hand, Pullmann and Allik (2008) explain that a positively high self-esteem among students leads to success academically and socially. Because, according to Beane and Lipka (1986), self-esteem is a highly deciding factor in the overall developmental process of a child. This factor can potentially harm or help a student in his/her social life. For example, students with low self-esteem may have complicated relationship with peers or teachers. Even such students create problems for parents at home.

Students with high self-esteem participate enthusiastically in the learning process. Such students are more confident, active and motivated towards learning. Students with high self-esteem perform better in examination as compared to those students who have low self-esteem (Jordon & Kelly, 1990). Wood et al. (1994) found that there is close relationship between self-esteem and high rate of academic achievement. Students with low self-esteem do not participate actively in the teaching and learning process. They remain silent, passive and have a withdrawal attitude towards learning activities. Similarly Tootoonchi (1993) highlights that students with low self-esteem do not expose their skills or willingness to take part in the learning process actively. They also try to hide their unfavorable characteristics which according to them are not liked by others. According to Gaus et al. (1994) students with poor self-esteem avoid anything that may put them in a risk of exposing their flaws to others. Due to this reason they do not show much interest in the activities which may bring them fame and name in the class. Students with low self-esteem do not take challenges that could also bring rewards, laurels to them such as furtherance of their education and bringing them good name in their social circles both in school and at home (Wood et al., 1994). In another study Maruyama et al. (1981) have examined the relationship between student's self-esteem, their achievements and classroom participation. The rate of academic achievements of students with high self-esteem was found to be highly significant. Students with high self-esteem participate enthusiastically in the learning process (Hadinezhad & Masoudzadeh, 2018). Owens (1992) looked at the effects of self-esteem of students in a post-high school context in Indiana State through a longitudinal study. The students were placed in three categories for investigation. These three categories of students consisted of students who joined various services after completion of their high school education. Data collected from this study showed that the students who had high level of self-esteem were much happy and were enjoying their services. Studies conducted by Tootoonchi (1993) on prison inmates to see their level of self-esteem. The study revealed that majority of them did not have positive self-concept about their own selves. They had less confidence to share their views with others during their school days. They shirked participating in activities with their classmates. McCall el al. (1992) found that individual with high self-esteem did not drop out from school. The greatest number dropout occurred in schools where the students had low self-esteem. Kelly and Jordan (1990) have concluded that self-esteem of gifted students (those with high degree of academic achieve-

ments) was much higher than those with low degree of academic achievements. Gifted students have thus more positive self-image and self-concept. According to Wiggins (1987), there are other variables which contribute towards self-esteem and increased rate of participation in learning activities by students such as, quality of family life, appreciation from teachers and parents, participation in co-curricular activities and positive peer relationships. This study was conducted in District Swabi to know the perceptions of teachers in government secondary schools as what did they think about the relationship between self-esteem and students' academic achievement, because, it is observed that very few studies are available on this issue in Pakistani public schools. Although there are a few case studies which cannot be generalized due to the nature of the study and its limitations. Therefore, this quantitative study was conducted to investigate the perception of teachers in government schools about the relationship between self-esteem and academic achievements of students.

Self-esteem has long been considered an essential component of good mental health and has drawn many researchers' attention in recent years. Self-esteem is composed of person's self-Assessment and a combination of his/her self-concept of characteristics and abilities (Pope et al., 1988; Flouri et al., 2006; Osborn, 1997).

Our self-esteem develops and evolves throughout our lives as we build an image of ourselves through our experiences with different people and activities. Experiences during our childhood play a particular large role in the happening of our basic self-esteem. When we were growing up our successes (and failures) and how we were treated by the members of our immediate family, by our teachers, coaches, religious authorities, and by our peers, all contributed to the creation of our basic self-esteem (Yaratan & Yucesoylu, 2010). According to Cooper Smith's studies more than 30 years ago, persons who feel insufficiency and worthless, assume themselves as to be unimportant and unable to produce internal sources for improving their situation. These people believe that they are unsuccessful and unhelpful while they don't achieve their goals despite a lot of effort to improve the situation and this belief is as a result of poor self-esteem (Daglas, 2006).

Students with high self-esteem participate enthusiastically in the learning process. Such students are more confident, active and motivated towards learning. Students with high self-esteem perform better in examination as compared to those students who have low self-esteem (Hadinezhad & Masoudzadeh, 2018).

