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Original Article

Investigating the Effects of Differentiated Instruction on High School Students' Grammar Learning Achievement in an Ethiopian EFL Context, Addis Ababa University, Ethiopia.

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Differentiated instruction promotes learning for diverse groups of students with different learning needs, readiness levels, learning profiles as well as different areas of strengths and weaknesses. However, despite its potential benefits in facilitating learning for all, it is neither sufficiently explored nor commonly used in the Ethiopian regular classrooms where the one-size-fits-all approach seems to be the norm in the Ethiopian EFL class. Thus, this study investigated the effects of DI as translated into classroom practices through flexible grouping, tiered activities/tasks, anchored activities, and scaffolding techniques, on grade 12 students' grammar learning achievement scores. The non-equivalent pre-test and post-test quasi-experimental study design was adopted. The grammar achievement test was used to get quantitative data from two intact groups (23 experimental and 24 comparisons). The pre-test data served as baseline data to check the comparability of the two groups regarding the grammar learning achievement scores while alleviating possible confounding variables that may likely affect the possible results of the study. To analyse the quantitative pre-test and post-test data, the SPSS software Version-24 was used. In the data analysis process, the independent sample t-test and paired-sample t-test were used, after checking normality. The results showed that the experimental group considerably outperformed the comparison group taught through the one-size-fits-all approach. The findings revealed that differentiating instruction considerably improved the post-test scores of the experimental group. The study concluded that using a differentiated instructional approach improves grade 12 students' grammar learning achievement in an EFL class. Finally, it was suggested that differentiated

instruction should be integrated into the regular EFL class in teaching high school students.

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INTRODUCTION

In Ethiopia, teaching diverse groups of students, including English as a foreign language (EFL) classes with different educational needs is primarily dominated by the one-size-fits-all model of instruction that seems to be the norm in the different educational levels even at higher education institutions. This has been evidenced by local studies that echoed the predominant use of the one-size-fits-all instructional approach in teaching the diverse groups of students in the country (Abate, 2013; Ginja & Chen, 2020; Melese, 2016; Melese, 2019) evidencing that the quality of instruction still suffers from the conventional practices that likely jeopardizes the quality of teaching and/or learning in terms of promoting learning for all students.

In using this mode of teaching, teachers teach to the middle level (Rock et al., 2008) which requires students to adjust themselves to the teachers' way of teaching instead of adjusting instructions to the students' way of learning. In this case, lessons are designed and delivered to the students with different readiness levels, learning profiles, the pace of learning, socio-economic factors, as well as areas of weaknesses and strengths. This doesn't adequately accommodate the varied readiness levels of students

while addressing their different learning needs. The one-size-fits-all instructional approach fails to meet the skills levels (readiness level) of the majority of the learners who are likely to be marginalized (Tomlinson, 1999) which is one of the primary causes of achievement gaps among students (Valiande, 2010) and no longer challenges appropriately the majority of the low achievers and/or some high achievers which are liable to be marginalized (Subban, 2006). In other words, teaching students via the one-size-fits-all is no longer acceptable for its failure in promoting learning for all in present-day classroom situations.

This necessitates teachers to use the means that benefit all, differentiated instruction. Differentiated instruction prioritizes responding to the students' diverse readiness levels, learning profiles, and interests with the main goal of improving learning for all students (Tomlinson, 1999). This instructional approach pays attention to learners as the center of our teaching in general and their differences acknowledge the students' strengths and accommodate differences in students' needs, or limitations (Tomlinson, 1999; Subban, 2006; Tomlinson et al, 2003). In the context of teaching English, several studies were conducted on the effects of this flexible mode of teaching English in

an attempt to meet the different learning needs of students in contemporary classroom situations and showed promising results (Abate, 2013; Alavinia & Farhady, 2012; Alhashmi & Elyas, 2018; Borja et al., 2015; Driskill, 2010; Hassina, 2014; Chien, 2015) and suggested the importance of integrating differentiated instructions into regular the classrooms.

However, despite the positive results of such studies, none of them has been conducted on high school students' grammar learning achievements elsewhere and in the Ethiopian contexts as far as the researcher's knowledge is concerned. Besides, the findings of local studies revealed that a differentiated instructional approach is not commonly integrated and/or used in the Ethiopian educational system despite its potential benefits in alleviating the pitfalls of the one-size-fits-all instructional approach (McBride, 2004) as evidenced by empirical studies conducted elsewhere.

Thus, the purpose of the current study was to investigate the effects of a differentiated instructional approach in teaching English grammar which is an important language component without which formal communication is hardly effective as "language without grammar would certainly leave us seriously handicapped" (Batstone, 1994, p.3). It is also viewed as the central area of a language around which reading, writing, speaking, vocabulary, and other components like meaning and function of a language revolve (Ur, 1988). It is the means to the end, effective communication which is the key purpose of language teaching and or learning.

In line with the purpose of the study, the following research questions were designed.

