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Fostering EFL Students' Performance in English Syntax through Syntactic Tree Diagram Application

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Abstract
This research seeks to investigate the effectiveness of using Syntactic Tree Diagram application to improve the students' performance in English Syntax and the students' interest in using the tool in English Syntax learning process. All participants were the sixth semester students of English Tadris Program of State Islamic University Datokarama Palu, Indonesia. This research was conducted through quasi experimental study design with two groups consisted of 18 students in the experimental group and 18 students in the control group. The instruments were syntax test to collect the data about the students' performance in English Syntax and questionnaire to find out the students' interest. After that, the data collections were analyzed using descriptive and inferential statistics through SPSS Program Version 23.0. The result of data analysis showed that (1) using Syntactic Tree Diagram application was more effective than drilling using the written tree diagram task to improve the students' performance in English Syntax. It is seen from the significance t test result that reveals the significance value is lower than the significance level; 0.000 < 0.05. Furthermore, in relation to the students' interest in using Syntactic Tree Diagram application to learn English Syntax, (2) it was found that the students' interest in using the application was categorized as high.
Keywords*: English Syntax, Tree Diagram, Syntactic Knowledge.*

1. Introduction

Mobile assisted language learning (MALL) has long been growing and even more progressively due to the global pandemic (Jeong, 2022) The classroom interactions were transformed into virtual teaching learning processes. Previous methods, models and strategies are mostly no longer possible to be implemented in online mode. As response to the needs of new language learning system, technology provides abundant new applications that can help educators and students adapt with the new culture of learning. The emergence of learning applications offers more alternatives of teaching strategies to be applied in the online classroom.

MALL refers to the use of mobile technology in language learning process. Smartphone is the most commonly used device nowadays for it is more practical, accessible, and multifunctional. Numerous learning sources and applications can easily be accessed as long as it is connected to the network. Researches have been conducted related to its efficacy in improving language skills. They show positive results in improving EFL students' speaking skill (Gromik, 2013; Dzakiah, 2020), listening (Palangngan & Mulyaningsih, 2018; Sari, 2019), reading (Chee, et.al, 2017; Rahim, et.al, 2020) and writing (Gharehblagh & Nasri, 2020). However, very few researches have been conducted in relation to English Syntax.

Syntax is a branch of linguistics which focuses on how words are structured. English Syntax is an important yet challenging subject for EFL students. Incompetencies in combining words into phrases, clauses, and sentences will affect the students' performance in other subjects, for instance Reading Comprehension, Translation, and especially in writing the last project (thesis).

There are two main reasons for investigating the way to foster EFL students' performance in Syntax. First, the researchers identified frequent syntactic errors in students' final project writings of Tadris Bahasa Inggris Students of State Islamic University Datokarama Palu which is in line with Hafiz's (2018) research result that the common syntactical errors made by the students are incomplete sentence structure, subject verb agreement, improper use of conjunctions, prepositions, and articles, etc. this is caused by the lack of knowledge and awareness on the syntactic structure of sentence. Second, because Syntax has been perceived as a monotonous and boring subject (Wafi, 2019), especially when they were required to practice analyzing the English sentences structures. Therefore, it is essential to investigate a new way of learning to change the students' current perception.

Studying syntax is tightly correlated with the tree diagrams which indicate the formation and organization of a thoughtful and meaningful sentence. By drawing tree diagrams, students learn how to parse sentences into several lexical units and the way those lexical units are structured. The Syntactic Tree Diagram is one of the applications created to assist the students to learn and practice parsing the sentences which is available and easy to be accessed on the handheld devices online anywhere and anytime.

As the government looks to reopening educational facilities in most provinces in Indonesia, the continuity of utilizing the online programs and applications comes into questions. Taking into account the students' psychological condition after months and years of attending online classrooms, staying in front of laptops, tablets, or cell phones for hours, real physical classroom interaction might be more tempting and interesting. However, they were accustomed to study using their mobile devices. It might also be a potential strategy to let the students readapt to an offline classroom. Thus, the researchers decided to investigate the use of Syntactic Tree Diagram Application in fostering Syntactic performance of the sixth semester students of English Tadris Department, State Islamic University Datokarama Palu.

This research aims to answer the following questions: 1) Does Syntactic Tree Diagram application have any effect on EFL Students' performance in English Syntax?; 2) Are the EFL students interested in using the Syntactic Tree Diagram application in learning English Syntax?

2. Method

The researchers employed the Quasi experimental research with non-equivalent control group design to answer the research questions. This method involved two groups of EFL students, the experimental and the control group. Both experimental and control groups were given pre-test before the learning process and post-test after completing the process while the questionnaire was distributed only to the students in the experimental group to figure out their interest toward the use of the syntax analysis online application. The experimental group used Syntactic Tree Diagram application as the extra activity in practicing the sentence analysis while the control group was treated by assigning some tasks as homework to do as drilling activity at home. The sentence analyzing drilling activities were conducted for 6 consecutive weeks.