Self-esteem is considered to be one of the most essential personality constructs, which does not lose its relevance through the period of human existence. According to the psychologists, self-esteems remains as an important criteria of person's significance through various age groups, as well as while the goals of human life, achievements and needs are changing (Meskauskiene, 2015).

Self-esteem predicts academic achievement, confidence level, job performance and satisfaction in relationships and in marriages. It improves ones belief in one self (Cheema & Bhardwaj, 2021).

Pooja (2016) studied the effects of self-esteem and academic performance on alienation among students in an Indian educational environment and results revealed a significant main effect of self-esteem and an interaction effect of self-esteem and academic performance. Demo and Parker (1987) studied academic achievement and self-esteem among black and white college students and found that self-esteem scores of blacks and whites were not significantly different, despite blacks having significantly lower grade point averages than whites. The relationship between grade point average and self-esteem, however, was negligible among blacks and among white males, suggesting that academic achievement is not critical to the self-concept of college students. Sebastian (1997) studied parental pressure for achievement in school and its influence on children's academic interest, actual academic achievement, self-esteem and creativity and results found that pressure reported by parents as well as that perceived by children are associated negatively with academic achievement, self-esteem, and creativity. Academic achievement, self-esteem, and creativity show significant positive associations with socio-economic status of the families. Singh (2005) studied self-esteem and academic achievement and concluded that the relationship between self-esteem and academic achievement is bidirectional; causation flows in both directions. Self-esteem and academic achievement directly influence each other. Wilma et al. (2005) conducted study on the relationship between self-esteem and academic achievement in high ability students: Evidence from the Wollongong Youth Study and results of the study were: The self-esteem measure yielded a mean of 0.745 for the gifted group and of 0.781 for the non-gifted group, which was not statistically significant. Hall (2007) studied the relationship between academic achievement, academic performance and self-esteem of high school juniors at a public high school in central Florida. A significant relationship was found between academic achievement and performance and self-esteem. Pullmann and Allik (2008) studied relations of academic and general self-esteem to school achievement and results reveals that self-reported academic self-esteem is a strong and accurate predictor of school achievement, additionally rather low, not high, general self-esteem is a significant predictor of superior school performance when academic self-esteem and multicollinearity is controlled for. Chauhan (2009) studied relationship between academic self-esteem and educational achievement of visually impaired: Suggestion for Inclusion. Results and Discussion showed that high academic self-esteem helps in increasing educational achievement or vice versa. Joshi and Srivastava (2009) studied self-esteem and academic achievement of adolescents and the findings indicated that there were no significant differences with regard to self-esteem of rural and urban adolescents. There were significant differences with regard to academic achievement of rural and urban adolescents. Urban adolescents scored higher in academic achievement as compared to rural adolescents. Boys would score significant higher on self-esteem as compared to girls. Significant gender differences were found in academic achievement. Girls were significantly higher on aca-

demic achievement. Whitesell, Mitchell, & Spice (2009) conducted a longitudinal study of self-esteem, cultural identity, and academic success among American Indian adolescents and found that the relationship between self-esteem and success were mediated by personal resources and problem behaviors. Alves-Martins et al. (2010) studied self-esteem and academic achievement among adolescents and results show that there are significant differences between the self-esteem enjoyed by successful and unsuccessful students in the seventh grade; such differences disappear in the eighth and ninth grades. Ulrich (2010) studied relationship between self-esteem and academic achievement and concluded that self-esteem and academic achievement were positively correlated. Rahmani (2011) studied relationship between self-esteem, achievement goals and academic achievement among the primary school students and results of research showed that self-esteem, goal orientation components (mastery, approach performance and avoidance performance) and academic achievement are correlated. Colquhoun and Bourne (2012) studied self-esteem and academic performance of 4th graders in two elementary schools in Kingston and St. Andrew, Jamaica. There is a positive correlation between self-esteem and academic performance. Okoko (2012) conducted study on self-esteem and academic performance of students in public secondary schools in Nidhiwa district, Kenya. The findings of the study have revealed that 1) Students who perform well in academic tasks as well as co-curricular activities have high self-esteem 2) Age has an effect on self-esteem and academic performance 3) Gender has an effect on self-esteem and academic performance 4) Teachers have an effect on students' self-esteem and academic performance. Vishalakshi and Yeshodhara (2012) in their work on relationship between self-esteem and academic achievement of secondary school students and results revealed positive relationship between self-esteem and academic achievement of students. Jain and Dixit (2014) studied Self Esteem: A Gender Based Comparison and the Causal Factors Reducing It among Indian Youth and the findings revealed that there was no significant gender difference in the self-esteem levels of the participants. The above evidence supports the purpose of this research.

