Teaching Quality and Students' EFL Achievements in Ethiopia: Analysis From the Perspective of the Basic Dimensions of Teaching Quality

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Abstract—**Teaching quality is important for students' English as a Foreign Language (EFL) Achievements. The three basic dimensions of teaching quality (student support, classroom management, and cognitive activation) showed effectiveness in some subjects in developed countries, but there is very little investigation on its effectiveness in developing ones. Using hierarchical linear modeling and re-centered influence function regression, this study investigates the extent to which the three basic dimensions of teaching quality affect students' EFL achievements and how much the effect varies across achievement distributions in the context of Ethiopia. Findings reveal that classroom management does not affect students' EFL achievements and this is consistent across achievement distributions. However, cognitive activation positively affects students' EFL learning achievements and the effect is consistent across the distribution of achievements. Similarly, student support affects students' EFL achievements positively, but its effect is higher for high-achieving students. Implications of the findings were discussed.**

Index Terms—**EFL achievement, teaching quality, HLM, RIF, teaching quality dimensions**

I. INTRODUCTION

Teaching quality is important in foreign language learning because children usually do not have other learning opportunities outside the classroom (Muijs et al., 2014). Klieme et al. (2001) developed the three basic dimensions of teaching quality and its effectiveness was investigated mostly in mathematics and in developed countries. Praetorius et al. (2018) argue that it may be applied "across school subjects, grade levels, and potentially even countries and cultures" (p 408). However, contextual factors might influence teaching quality itself and interact in the process of how it affects learning achievements in education in general and in English as a foreign language (EFL) in particular (Tikly, 2011). Therefore, it is crucial to investigate the effectiveness of the framework in developing countries. Moreover, studies tested the framework in EFL and German language, but they do not account for heterogeneity across achievement levels, an approach which is critical for a better understanding of the effect of quality teaching (Hochweber & Vieluf, 2018; Praetorius et al., 2016). Some instructional strategies might be important for high-performing students and not for low-performing ones (or vice versa) due to hidden mechanisms behind the effect of these strategies or due to hidden classroom circumstances (Konstantopoulos et al., 2019). As such, the question as to whether the effect of teaching quality is consistent across EFL achievement levels remains unanswered. Therefore, it is important to examine how teaching quality affects students' EFL achievements while also accounting for heterogeneity in achievements.

This study examines the effectiveness of the dimensions of teaching quality for students' EFL learning achievements. Specifically, the following research questions are asked: (1) to what extent does teaching quality affect students' EFL achievements? (2) to what extent does teaching quality affect students' EFL achievement across EFL achievement distributions? To answer these questions, we use Ethiopia, driven by three reasons: first, Ethiopia was chosen due to availability of reliable countrywide EFL data. Second, we want the study to be on a developing country, different than the developed ones where the theoretical model of interest was already tested (especially Germany), in order to capture the potential country difference in the effect of teaching quality on EFL achievements. And third, Ethiopia is one of the few developing countries that officially teach EFL at the primary school level, giving us an opportunity to investigate the dimensions of teaching quality in an EFL context at primary education. We draw from the rich Young Lives data on Ethiopia, a survey that captures many variables needed to operationalize the three basic dimensions of teaching quality

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analyzed in the study.

This study is important for its theoretical and policy implications not only in EFL teaching but also in other subjects. Its findings can be linked to better teaching practices in EFL teaching in Ethiopia and similar developing countries, improving education quality in those countries. This is very crucial in most developing countries, regarding the learning crisis they currently face. Moreover, EFL achievements are related to labor market premia in non-English speaking countries (Chakraborty & Bakshi, 2016). Helping to improve students' EFL achievements will likely give them more socioeconomic opportunities.

II. Literature Review

Teachers matter for learning in general education or EFL because they facilitate the learning process through quality instruction (Hochweber & Vieluf, 2018; Kunter et al., 2013). Teaching quality is sometimes referred to as effective teaching, instructional quality, or good teaching practices. There is no universal agreement on what teaching quality is, but the concept implies instructional strategies that match learners' needs and teaching behaviors and processes which promote better learning achievements (Pozas et al., 2020). For example, quality instruction may be learner-centered and it includes creating a relevant environment for learners to learn efficiently, adapting the teaching style to the learning style of students, and caring for their other learning needs (Valiandes, 2015). Consequently, teaching quality in this study is approached as teacher instructional activities or behaviors that are related to better learning achievements.

Many studies agree that teaching quality is related to EFL achievements. Wilden et al. (2020) found a relationship between teaching quality and students' L2 proficiency (EFL) in Germany. The study approached teaching quality from many of its components, but the one which was found to be related to students' achievements is supportive climate. Similarly, Kunter et al. (2013) examined what determines teaching quality and its subsequent potential effects on students' achievements. They found that teaching quality is determined by factors such as pedagogical content knowledge, self-regulatory skills, and enthusiasm for teaching. They also found that teaching quality is a strong predictor of learning achievements. Furthermore, Elgun-gunduz et al. (2012) showed that teaching quality is related to students' EFL achievements. They approached the concept from the perspective of isolated and integrated form-focused instructions. They found that integrated instruction was related to students' EFL achievements. Iraji and Gholami (2018) also found that these two instructional approaches are related to EFL achievements, though they agree that integrated form-focused teaching has a higher effect than isolated form-focused teaching.

Despite this evidence, some studies found a weak relationship between teaching quality and learning. Blömeke et al. (2016) found that teacher credentials are related to teaching quality and students' achievements, but teaching quality is not related to students' achievements. Some other studies argue that teaching quality affects some groups of students and not all students. Mehrdad et al. (2012) found that teaching quality is related to EFL achievements of intermediate proficiency students and not low or high proficiency ones. This finding is echoed by another EFL study which shows that learning outcomes also dependent on student ability levels (Wilden & Porsch, 2019).