This research was conducted in The State Islamic University (UIN) Datokatama Palu to the sixth semester students of English Department. There are 59 students in total who took Syntax class this semester. The whole population were divided into 3 classes. The samples of the research were taken using simple random sampling. Taken only class TBI 1 which contains 18 students as the experimental class, and TBI 2 which contains 18 students as the control class.

To collect the data the researcher used two kinds of instruments, they were Syntax test and questionnaire. The test was given in pre-test to find out the students' syntactic competencies before conducting the treatment and in the post-test to figure out the progress of students (if any) after being exposed to the application. The students were given 20 error identification questions to be answered in 40 minutes. The questionnaire was used to find out the students' interests in using Syntactic Tree Diagram application. was distributed after the students submit their 3rd certificate of the completing the advanced level of the sentence analysis in the application. The students responded to what they thought as the most appropriate response that represents their interest in the use of Syntactic Tree Diagram application as drilling tools in analyzing sentence to improve their syntactic performance. It consisted of 20 items written in Bahasa, 10 positive statements and 10 negative statements. There are 5 options of responses to each statement. Each response was assigned a point value and the students' individual score of interest was determined by adding counting the points from all statements. For a positive statement, the point values are as follow: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, strongly disagree = 1. For the negative statements, the point values are reversed.

3. Results

3.1. Findings

This research focused on investigating the use of Syntactic Tree Diagram in teaching Syntax, in terms of its efficacy and interestingness. Both experimental and control group received different treatment along the research process. The quantitative results of the research will be displayed and described in this section.

3.1.1 The Efficacy of the Syntactic Tree Diagram Application in Fostering Students' Performance in English Syntax

Table 1: The Rate Frequency and Percentage Distribution of the Students' Pre-test Scores

No.	Classification	Score Range	Experimental Group		Control Group	
			F	%	F	P
1	Excellent	81-100	0	0.00	0	0.00
2	Good	61-80	0	0.00	0	0.00
3	Fair	41-60	4	22.20	3	16.70
4	Poor	21-40	9	50.00	11	61.10
5	Very Poor	0-20	5	27.80	4	22.20
	Total		18	100%	18	100%

Table 1 displays the frequency and percentage of the students' pre-test scores in both experimental and control group. Based on the data on the table, students of both groups are unable to reach the two highest levels in the scoring classification, excellent and good, before the treatments were applied. There are 4 students (22.20%) in the experimental

group and 3 students (16.70%) in the control group gain score categorized as fair. A large frequency and percentage of students, 9 (50%) in the experimental group and 11 (61.10%) in the control group, are indicated at the poor score. On top of that, there are more than 20% of students (5 in the experimental and 4 in the control group) classified as very poor. The data description reflects that both groups have nearly the same level of performance in Syntax subject.

Table 2: The Rate Frequency and Percentage Distribution of the Students' Post-test Scores

No.	Classification	Score Range	Experimental Group		Control Group	
			F	%	F	P
1	Excellent	81-100	8	44.40	0	0.00
2	Good	61-80	10	55.60	12	66.70
3	Fair	41-60	0	0.00	5	27.80
4	Poor	21-40	0	0.00	1	5.50
5	Very Poor	0-20	0	0.00	0	0.00
	Total		18	100%	18	100%

The table 2 presents the frequency and percentage of the students' post-test scores of both experimental and control group after the treatment. The data indicates that there are improvements on the students' scores compared to the pre-test scores in table 1. From the data, it can be seen that of all 18 students there are 8 students (44.40%) in the experimental group who reached excellent score while none in the control group could reach the level. Most of the students of experimental group (55.60%) obtained good level and none gained the lowest three levels. However, it can also be seen in the control group that even though there are still 5 students (27.80%) indicated to be at the fair level and 1 student (5.50%) at the poor level, 66.70% (12) students obtained good score and none get very poor level. Based on the description, it can be assumed that the performance of the students in syntax class of both groups after conducting the treatment has already been improved.

To support and strengthen the data descriptions, the researchers provide statistics data of the students mean score and standard deviation as follow.

Table 3: The Result of Descriptive Statistics

	N	Min	Max	Mean	Std. Dev.
Pre-Test of the Experimental Class	18	10	50	29,44	14,234
Post-Test of the Experimental Class	18	70	95	81,39	6,599
Pre-Test of the Control Class	18	10	50	29,72	12,773
Post-Test of the Control Class	18	40	80	66,11	10,786
Valid N (listwise)	18				

The table 3 displays the mean score and the standard deviation score of the experimental and control group. The data shows that in the pre-test, the mean score of the experimental group is 29.44 which is categorized as poor with the minimum score 10

(categorized as very poor) and maximum score 50 (categorized as fair). The scores of the control group pre-test result are not much different where the mean score is 29.72 (categorized as poor) and the minimum and maximum score are similar with the experimental group. The mean score of students' syntactic performance data indicates that both groups have similar ability before the treatment.