STUDENT-TEACHER RELATIONSHIPS AND SELF-ESTEEM

Individuals' interaction with parents and teacher is vital and very important in developing mental picture of self (Pianta et al., 2003). Based on theories of interpersonal relationships, it is postulated that teachers have a basic need for relatedness with the students in their class which can play a significant role in students' self-concept and expectations regarding scholastic achievements and how to make meaningful life after school (Ewnetu & Fisseha, 2008).

Parent's role is high in building Self-esteem at an early age and teacher's role is paramount in school. Positive teacher's interaction has highly related with high students' self-esteem. When students start class, they also start believing that teacher's evaluation is better than parent's role because the time they spent with their teacher is more than with their parents. Relationship behavior of instructors and parents greatly influences self-esteem and academic performance

(Santrock, 2007). Because teacher-student relationships are essential to one's social and emotional development, they have the potential influence on how a student succeeds in school.

Teachers play very important role in shaping the self-esteem of students and this is achieved through the kind of relationships that the teachers demonstrate towards students. Self-esteem can be adjusted at any stage in life and can be positive or negative. It is therefore extremely important to emphasize positive developmental change and strive to prevent the negative (Alpay, 2004).

A research conducted by Pianta (1994) cited in (Nyadanu et al., 2015) shows that Students who perceived more positive involvement with their teachers were found to score high on closeness (secure relationship) sub scale items. The moderately positively involved groups were found on the other hand to be at mid-range on both positive effect (closeness and secure) and negative effect (conflict and dependency) subscale items.

The relationship type that happens between teacher and student is vital for classroom success and students' self-esteem. Gatabu (2013) provided in his study school environment, teachers and peers as the main factors that influence an individual's self-esteem. Of these, teacher-student relationship is fundamental to the healthy development of students in schools (Myers & Pianta, 2008), especially to the students' self-esteem. Self-esteem of each individual develops through experience and relation with their teachers and parents. Negative experience and relationship results low self-esteem whereas positive relationship and experience results high self-esteem (Bruno & Njoku, 2014).

2. Objectives of the Study

This study has the following general and specific objectives

General objectives

To examine the mediating effect of self-esteem on the relationship between student teacher interaction and academic achievement

Specific objectives

1) To examine the relationship between teacher-student interaction and academic achievement of university students.

2) To investigate the relationship between self-esteem and academic achievement of university students.

3) To investigate the relationship between students' self-esteem and their interaction with teachers

4) To analyze the mediating role of self-esteem on the relationship between student teachers interaction and academic achievement.

Conceptual Framework of the Hypothesis (**Figure 1**).

3. Methods

The current study was conducted in Wolaita Sodo University graduating class

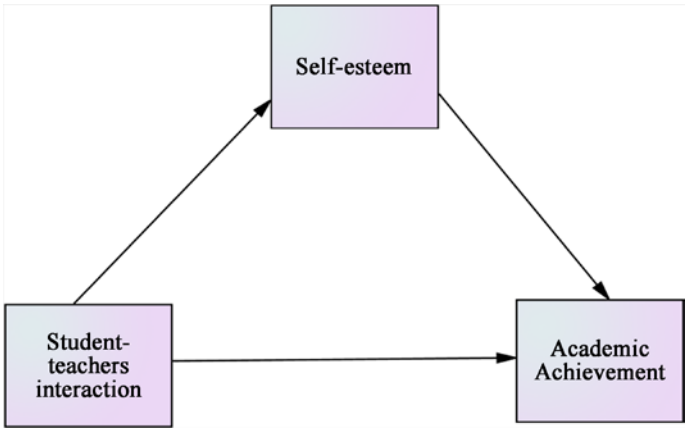

Figure 1. Conceptual framework.

students which is one of public university in Ethiopia. The reason graduating class students were selected was the outcome variable of the study is academic achievement of students (CGPA) in their study at university.

3.1. Participants

The target population of the study is all three college and two school graduating class students at Wolaita Sodo University 2021 academic year. The number of selected college and school graduating class student were 1730.