The three basic dimensions of teaching quality developed by Klieme et al. (2001) conceptualizes student support, effective classroom management, and cognitive activation as the fundamental dimensions of quality teaching. Student support refers to caring for the learning needs of students by providing them with support whenever necessary; it may also be associated with student-teacher interactions and relationships. A supportive classroom triggers students' well-being and learning motivation, contributing by that to improve their learning achievements (González et al., 2016; Adler et al., 2018). Classroom management is about disciplinary issues and interventions that help create desired behaviors or prevent undesired ones, so as to avoid disruptive situations that reduce the teaching and learning time (Kuger, 2016). However, time management is also included in the classroom management dimension, as better time management helps increase the teaching and learning time. Cognitive activation refers to teaching in a way that students can understand. In cognitive activation, teachers rely on what students already know and build on that by employing challenging tasks or engaging students in high-level thinking.

Praetorius et al. (2018) reviewed the literature on the three basic dimensions of teaching quality and suggest that the model has the potential to improve learning achievements across subjects and countries, but research is needed to identify the conditions under which it can be effective. Various studies have tested the model but are focused on subjects such as science and mathematics and are mainly on developed countries (e.g., Praetorius et al. 2016; Wilden et al., 2020). As such, the question arises whether the model is effective for EFL teaching and in a developing country.

III. Methods and Data

A. Data

This study used the Young Lives (YL) 2016-2017 school survey dataset. YL follows children from four low- and middle-income countries (Ethiopia, Peru, Vietnam, and India) to better understand child poverty in these countries and also explore how policies affect children's well-being. It was initially designed to cover information on children, their families, and their communities. However, in 2010, a school survey component was included in order to collect information on children's background and their educational experiences. The survey captures information on child background, learning achievements, and their schools or related factors.

YL used a sentinel site surveillance system as a sampling technique. In Ethiopia, this consisted of a three-stage sampling technique following the administrative division of the country. Specifically, the program selected regions, then woredas (districts), and finally kebeles (the lowest administrative tier). In selecting regions, YL ensured national coverage, for the data to be representative of the concerned population. From this perspective, five out of the nine regions of the country were initially selected, but the regions of Somali and Afar (called "Emerging regions") were later included in the sample, making it representative of the concerned national population. Within each region, three to five woredas were selected while keeping balanced representations of poor and non-poor households, rural and urban areas, and the cultural diversity of the country. Within each woreda, at least one kebele was sampled. As a whole, YL data include students from schools in thirty sentinel sites.

B. Variables

YL provides information on students from grades 7 and 8 (primary school) and their respective school-related factors. Students' EFL test score is the dependent variable in this study. This dependent variable measures the functional English skills of students, i.e. their skills in terms of understanding English in relevant contexts or situations which reflect real life. As such, it focuses on English for communication, rather than correct technical and grammatical aspects of the language.

The concept of teaching quality is not easily captured. This paper adopts the three basic dimensions of teaching quality and operationalizes it following literature (e.g., Atlay et al., 2019; Lotz, 2014). It computed constructs capturing each dimension of the model. To do so, Principal Component Analysis (PCA) was used to reduce information dispersed over a number of variables (related to each dimension) into single index variables (Jolliffe, 1990). PCA is often used in educational research to capture concepts which are challenging to measure using a single variable (Sanfo, 2020). Items on each dimension of the model are Likert-type (four categories) and are used to construct indexes representing each dimension (table A-1 in the appendix). The index for each component was constructed independently and validity of the correlation between the initial items was checked by ensuring a Cronbach alpha of at least 0.7 for each set of items (Dhrymes, 1970). Following Kaizer (1960), we retained extracted components with at least an eigen-value of one as the "meaningful" ones to be used in the analysis. However, as recommended by Hatcher (1994), we applied a varimax (orthogonal) rotation to the retained components in order to have loadings which are similar to the correlation between these components and the initial variables used for the PCA. In summary, PCA helped construct indictors which better capture the complexity of the dimensions of teaching quality. Tables 1 and 2 present the descriptive statistics and the definition of variables, respectively.

TABLE 1
DESCRIPTIVE STATISTICS OF VARIABLES USED IN THE ANALYSIS

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variable					
English score	12,182	19.071	6.927	1	40
Student and family level variables					
Gender	12,182	0.485	0.500	0	1
Age	12,182	14.364	1.549	11	16
Household size	12,182	6.599	3.087	1	28
Mother education (No educ.)	12,182	0.273	0.446	0	1
Mother education (Primary)	12,182	0.335	0.472	0	1
Mother education (Second.)	12,182	0.205	0.404	0	1
Mother education (Tertiary)	12,182	0.060	0.238	0	1
Father education (No educ.)	12,182	0.154	0.361	0	1
Father education (prim.)	12,182	0.253	0.435	0	1
Father education (Sec.)	12,182	0.287	0.453	0	1
Father education (Tertiary)	12,182	0.123	0.329	0	1
Home books (no books)	12,182	0.114	0.318	0	1
Home books (1-5)	12,182	0.332	0.471	0	1
Home books (6-10)	12,182	0.289	0.453	0	1
Home books (11- 20)	12,182	0.125	0.331	0	1
Home books (21-50)	12,182	0.061	0.240	0	1
Home books (51+)	12,182	0.079	0.270	0	1
Reading habit	12,182	0.556	0.497	0	1
Labor (family business)	12,182	0.297	0.457	0	1
Labor (outside paid)	12,182	0.545	0.498	0	1
School level variables					
Student support	12,182	0.000	1.583	-4.858	2.665
Classroom Management	12,182	0.000	1.360	-3.808	2.170
Cognitive activation	12,182	0.000	1.385	-4.154	2.153
Public school	12,182	0.891	0.311	0	1
English class periods	12,182	5.116	0.501	3	6
Teaching has training	12,182	0.428	0.495	0	1
Teacher experience	12,182	14.983	9.467	1	36
Teacher experience square	12,182	314.101	358.661	1	1296
Student book ratio	12,182	0.701	0.458	0	1
Pedagogical resources	12,182	0.000	1.242	-0.572	9.281
Site level variables					
Urban	12,182	0.744	0.436	0	1