- Does a differentiated instructional approach significantly change the students' grammar learning achievements as compared to the comparison groups deprived of the intervention in an Ethiopian EFL class?
- Does differentiating instructional approach significantly change the experimental group grammar learning achievements as measured by the post-test scores?

METHODOLOGY

Study Area

The current study was conducted at higher 23 secondary school located in Nefas silk lafto sub-city, Addis Ababa, Ethiopia. During the study time, there were 24 and 23 students in the comparison and experimental groups respectively. The number of students per class was smaller than the common class size at government schools across the country. The Ethiopian government decided to reduce the number of students per class in an attempt to alleviate the spread of the pandemic, covid-19, during the study time.

Design

This study adopted the pre-test and post-test non-equivalent quasi-experimental design. The pre-test and post-test designs are widely used, primarily to compare groups and/or measure change(s) resulting from experimental treatment (Dimitrov & Rumrill J, 2003). This design is very prevalent and useful in educational settings that practically contribute to classroom practices in similar contexts (McMillan & Schumacher, 2010).

Research Procedure

In conducting this study, awareness training was given to a voluntary English teacher about the differentiated instructional approach and then two intact groups of students (23 experimental and 24 comparisons) were pre-tested for the comparability of their grammar learning scores while ruling out possible confounding variables, and to get baseline data for further comparisons with the post-test results. The students were randomly assigned to experimental and comparison groups through the random sampling technique by tossing a coin (Ary et al., 2018).

The intervention groups were taught English grammar through differentiated instructional strategies, including tiered instruction, flexible grouping, anchored activities, and scaffolding techniques flexibly. The activities for the intervention group were designed based on the course contents. Teaching students under the conditions of differentiated instructions lasted for 10 consecutive weeks in the first semester of the

academic year 2021, during the pandemic (Covid-19), but the comparison group was taught English grammar through the one-size-fits-all traditional, teacher-dominated teaching approach using textbook-provided activities. The post-test was administered to the control and experimental groups, at the same time, and comparisons were made within and between groups to figure out if the intervention resulted in significant differences in students' grammar learning achievement test scores.

Data Gathering Tool

Regarding the data gathering tools, the researcher used test because a test is useful for instructional, administrative, or research purposes (Cohen, 1991), specifically the grammar learning achievement test was used in this study as “an achievement test is related directly to classroom lessons, units, or even a total curriculum” (Lawrence-Brown, 2004, p.47). In other words, an achievement test is designed based on the contents and objectives of the teaching material and used to measure past learning related to the course objective(s), and such tests are used to find “whether progress has been made in terms of the goals of learning (McNamara, 2000, p. 6). Thus, the learning objective and contents of the grammar learning achievement test were related to the lesson objectives and contents stated in the students' textbook.

Table 1: t-test results for the pre-test grammar achievement scores (EG & CG)

Group	N	Mean	Mean Difference	T	df	P
CG	24	36.25	0.830	0.216	45	0.830
EG	23	37.13				

* $p > 0.05$

In comparing the group statistics, the pre-test data presented in table 1 indicated that the sample means were slightly different between the intact groups of students. However, the pre-test results of the 2-tailed independent samples t-test for equality of means proved that the groups were comparable with no statistically significant difference as depicted by the inferential statistical values ($t = 0.216, .217$, $df: 45$, $p=0.83$) at a statistically significant level of 0.05. The p-value of the test (0.83) is much greater than 0.05. This proves that there was not sufficient evidence to say that the mean test results differ

Data Analysis Techniques

Regarding data analysis techniques, the quantitative data collected through the grammar learning achievement test was analysed using SPSS software version 24 which is commonly used in data analysis in educational research and applied linguistics (Dornyei, 2007) that facilitates the data analysis process. Both descriptive and inferential statistics were used in the data analysis process. To answer the first research questions, an independent or unpaired t-test was used because one group does not depend on or influence the results of the other groups. To answer the second research question, the paired t-test was used because the results of the pre-test and post-test were paired for the same groups of students. These statistical tools were used after checking the normality of the test data.

FINDINGS AND DISCUSSIONS

In an attempt to confirm the comparability of the experimental and comparison groups, a pre-test was administered for both groups using the same grammar learning achievements at the same time. In the data analysis process, t-tests were used to calculate the pre-test and post-test results as presented in the tables hereunder.

between the treatment and comparison groups was statistically. In other words, the two intact groups were equivalent and comparable regarding their grammar learning achievement scores before the interventions.

Research question 1: Does a differentiated instructional approach significantly change the students' grammar learning achievements as compared to the comparison groups deprived of the intervention in an EFL class?