3.2. Sample and Sampling Technique

The selection of the sample for this study made as follows: First, by using purposive sampling graduating class students were taken because this research was investigating effects of student-teachers interaction and self-esteem on academic achievement based on *Cumulative Grade-Point-Averages (CGPAs).* Following this, stratified sample was used so as to participate female equally or proportionally in the study with male and to give equal chance for all colleges and schools because the numbers of students in each college or school are not equal. The sample of the study would be 313 third year students that the researcher selected from 1730 students of the Natural and Computational Science, Social Science College, Business and Economics College, School of Education and School of Law depending on sampling table that Morgan and Krejcie developed in 1970. "Because the sampling determination table developed by Morgan and Krejcie is very important to select a sample from population based on its clearness, many researchers used the technique and provided validity to it.

The 313 respondents were selected from all departments in the colleges and schools by using the sampling table. Finally, the researchers used simple random sampling techniques to select participants from each department to avoid bias and give equal opportunity for the entire graduating class of students to participate in the study.

According to Amin (2005), randomization is effective in creating equivalent representative groups that are essentially the same on all relevant variables

thought of by the researchers (see Table 1).

3.3. Measures

The researchers used the following fit indices to evaluate the overall goodness of fit of the model: comparative fit index (CFI), incremental fit index (IFI), Tucker-Lewis coefficient (TLI), and root mean square error of approximation (RMSEA). A model is considered acceptable if CFI > .93 (Byrne, 1994), IFI > .9, TLI > .9, and RMSEA < .08 (Browne & Cudeck, 1992). An ideal model is indicated when CFI > .95, IFI > .95, TLI > .95, and RMSEA < .05 (Steiger, 1990) or alternatively, the upper bound of RMSEA should not exceed 0.08 (Hu & Bentler, 1995). Modification indices (MIs) were examined to isolate sources of ill fit and correlate error terms with reasonable high covariance.

In order to conduct mediation analysis, this study followed the recommendation offered by Baron and Kenny (1986). Accordingly, the researchers supposed to consider four characteristics of mediation for analysis: a) the significant relation between X (predictor) and Y (outcome) (c), b) the relation between X (predictor) and M (mediator), c) the effect of the mediator on the outcome after controlling for the predictor, and 4) the remaining effect of X on Y after accounting for M (c'). This effect is zero in full mediation, while in partial mediation the degree of the effect can differ. C must be greater than c', and if a and b are significant and c' remains significant but $c' < c$, a partial mediation process is supported (Hopwood, 2007).

Teacher's student interaction

The Teacher-Student Relationship Scale (TSRS) was developed by Robert C. Piñata (1999) revised by Moskal, B.M., and Leydens, J.A. (2000). The internal consistency of responses to this scale measured by Cronbach's alpha was .845. Participants were asked to express the level of interaction on a five point Likert-Scale ranging from 1 = Strongly Disagree, to 5 = Strongly Agree. This scale has shown good reliability and validity among University students of the study area (Ly et al., 2012). This study only adopted the subscale of teacher student interaction which had 14 items, including teachers affectionate sharing with students (four items), jealous feeling (three items), and communication and sharing idea (seven items) [X^2/df = 4.14, tucker-lewis index (TLI) = .95, comparative fit

Table 1. Sampling frame for sampling techniques.

No	College/school	Population	Sample	Male	Female
1	Natural and computational science	560	101	57	44
2	Social sciences and Humanities	590	107	61	46
3	Business and Economics	370	67	38	29
4	Education and behavioral sciences	150	27	15	12
5	School of Law	60	11	6	5
	Total	**1730**	**313**	**177**	**136**

index (CFI) = .97, root mean-square error of approximation (RMSEA) = .036]. All items were rated on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). The higher scores indicated higher levels of student teacher interaction. For the current study, Cronbach's alpha for the scale was .84.

Self-esteem

Self-esteem items were developed by Rosenberg (2006). The purpose of the 10 item RSE scale was to measure self-esteem. Originally, the measure was designed to scale the self-esteem of high school students. However, since its development, the scale has been used with a variety of groups including adults, with norms available for many of those groups. This scale has shown good reliability and validity among Wolaita Sodo University students (Ly et al., 2012). This study only adopted the subscale of self-esteem which had 7 items, [X^2/df = 5.12, tucker-lewis index (TLI) = .95, comparative fit index (CFI) = .96, root mean-square error of approximation (RMSEA) = .074]. All items were rated on a 4-point Likert scale (from 1 = strongly agree to 4 = strongly disagree).