TABLE 2
DEFINITION OF VARIABLES USED IN THE ANALYSIS

Variable	Definition
Dependent variable	
English score	Student's English test score
Student and family level variables	
Gender	Student's gender (male = 1)
Age	Student's age in years
Household size	Number of household members
Mother education (No educ.)	Student's mother has no education = 1
Mother education (Primary)	Student's mother has primary education = 1
Mother education (Second.)	Student's mother has secondary education = 1
Mother education (Tertiary)	Student's mother has tertiary education = 1
Father education (No educ.)	Student's father has no education = 1
Father education (prim.)	Student's father has primary education = 1
Father education (Sec.)	Student's father has secondary education = 1
Father education (Tertiary)	Student's father has tertiary education = 1
Home books (no books)	Student has no books at home = 1
Home books (1-5)	Student has one to five books at home = 1
Home books (6-10)	Student has 6 to 10 books at home = 1
Home books (11- 20)	Student has 11 to 20 books at home = 1
Home books (21-50)	Student has 21 to 50 books at home = 1
Home books (51+)	Student has more than 51 books at home = 1
Reading habit	Student sometimes reads the books outside school = 1
Labor (family business)	Student does not do family related business labor = 1
Labor (outside paid)	Student does not do paid labor outside the household = 1
School level variables	
Student support	Student support index variable
Classroom Management	Classroom management index variable
Cognitive activation	Cognitive activation index variable
Public school	Student goes to government school = 1
English class periods	Number of English class periods
Teaching has training	Teacher teaching diploma = 1
Teacher experience	Teacher experience in years
Teacher experience square	Teacher experience square
Student book ratio	One textbook per student = 1
Pedagogical resources	Classroom pedagogical resources index variable
Site level variables	
Urban	School belongs to an urban site

C. Empirical Analysis

This study used Stata 16.1 for all estimations. Hierarchical linear modeling (HLM) was employed to answer the first research question. HLM is often used in analyses using data with a clustering nature structure (Hox 2010). We first fitted an empty model (model 1), which decomposes the dependent variable into different variance components of the clusters (here student, school, and site). The variances are used to estimate the intraclass correlation, i.e., the degree of similarity in the outcome variable within the second (or higher) level of the hierarchy. In order to determine the number of clusters to use, we fitted single-level, two-level, and three-level models by maximum likelihood (ML) and we compared them using likelihood ratio test (Leckie, 2013).

Second, we added predictors at the student, school, and site levels. The dimensions of teaching quality were included along with school-level factors used, and the estimation for each dimension was done separately to avoid collinearity (Praetorius et al., 2018). After including all predictors in each regression and it was found that the factor of interest was not statistically significant, interaction terms with other variables were explored. This showed a statistically significant interaction term between classroom management and school type (government school). Furthermore, the effect of student-book ratio was found to vary across schools, leading to the inclusion of a random slope related to this variable at the school level. The inclusion of all factors, the interaction term, and the random slope provided the final model, model 5, specified in (1).

$$y_{ijk} = \beta_0 + \beta_1 x_{1ijk} + \beta_2 x_{2ijk} + \beta_3\ x_{3ijk} + \beta_4\ x_{4ijk} + \beta_5\ x_{5ijk} + \beta_6\ x_{6ijk} + \beta_7\ x_{7ijk} + \beta_8\ x_{8ijk} + \beta_9\ x_{9ijk} + \beta_{10} w_{1jk} + \beta_{11} w_{2jk} +$$
$$\beta_{12} w_{3jk} + \beta_{13} w_{4jk} + \beta_{14} w_{5jk} + \beta_{15} w_{6jk} + \beta_{16} w_{7jk} + \beta_{17} w_{8jk} + \beta_{18} w_{9jk} + \beta_{19} z_{1k} + \beta_{20} w_{1} {}^{*} w_{2jk} + v_k +\ + u_{0jk}\ + u_{1jk} w_{7jk} + e_{ijk}$$
(1)

$$(v_k) \sim \mathrm{N}\ (0,\ \sigma_v^2)$$

$$u_{jk} \sim \mathrm{N}\ \left\{ \begin{pmatrix} 0 \\ 0 \end{pmatrix} \begin{pmatrix} \sigma_{u0}^2 & \square \\ 0 & \sigma_{u1}^2 \end{pmatrix} \right\}$$

$$e_{ijk} \sim \mathrm{N}\ (0,\ \sigma_e^2)$$

Where:

y_{ijk} is the EFL achievement score of student i in school j in site k.

β_0 is the mean across all sites;

v_k is the effect of site k;

u_{jk} is the effect of school j; and

e_{ijk} is the student level residual term.

$x_{1ijk} \sim x_{9ijk}$ are students' background factors

$w_{1jk} \sim\ w_{9jk}$ are school factors (including teaching quality)

z_{1k} is the site factor

$\beta_{20} w_{1}{}^{*} w_{2jk}$ is the interaction between classroom management and public school

$u_{1jk} w_{7jk}$ is the random slope of student book ratio at the school level

It is important to mention that just adding predictors does not necessarily improve model fit. We tested "new" models using deviance statistics (- 2 X log likelihood). Furthermore, variables were not standardized, because studies show that this practice is subject of debate, as it may lead to estimating a different model than the one intended (Hofmann & Gavin, 1998; Paccagnella, 2006).