Table 2: t-test results for the post-test Grammar achievement (EG & CG)

Group	Mean	T	df	P	Mean difference
CG	43.83	2.074	45	0.04	6.95
EG	50.78				

*p<0.0

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In response to the first research question, an attempt was made to investigate the effects of a differentiated instructional approach on students' grammar learning achievement results. Accordingly, the data presented in table 2 (a 2-tailed independent t-test for equality of means of the post-test results) showed that the mean of the experimental group was found to be 50.78 while the mean of the control group was 43.83. The mean shows the descriptive statistics with slight differences, but the inferential statistical values (t = 2.074, df: 45, p=.04, *p<0.05) showed that the achievement mean score difference between the experimental and controlled groups was found to be

statistically significant because the p-value, 0.04, is less than 0.05, the threshold value. The preliminary result obtained from the students' post-intervention results sufficiently evidenced that integrating a differentiated instructional approach significantly improved students' grammar learning achievement results. In other words, it can be inferred from the post-test results of the independent samples t-test that the treatment group significantly outperformed the control group, deprived of the intervention.

Research question 2: Does a differentiated instructional approach significantly changes the experimental group grammar learning achievements as measured by the post-test scores within-group comparison?

Table 3: t-test results of the pre-test and post-test scores (EG & CG)

	Mean	SD	T	Df	P	Mean Difference
Pre-test (EG)	37.130	5.32241	-11.35059	22	0.00	11.652
Post-test (EG)	50.78					

The results of the t-test indicated that the mean of the pre-test and post-test results were found to be 37.130 and 50.78 respectively. The pre-test mean score (37.13) is much smaller than that of the post-test mean score (50.78). This value cannot tell us whether there exists a statistically significant difference or not, so it was further analysed to check its statistical significance. Accordingly, the inferential statistical values were found to be, t= -11.35059; df=22, p=0.00 These inferential statistical values (t=-11.35059; df=22, p=0.00) proved that the mean of the post-test results significantly differed from the pre-test result within groups of the intervention at a significant level of *p<0.05, 0.00<0.05 with 95% confidence interval. Thus, the post-test result is by far different from the pre-test results which means that using a differentiated instructional approach significantly

improved high school students' grammar learning achievements in an EFL context.

DISCUSSIONS OF FINDINGS

The one-size-fits-all mode of teaching seems to be the norm in Ethiopia where differentiated instruction is not a commonly integrated instructional practice into the regular classroom and the effectiveness of differentiated instruction in the local context has not been much known yet. There exists little empirical evidence in teaching the English language in general despite its promising results in other contexts in teaching English as an EFL, ESL, or L1 context. Thus, this study attempted to investigate the effects of a differentiated instructional approach on grade 12 students' grammar learning achievement.

The results of the current study revealed that using a differentiated instructional approach significantly improved the experimental group's English grammar learning achievement scores as compared to the comparison group, deprived of the intervention. The results also showed that differentiated instructions significantly improved the experimental group's grammar learning achievement scores as measured by the post-test results. These findings are parallel with the literature that states differentiated instruction ultimately improves students' academic achievements in regular classrooms (Tomlinson, 1999; Heacox, 2012); it primarily deals with diversity among students while providing different learning opportunities accordingly.

The findings of the current study support the previous studies that investigated the effects of differentiated instructional strategies. Related to this study, Alhashmi & Elyas (2018) investigated the effects of differentiated instructions on female university students' grammar performance and found that implementing a differentiated instructional approach significantly improved the English grammar learning performance as measured by the pre-test and post-test results of the experimental group, but it did not significantly improve the experimental group's grammar performance as compared to the control groups. The female participants exposed to this innovative instructional approach also positively perceived learning English grammar through a differentiated instructional approach. The participants of this study were female students which makes it different from the current study and the results though the researcher used pre-test and post-test quasi-experimental studies in an EFL context.

Similarly, Firwana (2017) also investigated the effectiveness of differentiated instruction on second graders' grammar and vocabulary learning achievements in the context of Gaza. This study empirically evidenced that using differentiated instructional strategies significantly improved the grammar and vocabulary learning of the students. The study used the pre-test and post-test grammar and vocabulary learning achievement scores. The results were in line with the current study as it confirmed the positive effects of differentiating instructions for teaching English grammar and

vocabulary. However, the five-week intervention time appears to affect the internal validity of the study because students may easily remember the test items within this short period of time, and testing threatens its internal validity and the findings could be open for alternative explanations, not attributed to the application of differentiation.

CONCLUSIONS AND RECOMMENDATIONS

Based on the key findings of the current study, it was concluded that a differentiated instructional approach highly improves high school students' grammar learning achievements as measured by the post-test scores of the experimental and comparison groups, and the pre-test and post-test scores of the experimental group that showed significant improvements. Accordingly, it was suggested that differentiated instructional strategies should be incorporated into the regular EFL class in teaching English grammar for grade twelve students' while renewing the one-size-fits-all instruction that seems to be the norm. Teachers should get in-service training to properly integrate differentiated instructional approaches in the regular EFL class in general and teaching grammar in particular. Due to the small size of the sampled groups, further studies should be conducted with the regular class size in the same grade level on language focus and other language components. Textbook designers should also incorporate varied learning activities that require the practices of differentiated instructional strategies to address the diverse learning needs of students.

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