The RSE demonstrates a Guttman scale coefficient of reproducibility of .92, indicating excellent internal consistency. Test-retest reliability over a period of 2 weeks reveals correlations of .85 and .88, indicating excellent stability.

This pilot study was conducted within the sample of Wolaita Sodo University students, as a result Cronbach's alpha coefficient of .82 was obtained.

Academic achievement

In this study, the academic achievement was measured by students' cumulative grade point average (CGPA) from first year to graduating semester based on university guideline.

Mediation effect

Baron and Kenny (1986) method was followed to analyze the mediation effect. According to Baron and Kenny (1986), some conditions need to be met in order to prove the mediation effect. In the first condition, the independent variable (student teacher interaction) should have a significant effect on the dependent variable (academic achievement). In the second condition, the independent variable (student teacher interaction) should have a significant effect on the mediator variable (self-esteem). In the third condition, mediating variable (self-esteem) should have a significant effect on the dependent variable (academic achievement). In the fourth condition, effects of both independent (student teacher interaction) and the mediator (self-esteem) variables on a dependent variable (academic achievement) are calculated. In such case, the mediation effect may be considered only when the effect of the independent variable on the dependent variable becomes meaningless (Full medium) or decreases (partial medium).

3.4. Procedures

The present study was approved by the Academic Ethics Committee of the School of Education, Shaanxi Normal University, China. Informed consent was obtained from Wolaita Sodo University prior to data collection. The overall

quantitative data were collected within five consecutive days by keeping covid-19 rule. Following every necessary precaution such as securing permission to inter the class and the subjects (sample), the questionnaire was distributed to the selected students (sample) in the classroom the researcher together with a data collector and classroom representatives. Some clarifications were made for the respondents by the researcher as the participation were voluntary and they have the right not to fill the questionnaire before they were decided to participate in the research. Finally, keeping the confidentiality of data filled by the subject from unauthorized persons, the distributed questionnaires were collected in the day to avoid time constraints to fill the question in the specified period of time. While trying to organize the data for analysis, fortunately the researchers found that all selected 313 participants fill questionnaire and gave it back to the researchers. As a result the researchers 313 sample were considered for analysis.

3.5. Statistical Analysis

The hypotheses of the present study were: 1) teachers student interaction positively and significantly affects students' academic achievement, 2) students self-esteem affects significantly their interaction with their teachers, 3) Self-esteem of students affects students' academic achievement and 4) self-esteem mediates the effects of teacher student interaction on students' academic achievement.

Once the researchers collated the data for analysis, The SPSS version 25.0 and AMOS 21.0 (IBM, Armonk, NY, USA) were used to conduct the following analyses. First, Pearson's correlation analysis was conducted to represent the associations between all the study variables. Then, structural equation models (SEM) were developed based on hypothesized relationships between variables and tests of preliminary models. SEM is used to explain the relationship between multiple variables and concepts, which can combine mediation analysis with latent variable analysis and provides model fit information about the consistency of the hypothesized mediation model to the data. Model fit was assessed by RMSEA, TLI, and CFI. The adequate fit was suggested for values less than or equal to .08 for the RMSEA and greater than or equal to .90 for the TLI and CFI (Hu & Bentler, 1999). Finally, the bootstrap method was used to test the indirect effects. We calculated bias-corrected and accelerated 95% bootstrap CIs based on 2000 bootstrapped samples. If a 95% CI did not contain zero, then the indirect effect was significant.

4. Results

Common Method Bias

In the current study, all the data were collected using self-report measurements, which might lead to common method bias (Podsakoff et al., 2003). Thus, a single factor test of Harman was conducted to rule out the common method bias (Harman, 1976). According to Harman (1976), common method bias existed when only one factor emerged or when one factor explained for more than

40% of the variance associated with all items loaded simultaneously in factor analysis. The results of the factor analysis of the current study showed that a single factor explained 13.80% of the total variance, which indicated no significant common method bias.

4.1. Descriptive and Correlational Analysis

Means, SDs, and bivariate correlations of all the study variables are displayed in Table 2. As hypothesized, student teacher interaction is positively correlated with academic achievement and also students' teacher interaction is positively correlated with self-esteem of students. In addition, a positive relationship was found between self-esteem and academic achievement (see Table 2).