Despite its widespread use, HLM cannot estimate the effect of predictors across distributions of the outcome variable, what our second research question investigates. Consequently, it is critical to use another approach that allows such investigations. To do so, this study employs unconditional quantile regression (UQR) based on re-centered influence function (RIF) developed by Firpo et al. (2007). RIF is specified as:

$$\mathrm{RIF}\ (Y;\ q_\tau;\ F_Y) = q_\tau + \ \frac{\tau - 1\ (Y \le q_\tau)}{f_Y(q_\tau)} \tag{2}$$

Where q_τ is the value of the dependent variable y at quantile τ. $f_Y(q_\tau)$ is the density function of y at q_τ. $1\ (Y \le q_\tau)$ is the indicator function and identifies whether the value of the dependent variable Y for the individual is below q_τ.

The UQR was estimated using cluster-adjusted standard errors (Woessmann, 2003), and it can be specified as conditional RIF regression models at the quantile q_τ as follows[1]:

$$\mathrm{E}\ [\mathrm{RIF}\ (Y_i;\ q_\tau; F_Y)|X_i]\ \ = X_i\ \beta_\tau + \varepsilon_i \tag{3}$$

Where X is a vector of the factors included in the regression, β represents their respective coefficients, and ε is the error term.

IV. RESULTS AND DISCUSSION

A. Teaching Quality and Students' EFL Learning Achievements

In this study, the first research question investigates the extent to which teaching quality affects students' EFL achievements. The study estimated each dimension of teaching quality separately and controlled for a certain number of factors that it added stepwise. We present only the results from level 2. The full results are available upon request.

Model 3 in table 3 indicates that classroom management does not have a direct effect on students' EFL achievements. Potential indirect effects were then investigated through interaction terms. The interaction with public school showed statistical significance, as can be seen in models 4 and 5 in table 3. This means that the effect of classroom management on EFL achievements depends on whether the school is a government or a non-government one. We plotted the interaction in order to interpret it (figure 1). As can be seen, along all levels of classroom management, the slope for non-government schools is higher relative to the one of government schools. This means that as classroom management improves, EFL achievements of students from non-government schools are expected to be higher relative to students from government schools.

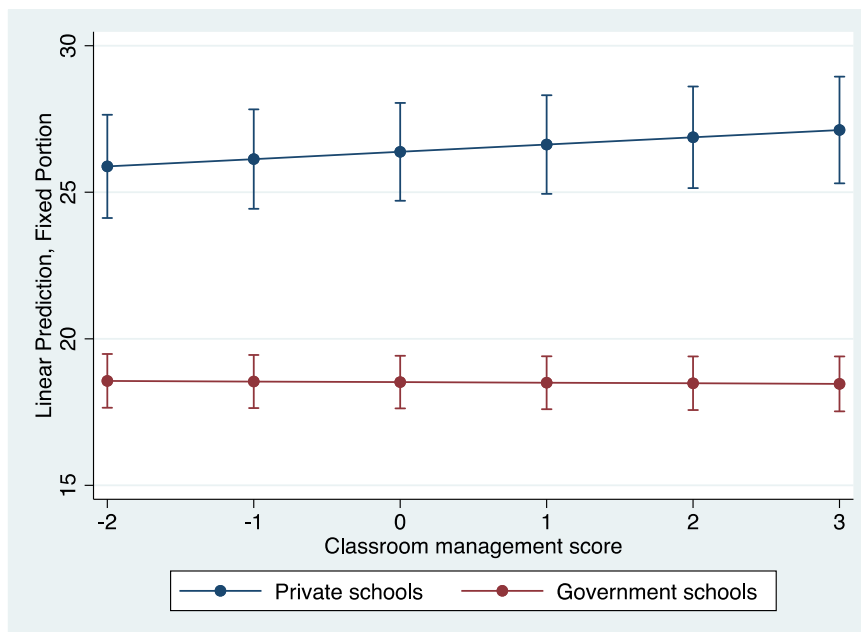[1] See Borgen (2016) for a technical presentation of RIF regression

Figure 1: EFL achievements by classroom management and school type

TABLE 3
CLASSROOM MANAGEMENT AND STUDENTS' EFL ACHIEVEMENTS

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
English class periods			-0.174	-0.174	0.186
			(0.256)	(0.254)	(0.296)
Teacher has training			-0.117	-0.075	-0.156
			(0.228)	(0.227)	(0.229)
Teacher experience			0.332***	0.317***	0.336***
			(0.044)	(0.043)	(0.044)
Teacher experience square			-0.009***	-0.009***	-0.009***
			(0.001)	(0.001)	(0.001)
Student book ratio			0.872***	0.876***	0.823**
			(0.211)	(0.210)	(0.407)
Classroom management			0.009	0.240*	0.248*
			(0.042)	(0.133)	(0.132)
Public school			-8.535***	-8.116***	-7.855***
			(0.893)	(0.852)	(0.854)
Public school X Classroom management				-0.257*	-0.269*
				(0.140)	(0.140)
Pedagogical resources			0.029	0.027	0.063
			(0.065)	(0.065)	(0.066)
Urban				3.432***	3.443***
				(0.794)	(0.776)
Observations	11,616	9,710	8,985	8,985	8,985
Number of groups	30	30	30	30	30

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results on the effect of the cognitive activation dimension of teaching quality on students' EFL achievements are presented in table 4. They indicate a strong relationship between cognitive activation and students' EFL achievements. Specifically, the relationship between cognitive activation and students' EFL achievements is positive and statistically significant at the 1% level. The variable cognitive activation is added from model 3 which already presents a statistical significance at 1% level. In model 4, controlling for rural and urban sites does not change the statistical significance of the relationship between the two variables. Similarly, in the final model (model 5), a random slope is accounted for, but the relationship between cognitive activation and EFL achievements does not change. It can be said then that cognitive activation is positively related to students' EFL achievements.

TABLE 4
COGNITIVE ACTIVATION AND EFL ACHIEVEMENTS

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Public school			-8.663***	-8.269***	-8.105***
			(0.905)	(0.859)	(0.860)
English class periods			-0.087	-0.082	0.215
			(0.258)	(0.256)	(0.297)
Teacher has training			-0.267	-0.222	-0.293
			(0.229)	(0.228)	(0.230)
Teacher experience			0.327***	0.311***	0.333***
			(0.044)	(0.044)	(0.044)
Teacher experience square			-0.009***	-0.008***	-0.009***
			(0.001)	(0.001)	(0.001)
Student book ratio			0.913***	0.917***	0.848**
			(0.213)	(0.211)	(0.406)
Cognitive activation			0.255***	0.255***	0.254***
			(0.042)	(0.042)	(0.042)
Pedagogical resources			0.029	0.027	0.065
			(0.066)	(0.066)	(0.067)
Urban				3.389***	3.394***
				(0.788)	(0.773)
Observations	11,616	9,710	8,809	8,809	8,809
Number of groups	30	30	30	30	30

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As for the results on the relationship between student support and EFL achievements, they are presented in table 5. Model 3 indicates that student support is statistically related to students' EFL achievements for all students, and the relationship is statistically significant at 1% level. Model 4, which controls for differences between rural urban areas, also indicates that classroom support is statistically related to students' EFL achievements at 1% level. Model 5, the final model, confirms the statistical relationship found in the previous ones. Specifically, student support is related to students' EFL achievements, statistically significant at 1% level. In summary, the results on the student support perspective show a strong relationship between the latter and students' EFL achievements.

TABLE 5
STUDENT SUPPORT AND EFL ACHIEVEMENTS

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
Public school			-8.518***	-8.140***	-7.893***
			(0.902)	(0.859)	(0.865)
English class periods			-0.177	-0.171	0.199
			(0.257)	(0.255)	(0.297)
Teacher has training			-0.129	-0.088	-0.151
			(0.228)	(0.227)	(0.229)
Teacher experience			0.320***	0.304***	0.321***
			(0.044)	(0.044)	(0.044)
Teacher experience square			-0.009***	-0.008***	-0.009***
			(0.001)	(0.001)	(0.001)
Student book ratio			0.895***	0.899***	0.810**
			(0.212)	(0.210)	(0.399)
Student support			0.104***	0.104***	0.103***
			(0.037)	(0.037)	(0.037)
Pedagogical resources			0.045	0.044	0.075
			(0.065)	(0.065)	(0.066)
Urban				3.450***	3.452***
				(0.802)	(0.784)
Constant	17.227***	16.241***	22.592***	20.848***	19.098***
	(0.796)	(0.935)	(1.722)	(1.710)	(1.896)
Observations	11,616	9,710	9,005	9,005	9,005
Number of groups	30	30	30	30	30

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

B. Teaching Quality and Students' EFL Achievements across Distributions of Achievements

The second research question of this study explores the extent to which the effect of the three basic dimensions of teaching quality on EFL achievements might vary across EFL achievement distributions. The analysis was done separately for each dimension and results presented accordingly. Moreover, the analysis used many quantiles, trying to uncover relationships that may change across as many of them as possible. Results are presented from percentiles 10 to 95.

Table 6 indicates that classroom management is not statistically related to students' EFL achievements at the mean. The lack of statistical relationship may change depending on disaggregation into percentiles (i.e., low, medium, and high-performing students). The disaggregation still shows a non-statistically significant relationship between classroom management and students' EFL achievements. Consequently, regardless of EFL achievement levels, it can be said that classroom management does not affect students' EFL achievements.

Examining the relationship between cognitive activation and students' EFL achievements, results indicate that the relationship between the two at the mean is positive and statistically significant at the 1% level (table 7). Disaggregating the analysis into percentiles might make the statistical significance disappear if there are students at some percentiles who are not affected by cognitive activation. However, the disaggregation shows that the relationship between cognitive activation and students' EFL achievements remains positive and statistically significant across the whole distribution. In terms of the strength of the statistical significance, it is at least 5% level along the distribution, though no consistent pattern can be observed when comparing the tails or the middle of the distribution. As a whole, cognitive activation affects students' EFL achievements consistently across distributions of learning achievements.

In terms of the relationship between student support and EFL achievements (table 8), surprisingly, no statistical significance was found at the mean analysis, while there was a statistical significance in the first research question (using HLM). As the analysis is disaggregated across distributions, the results remain statistically insignificant for students on the lower tail and the middle of the distribution. Moving to the upper tail of the distribution, statistical significance was found at the extreme end. Specifically, student support affects EFL achievements at percentile 95 of the distribution, statistically significant at the 10% level. These results from a comparative perspective across the distribution indicate that student support is related to students' EFL achievements, but only for those at the 95th percentile (high achievers).