4.2. Results of Factor Analysis

Two tests, the Kaiser-Meyer-Olkin (KMO) test of sampling ampleness and Barlett's test of Sphericity, are normally computed to decide whether the sample has met the suitable necessities for factor analysis (Andersen & Herbertsson, 2003). Similarly in the present research the KMO test is done to test if the data set is adequate for factoring and it is also one of the preconditions in order to conduct factor analysis (Andersen & Herbertsson, 2003). According to the criteria set by Kaiser and Rice (1974), a KMO result under .50 is unacceptable, a result above .60 is fair, a result above .70 is middling, a result above .80 is meritorious and a worth over .90 is marvelous. Thus in the present study, the KMO score result for the 21 combined items was .802. As compared to the criteria of Kaiser and Rice (1974), the sample is adequate enough for factor analysis.

4.3. Measurement Model

As shown in the Table below, Confirmatory factor analysis was conducted to test the validity of the scales in the study and to assess the measurement model fit indices. The fully measurement model included three latent constructs (student teacher interaction, self-esteem and academic achievement). The measurement model was adequately suited to the data in terms of the model fit indices. The path coefficients between the measured variables and latent variables were significant (p

Table 2. Descriptive and correlation analysis of study variables (n = 313).

		M	SD	Sex	Age	CGPA	STI	SE
1	Sex	1.43	.496	–	.394	.755	.421	.098
2	Age	2.13	.56	.394	–	−0.167*	.093	.067
3	CGPA	2.85	.490	.755	−0.167*	–	.782	.30
4	Student teachers interaction	3.41	.472	.421	.093	.782	–	.100
5	Self-esteem	2.29	.487	0.098	.236	.30	.100	–

*Correlation is significant at the .05 level (2-tailed).

< .001). This measurement model adequately reflected the latent variables (see Table 3).

4.4. Mediation Test with Structural Equation Modeling

Mediating role of self-esteem in the effect of student-teacher interaction on students' academic achievement has been determined by two different path analyses. Baron and Kenny (1986) method mentioned above has been used as basis to prove the effect of mediation. According to this; in the first model, it has been tested whether student teacher interaction has a significant effect on academic achievement of students. When the first model is examined, it is observed that student teacher interaction has a significant effect on students' academic achievement (standardized β = .20, $p < .05$). Thus the first hypothesis has been accepted (see Figure 2).

The goodness-of-fit indexes of the model show that the model is in between acceptable limits [X^2/df = 4.14, tucker-lewis index (TLI) = 0.95, comparative fit index (CFI) = 0.97, root mean-square error of approximation (RMSEA) = 0.036] (see Table 4 and Figure 3).

The relationships between student teacher interaction and students' academic achievement, student teacher interaction and self-esteem, self-esteem and academic achievement have been tested in the second model according to the Baron and Kenny (1986) method. In this model, student teacher interaction is considered as

Table 3. Confirmatory factor analysis result of Student teacher interaction and self-esteem.

Scale	χ^2	Df	CFI	TLI	NFI	RMSEA
Student teacher interaction	2.82	67	.970	.959	.906	.036
Self-esteem	5.12	13	.969	.950	.962	.074

CFI, comparative fit index; TLI, Tucker and Lewis's index of fit; NFI, normed fit index; RMSEA, root mean square error of approximation.

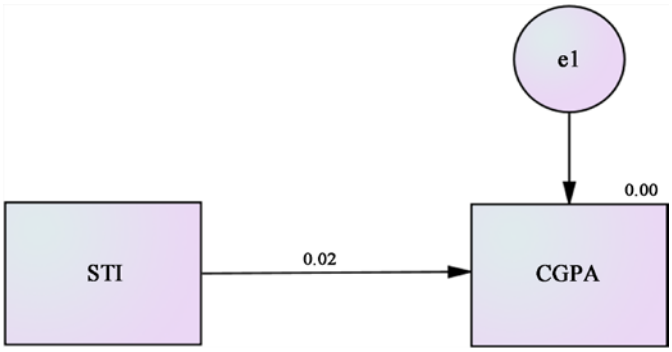

Figure 2. First hypothesis.

Table 4. Model of goodness fit indexes.