TABLE 6
CLASSROOM MANAGEMENT AND STUDENTS' EFL ACHIEVEMENTS ACROSS DISTRIBUTIONS

VARIABLES	(1) Mean	(2) Perc. 10	(3) Perc. 20	(4) Perc. 30	(5) Perc. 40	(6) Perc. 50	(7) Perc. 60	(8) Perc. 70	(9) Perc. 80	(10) Perc. 90	(11) Perc. 95
Public school	-8.368***	-1.328***	-1.955***	-3.189***	-4.836***	-5.942***	-8.225***	-11.739***	-15.614***	-19.894***	-22.735***
	(1.063)	(0.338)	(0.398)	(0.608)	(0.744)	(0.810)	(0.988)	(1.288)	(1.932)	(2.982)	(4.938)
English class periods	1.434*	-0.208	-0.055	0.416	1.022	1.141	1.797*	2.600*	3.505**	3.202**	2.877*
	(0.778)	(0.259)	(0.388)	(0.576)	(0.765)	(0.816)	(1.001)	(1.311)	(1.378)	(1.362)	(1.692)
Teaching has training	-0.711	-0.671*	-0.944**	-1.084	-1.131	-1.198	-1.282	-0.961	-0.391	0.427	1.039
	(0.795)	(0.369)	(0.465)	(0.665)	(0.830)	(0.891)	(0.998)	(1.214)	(1.255)	(1.258)	(1.402)
Teacher experience	-0.003	0.012	-0.016	-0.039	-0.016	-0.005	0.014	-0.058	0.105	0.104	-0.047
	(0.120)	(0.054)	(0.068)	(0.101)	(0.138)	(0.150)	(0.166)	(0.182)	(0.186)	(0.201)	(0.244)
Teacher exper. squared	-0.000	-0.000	0.000	0.001	0.001	0.000	-0.001	0.001	-0.004	-0.004	-0.001
	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)
Student book ratio	0.641	0.501	0.407	0.206	0.058	0.041	0.034	0.332	0.894	1.539	3.545**
	(0.529)	(0.396)	(0.379)	(0.488)	(0.575)	(0.594)	(0.655)	(0.798)	(0.855)	(1.026)	(1.388)
Classroom management	0.079	0.005	0.098	0.094	0.094	0.133	0.113	0.132	0.049	0.013	0.010
	(0.084)	(0.062)	(0.067)	(0.075)	(0.090)	(0.103)	(0.123)	(0.136)	(0.141)	(0.143)	(0.127)
Pedagogical resources	0.437***	0.168***	0.295***	0.432***	0.478***	0.502***	0.606***	0.544***	0.513***	0.635***	0.316
	(0.093)	(0.051)	(0.061)	(0.086)	(0.102)	(0.111)	(0.137)	(0.155)	(0.191)	(0.170)	(0.279)
Urban	2.670***	1.964***	2.318***	3.153***	3.722***	4.025***	3.887***	3.217***	2.510**	1.774*	0.772
	(0.685)	(0.432)	(0.547)	(0.716)	(0.901)	(0.874)	(0.905)	(0.963)	(0.956)	(0.895)	(0.940)
Constant	14.796***	10.749***	12.152***	11.785***	10.622**	11.527**	11.147*	13.527*	16.040**	27.759***	38.733***
	(4.392)	(1.572)	(2.321)	(3.414)	(4.395)	(4.521)	(5.739)	(7.263)	(7.657)	(7.748)	(9.770)
Observations	8,985	8,985	8,985	8,985	8,985	8,985	8,985	8,985	8,985	8,985	8,985
R-squared	0.349	0.051	0.094	0.146	0.197	0.216	0.230	0.242	0.245	0.247	0.189

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 7
COGNITIVE ACTIVATION AND STUDENTS' EFL ACHIEVEMENTS ACROSS DISTRIBUTIONS

VARIABLES	(1) Mean	(2) Perc. 10	(3) Perc. 20	(4) Perc. 30	(5) Perc. 40	(6) Perc. 50	(7) Perc. 60	(8) Perc. 70	(9) Perc. 80	(10) Perc. 90	(11) Perc. 95
Public school	-8.522***	-1.309***	-2.010***	-3.104***	-4.795***	-6.841***	-9.586***	-12.119***	-16.142***	-20.339***	-22.878***
	(1.036)	(0.338)	(0.416)	(0.589)	(0.718)	(0.928)	(1.060)	(1.253)	(1.841)	(3.012)	(4.846)
English class periods	1.503**	-0.260	-0.040	0.421	1.048	1.487*	1.892*	2.761**	3.719***	3.477***	2.994*
	(0.730)	(0.243)	(0.379)	(0.523)	(0.701)	(0.857)	(1.109)	(1.260)	(1.302)	(1.283)	(1.658)
Teaching has training	-0.699	-0.800**	-0.997**	-1.194*	-1.166	-1.325	-1.208	-0.867	-0.293	0.532	1.178
	(0.786)	(0.366)	(0.483)	(0.651)	(0.811)	(0.933)	(1.100)	(1.208)	(1.224)	(1.241)	(1.380)
Teacher experience	-0.013	0.020	-0.017	-0.049	-0.037	-0.043	-0.034	-0.063	0.104	0.106	-0.051
	(0.118)	(0.053)	(0.069)	(0.098)	(0.136)	(0.158)	(0.178)	(0.180)	(0.181)	(0.198)	(0.240)
Teacher experi. squared	-0.000	-0.001	0.000	0.001	0.001	0.001	0.000	0.001	-0.004	-0.003	-0.000
	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.006)
Student book ratio	0.640	0.571	0.464	0.172	0.082	0.071	0.258	0.325	0.737	1.457	3.402**
	(0.519)	(0.407)	(0.402)	(0.481)	(0.570)	(0.638)	(0.667)	(0.784)	(0.809)	(1.023)	(1.356)
Cognitive activation	0.227***	0.204***	0.147**	0.217***	0.218***	0.196**	0.281***	0.315***	0.326***	0.263**	0.309**
	(0.057)	(0.065)	(0.065)	(0.053)	(0.067)	(0.090)	(0.099)	(0.116)	(0.119)	(0.120)	(0.140)
Pedagogical resources	0.415***	0.142**	0.276***	0.403***	0.447***	0.513***	0.597***	0.513***	0.515***	0.642***	0.309
	(0.096)	(0.056)	(0.068)	(0.089)	(0.107)	(0.142)	(0.159)	(0.155)	(0.182)	(0.172)	(0.263)
Urban	2.752***	2.085***	2.334***	3.329***	3.873***	4.167***	3.809***	3.318***	2.508**	1.728*	0.733
	(0.699)	(0.437)	(0.582)	(0.736)	(0.915)	(0.954)	(0.999)	(0.984)	(0.957)	(0.875)	(0.917)
Constant	14.608***	11.204***	11.852***	11.641***	10.214**	10.018**	12.247*	12.932*	15.701**	27.196***	38.175***
	(4.130)	(1.575)	(2.290)	(3.097)	(4.061)	(4.731)	(6.318)	(7.034)	(7.331)	(7.329)	(9.302)
Observations	8,809	8,809	8,809	8,809	8,809	8,809	8,809	8,809	8,809	8,809	8,809
R-squared	0.358	0.056	0.097	0.152	0.203	0.228	0.238	0.250	0.253	0.255	0.193

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE 8
STUDENT SUPPORT AND STUDENTS' EFL ACHIEVEMENTS ACROSS DISTRIBUTIONS

VARIABLES	(1) Mean	(2) Perc. 10	(3) Perc. 20	(4) Perc. 30	(5) Perc. 40	(6) Perc. 50	(7) Perc. 60	(8) Perc. 70	(9) Perc. 80	(10) Perc. 90	(11) Perc. 95
Public school	-8.389***	-1.323***	-1.976***	-3.172***	-4.763***	-5.860***	-8.412***	-12.016***	-15.806***	-19.735***	-22.505***
	(1.060)	(0.333)	(0.404)	(0.590)	(0.736)	(0.809)	(0.981)	(1.303)	(1.937)	(3.017)	(4.980)
English class periods	1.462*	-0.214	-0.046	0.364	0.989	1.138	1.960*	2.802***	3.611**	3.214**	2.844*
	(0.768)	(0.254)	(0.400)	(0.574)	(0.764)	(0.820)	(1.008)	(1.314)	(1.376)	(1.326)	(1.669)
Teaching has training	-0.664	-0.682*	-0.950**	-1.107*	-1.113	-1.170	-1.132	-0.852	-0.221	0.442	1.055
	(0.792)	(0.359)	(0.475)	(0.646)	(0.815)	(0.881)	(1.004)	(1.232)	(1.263)	(1.256)	(1.390)
Teacher experience	-0.021	0.014	-0.031	-0.049	-0.025	-0.022	-0.004	-0.075	0.073	0.075	-0.095
	(0.119)	(0.052)	(0.067)	(0.096)	(0.134)	(0.146)	(0.165)	(0.186)	(0.190)	(0.206)	(0.253)
Teacher exper. squared	0.000	-0.000	0.001	0.001	0.001	0.000	-0.000	0.001	-0.003	-0.003	0.001
	(0.003)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.007)
Student book ratio	0.628	0.553	0.446	0.237	0.027	0.091	0.023	0.258	0.714	1.423	3.477**
	(0.536)	(0.403)	(0.394)	(0.495)	(0.591)	(0.604)	(0.668)	(0.827)	(0.862)	(1.042)	(1.403)
Student support	0.046	0.033	0.015	0.009	0.013	0.010	0.046	0.066	0.069	0.141	0.283*
	(0.061)	(0.059)	(0.063)	(0.065)	(0.067)	(0.071)	(0.088)	(0.105)	(0.106)	(0.128)	(0.146)
Pedagogical resources	0.435***	0.146***	0.273***	0.411***	0.471***	0.503***	0.613***	0.570***	0.531***	0.666***	0.310
	(0.092)	(0.051)	(0.062)	(0.085)	(0.101)	(0.109)	(0.132)	(0.155)	(0.182)	(0.170)	(0.279)
Urban	2.689***	1.945***	2.256***	3.129***	3.764***	4.045***	3.951***	3.324***	2.589***	1.840**	0.802
	(0.687)	(0.454)	(0.565)	(0.711)	(0.896)	(0.866)	(0.898)	(0.972)	(0.954)	(0.892)	(0.935)
Constant	14.834***	10.975***	12.026***	12.254***	10.652**	11.592**	10.403*	12.646*	15.946**	28.265***	39.138***
	(4.332)	(1.467)	(2.323)	(3.337)	(4.379)	(4.507)	(5.749)	(7.268)	(7.734)	(7.581)	(9.634)
Observations	9,005	9,005	9,005	9,005	9,005	9,005	9,005	9,005	9,005	9,005	9,005
R-squared	0.351	0.052	0.093	0.147	0.198	0.215	0.230	0.245	0.247	0.246	0.189

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

C. Discussion

The analysis revealed that classroom management does not directly affect EFL achievements, consistent along the distribution. These findings are inconsistent with previous studies which found that classroom management is positively related to students' EFL achievements (Cevallos & Soto, 2020; Talebi, 2015). This might be explained by the complexity of the concept of classroom management. Martin et al. (1998) showed that it includes behavior management, people management, and instructional management. This is supported by Sowell (2013) who divides the concept into behavioral management and instructional management. Our variable for classroom management incorporates these aspects to some extent because the three basic dimensions of teaching quality also accounts for them. Furthermore, our findings suggest that the effect of classroom management may be inconsistent across countries. In other words, it might be a characteristic of effective teaching, but its effect is not consistent across contexts. The effect may depend on other factors at the school or country level, which underlines hidden mechanisms that need to be elucidated. Yet, students' performance heterogeneity does not reveal hidden mechanisms. As such, potential direct benefits of classroom management as supported by Praetorius et al. (2018) may not be expected in developing countries, at least for Ethiopia.