Path	Standardized β	Standard error	*P*
STI → CGPA	.20	.059	.00

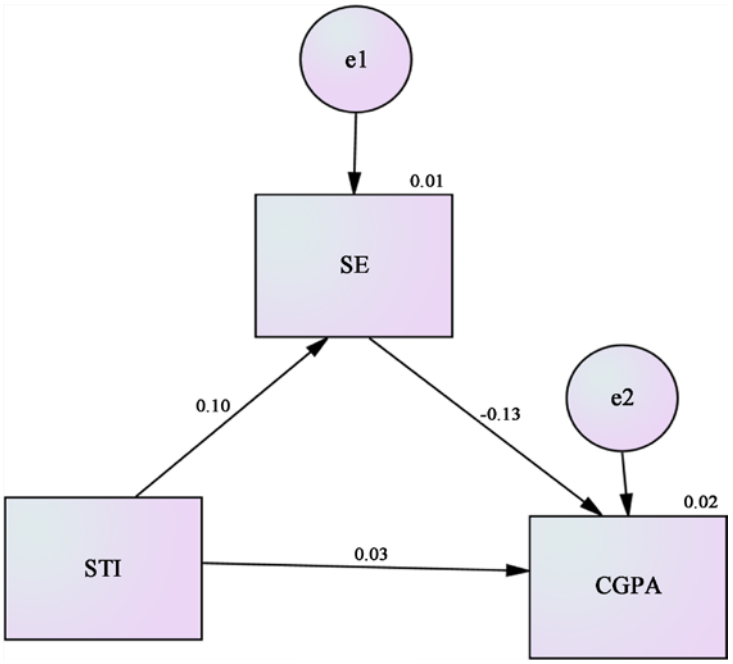

Figure 3. Baron and Kenny (1986) suggested that a mediation model should not be tested unless there is a significant relationship between X1 and Y. In more recent treatments of mediation, it has been pointed out that in situations where one of the path coefficients is negative; there can be significant mediated effects even when X1 and Y are not significantly correlated (Hayes, 2009) (see **Table 5**).

Table 5. The mediation Model.

Path	β	S.E	C.R	*P*
STI → CGPA	0.29	.059	.500	.00
STI → SE	.103	.058	1.77	.076
SE → CGPA	−.126	.057	2.21	.026

independent, academic achievement is considered as dependent and self-esteem is considered as mediator variable.

When the second model is examined, it is observed that student teacher interaction has a positive effect on students' academic achievement (standardized β = .29; $p < .05$); and self-esteem has significant effect on academic achievement (standardized β = −.126; $p < .05$). Thus, second and third hypotheses have been accepted.

According to this, 2nd and 3rd conditions of Baron and Kenny (1986) have been met as well. In addition to all these, by the inclusion of self-esteem in the model, the effect of student teacher interaction (standardized β = −.126; $p < .05$) on students' academic achievement has become meaningful. Thus, 4th condition of Baron and Kenny (1986) has been met as well. According to this, self-esteem of the university student has a full mediator variable role within the relationship between student teacher interaction and academic achievement. Thus, fourth hypothesis has been also accepted.

5. Discussion

The present study focused on examining the effect of student-teacher interaction on academic achievement and analyzing the mediating role of self-esteem in the relationship between student teacher interaction and academic achievement. The study tried to expand and relates the existing research areas related to student teacher relationship, self-esteem and academic achievement using the self-determination and ecological model as a theoretical base. As a result of the study, it has been revealed that there are positive relationships between teachers' student interaction, self-esteem and academic achievement. According to the results, there is a positive relationship between teachers' student interaction and students' academic achievement and students' self-esteem influence their academic achievement positively. Findings from the analysis of the survey of Wolaita Sodo University graduating class students showed that student teacher interaction had a positive and significant relationship with academic achievement. This indicates that the more teachers display appropriate interaction with students, the better students perform on their academic achievement. That means, developing the appropriate relationship with students while teaching and learning process would increase the academic achievement of students in university.

The same findings with the previous studies were found that student teachers interaction both has the positive and negative effects on the students' academic achievement. There were research findings in agreement with the results of the present study.

The present study finding supports Cui et al. (2020) found that there was positive and significant relationship between student teacher interaction and academic achievements of Chinese students. This research supports the research findings of Xu and Qi (2019) which shows that there was positive and significant relationship between student teacher interaction and students' mathematics achievement of eighth grade students in different provinces of mainland china. This finding opposes the research findings of Nyadanu et al. (2015) revealing that existing lecturer-student relationships had negative correlation with the self-esteem of students, indicating that the higher the scores on the lecturer-student relationship scale, the lower the self-esteem. This correlation means that high self-esteem individuals scored low on the student-lecturer relationship. This finding supported the propositions that good relationship between learners and the instructors provide a perfect atmosphere for the learner, promoting social acceptance and belonging and in turn inspire the learner to esteem high in life (DeSantis King et al., 2006, DuBois et al., 2002; Howes et al., 1992; Gatabu, 2013). This clearly revealed that environment play an important role in developing high self-esteem.

This study finding is similar with Whitaker (2004) which is there is significant relationship between student teachers interaction and academic achievement of college students. This finding also supports the findings of Hamre and Pianta

(2001) reveals that students' teacher interaction positively correlated with students' academic achievement. This study finding is similar with findings of Zou, Qu and Ye (2007) which showed that the positive relationship between student teacher interaction and academic achievement. Findings of Lee (2007) revealing that student teacher interaction significantly influences academic achievement of students is also supported by this findings.

According to the results of this study there is negative effect of self-esteem on academic achievement of students. This implies that students with high self-esteem achieves lowest grade in their academic performance. This study supports the findings of Hall (2007) which reveals that there is a negative relationship between students' self-esteem and their academic achievement. This result opposes many findings including Vishalakshi and Yeshodhara, 2012, Anthony et al., 2004, Alves-Martins et al., 2010, Ulrich, 2010 and Colquhoun & Bourne (2012) their findings were reveals the positive relationship between students' level of self-esteem and their academic achievement.

As the finding reveals there is positive relationship between student teacher interaction and students' self-esteem. This result supports the research findings of Ewnetu & Fisseha (2008) which shows that there is significant and positive relationship between student teacher interaction and self-esteem. Santrock (2007) also found similar findings with this result which indicates that significant correlation between student teacher interaction and students' self-esteem. The result of this study similar with Alpay (2004) found that role of teachers in shaping students' self-esteem is high. Gatabu (2013) study finding also supported by this finding reveals that student teachers interaction is significantly correlated with students' self-esteem. The finding of this study is parallel with the research result of Myers and Pianta (2008) which reveals that positive relationship between student teachers interaction and their self-esteem.

With regards to the last hypothesis, structural equation modeling was employed and the mediating role of self-esteem in the relationship between student-teacher interaction and academic achievement was confirmed positive and significant. This implies, self-esteem plays a full mediating role of the relationship between student teacher interaction and academic achievement. The teacher-student relationship affects the academic achievement of university students. In this study, the regression coefficient of teacher-student relationship on self-esteem is 0.103, which indicates that the teachers' care and attention is conducive to the students to form a healthy learning in classroom, thus establishing a higher self-esteem, teacher-student relationship has always influenced the development of positive emotions among students (Xu & Qi, 2019).

Self-esteem also affects academic achievement of university students. Students who are cared and trusted by teachers are more likely to build a strong self-esteem in their studies. They believe in their ability to overcome learning difficulties and have a lasting motivation for future learning activities. Therefore, these groups are relatively easy to acquire better academic achievement.

6. Conclusion

In the present study, the researchers found that there was positive relationship between student teacher interaction and academic achievement as well as between student teacher interaction and self-esteem and also self-esteem and academic achievement. Thus both student teacher interaction and self-esteem were significant predictors of academic achievement. Additionally, the study has concluded that self-esteem mediates the relationship between student teacher interaction and academic achievement. The results of the study helped us to understand the causal relationships among student teacher interaction, self-esteem and academic achievement. As the hypotheses of the present study were formulated based on the previous literatures, all of the hypothesis were successfully tested empirically and found supported. In order to get meaningful results, the study applied Structural Equation Modeling (SEM). Overall, the study provides new understanding in relation to the topic and empirical evaluation of the study model.

7. Recommendation

The positive interactions between teachers and students have an effect on students' academic progress. Teaching and learning are hampered when teachers and students have significant difficulties because of absences or a tense student-teacher relationship.

This discovery also motivates all parties involved in education to assume responsibility for coming up with and putting into action practical solutions to enhance the caliber and efficacy of teacher-student interaction. Through the use of modern teaching methods like discussion, debate, and practice, such a relationship can be strengthened. Teachers, students, policymakers, parents, caregivers, and school administrators must work hard to create supportive relationships in the learning environments in order to boost academic achievement at universities and colleges. In general, the process of education and teaching reform, all concerned bodies must work to create a positive teacher-student relationship, encourage their emotional interaction, and reduce the distance between them. These will boost pupils' academic performance as well as assist them to develop a high level of self-esteem.

Conflicts of Interest

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

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