Our findings show that cognitive activation is positively related to students' EFL achievements, and RIF regression confirms that this applies to all students. These findings are consistent with previous studies that show that cognitive activation is related to students' achievements (Iwai, 2011; Wernke et al., 2011). A plausible explanation of these findings is that cognitive activation gives the opportunity to students to engage into higher-level thinking processes which are very important for learning achievements in general. Anderson (2002) showed that these processes involve the skills of learning to learn. When students are given opportunities to reconstruct, elaborate, question, and evaluate their own learning, they are able to communicate concepts and ideas, and thereby develop a conceptual understanding of what they learn (Osborne et al., 2004). Another plausible explanation is that cognitive activation develops students' motivation and positive attitudes towards EFL learning, critical factors for language learning (Wilden & Porsch, 2019). From such a perspective, it might be important to promote the use of cognitive activation in EFL teaching in developing countries like Ethiopia because it has potential benefits. This is critical in such a context because the country is facing a learning crisis and many of its students are not motivated to learn English (Geberew et al., 2018).

The potential benefits of cognitive activation are applicable to a subject like EFL and seem not to change depending on whether the context is a developed country or a developing one. Furthermore, these potential benefits of cognitive activation are also crucial for low-achieving students (usually the most struggling ones) in EFL context and have implications for instruction. EFL teachers of low-achieving students might present challenging problems and believe that these students are not able to cope with the cognitive demand of solving them. Consequently, these teachers may not use cognitive activation approaches with low-achieving students; this makes the activity de-motivating for these students, which means performing lower than they could have. Using cognitively engaging activities is likely to help improve students' EFL achievements regardless of their performance.

The results reveal that student support is related to students' EFL achievements, but mainly for high-achievers. These findings are in line with Talebinejad and Akhgar (2015) who found that student support is very important to improve students' EFL achievements. Nevertheless, the differing effect of student support on EFL achievements suggests that there might be hidden mechanisms or classroom-specific circumstances which exist and that need to be addressed for all

students to profit from the support of teachers. For example, teacher perceptions on students might lead them to develop high expectations for high-achievers and devote most or the best of the quality of support to them. In such circumstances, low-achievers are left behind and will likely not profit from the support of the teacher. Chang and Read (2007) provide evidence showing that student support may not only boost EFL achievements of low-achievers, it also encourages them to keep up with their efforts to achieve higher. As such, student support as a teaching quality dimension has the potential to improve students' EFL achievements even in different contexts or countries, but caution might be needed in relation to student heterogeneity. Factors like teacher ones may need to be accounted for in order to identify the effectiveness of student support for some groups of students.

V. CONCLUSION

Teaching quality is important for students' EFL achievements. Klieme et al. (2001) developed the three basic dimensions of teaching quality (student support, classroom management, and cognitive activation) and research shows they are effective in developed countries. Praetorius et al. (2018) argue that the framework has a potential to improve students' achievements but there is need of research to identify the conditions under which its effectiveness may occur (e.g., country context, student abilities, subject, and school type). This study examined the effect of the three basic dimensions of teaching quality on students' EFL achievements in Ethiopia. It used the rich YL 2016-2017 school survey that it analyzed using three-level HLM and RIF regression. Results revealed that classroom management does not directly affect students' EFL achievements, consistent across achievement distributions. However, cognitive activation affects students' EFL achievements and consistently across distributions. Similarly, student support affects EFL achievements positively, but its effect is higher for high-achieving students. This research shows that two of the three dimensions of teaching quality are effective for students' EFL achievements in the context of Ethiopia and supports Praetorius et al. (2018), i.e., teaching quality can improve students' achievements in other countries and other subjects (EFL).

Teaching quality may be effective in developing countries, but all its dimensions do not have equal potentials. The findings of this study imply that teaching practices in developing countries need to be grounded on theoretical frameworks which are evidence-based if these countries are aiming at higher students' achievements in EFL. From this perspective, student support and cognitive activation are teaching strategies that are promising as a way to help these countries address the learning crisis they are facing. We believe that developing rigorous and meticulous programs related to the evidence from the findings of this study will contribute substantially to improve students' EFL achievements.

Despite its insights, this study has limitations that might need to be noted. First, there is no common operationalization of the three basic dimensions of teaching quality, which leads to inconsistency as to which dimension some of the variables might fit in. This study followed studies like Praetorius et al. (2018) in selecting items, but there are variables not included because they are not available in the dataset. Second, the analysis focused on students at the final stage of primary education, then it might be interesting to test the validity of findings at the early stage of primary education as well. Third, the methods of analysis do not infer causality but rather correlation, then the findings should be interpreted accordingly. Future studies may address these limitations.

APPENDIX

TABLE A-1
ITEMS USED TO COMPUTE EACH OF THE THREE DIMENSIONS OF TEACHING QUALITY

Variables	Items used
Classroom management	
Every time my teacher explains something, we are asked whether we understand. The lesson doesn't continue until we understand	
From start to finish, there is no time wasted in lessons	
I can talk to my friends while my teacher is talking	
My teacher is always on time to start lessons	
My teacher will notice immediately if I am not concentrating and tell me to focus	
Cognitive management	
If I raise my hand to share, my teacher will always want to know what I think about a topic	
If I find something hard my teacher does not mind if I stop trying	
When I give an answer, my teacher makes me explain why I think that it is correct	
In this lesson I must correct all mistakes that I make	
When my teacher explains something, I can usually understand it straightaway	
Student support	
If I don't understand something, I can ask my teacher to explain again until I do understand	
If I walk into a lesson upset my teacher will come and talk to me	
My teacher will always notice when I don't understand a topic and then come and help me	
If I need help I can always ask my teacher	
My teacher always knows what I am doing	
When I ask a question, my teacher will be nice to me	

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