The table also presents the mean score and standard deviation score of the students' syntax performance after the treatment. The post-test mean score of the experimental group is 81.39 which is categorized as excellent with the minimum score obtained is 70 (categorized as good) and the maximum score is 95 (categorized as excellent). Contrast with the experimental group, the control group's mean score in the post test is 66.11 which is categorized as good with the minimum score obtained is 40 (categorized as poor) and the maximum score is 80 (categorized as good). The data reflects that the mean score of the experimental group is higher than the control group with 15.28 points.

However, the data displayed on the tables above are not enough to be generalized to the entire population and unable to be used to confirm the hypothesis formulation set by the researchers. Therefore, to confirm the hypothesis and answer the first research question, the data were analysed through inferential statistics, using the SPSS 23 application program.

The process of confirming the hypothesis can be carried out when the research data has met the requirements to be processed using statistical techniques (T-test). Therefore, before testing the hypothesis, it is essential to ensure it by conducting the assumption test in advance.

After conducting the assumption test, it was found that the data are normally distributed and homogeneous or equal. Therefore, the researchers proceed to analyse the data using statistic parametric (the T-test independent sample).

Table 4: Independent Samples Test

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Students' Learning Score	5,126	34	,000	15,278	2,980	9,221	21,335

The analysis result of T-test for independent sample displayed in the table 4 above, the researchers found that the value of Sig. (2-tailed) of post-test is smaller than the level of significance which is 0,000 < 0.05. Hence, the alternative hypothesis (H^1) is accepted and null hypothesis (H^0) is rejected. In other words, there is a significant difference of English Syntax' performance between students who used and students who did not use Syntactic Tree Diagram application. Therefore, it can be inferred that the use of Syntactic Tree Diagram Application can significantly help to develop the students' performance in Syntax class.

3.1.2 The Students' Interest in Using the Syntactic Tree Diagram Application

The questionnaire sheets were distributed to the students on the experimental group to reveal their interest toward the use of Syntactic Tree Diagram Application in Syntax class. The students' scores from the questionnaire are shown in the following table:

Table 4.7: The Percentage of the students' interest toward the Syntactic Tree Diagram Application

No.	Classification	Score Range	Frequency	Percentage (%)
1	Very High	85-100	2	11.11
2	High	69-84	14	77.78
3	Medium	52-68	2	11.11
4	Low	36-51	0	0.00
5	Very Low	20-35	0	0.00
	Total		18	100
	Mean Score		77,78	

Table 4.7 displays the data of the experimental group students' interest toward the use of Syntactic Tree Diagram Application. Based on the table, it presents that the students at the experimental group have high interest in using the Syntactic Tree Diagram Application to learn Syntax. There are 2 of 18 students (11,11%) perceive the use of the application as very highly interesting. 12 students (77,78%) have very high interest and 2 other students are indicated to be in medium interest. Moreover, none is categorized as having low and very low interest. Further analysis showed that the mean score of the students' interest toward the use of Syntactic Tree Diagram Application in learning Syntax is 77.78 which is categorized as high interest.

Based on the data analysis above, it can be summarized that alternative hypothesis (H1) is accepted and null hypothesis (H0) is rejected. It reflects that the students are interested in using Syntactic Tree Diagram Application as a sentence analysis drilling tool in learning Syntax.

3.2. Discussion

Taking into consideration about the result of t-test, it can be concluded that the use of the Syntactic Tree Diagram Application to practice analyzing sentence structure is more effective to improve students' syntactic performance than drilling using the written tree diagram task. It can be proven by the students' score in the post-test which indicated that the use of Syntactic Tree Diagram Application resulted in significant improvements toward the students' performance.

Reflecting to the pre-test result of experimental and control group's syntax performance, both got mean score 29.44 and 29.72 respectively which are indicated as poor level. It means majority of students encountered difficulties in answering the questions provided and ended up choosing the wrong answer to the questions. In other words, the students still lack the knowledge and ability to recognize and compose a syntactically correct and meaningful sentence, in terms of words order, subject verb agreement, and hierarchical structure which is in line with the findings of previous researchers (Burhanuddin, 2020). This

case occurs because of the students' first language interference (Febrianti & Said, 2022) or usually called as Interlingual Errors (Long & Hatcho, 2018; Shahrani, 2018). Therefore, the learners are suggested to do drills and practices to foster and instill the English Syntax knowledge.

As EFL learners, having a good performance in English Syntax are essential yet complicated. Knowing the syntactic structure of grammatically correct and meaningful sentences is not enough. The students can achieve it through practices or drills to let the knowledge instilled into their mental knowledge. Incompetencies in Syntax bring the students problems such as difficulties in translating complex sentences which will impact on students' reading comprehension as stated by Coloma, et.al (2020) that vocabulary and syntax complexity are the most consistent predictors of reading performance.

The idea of integrating mobile learning application into the language learning process to foster learning outcomes has been widely investigated. This research result also reflects the efficacy of the Syntactic Tree Diagram application. The features that the application provides are able to help in improving students' syntactic knowledge to some extent. As displayed in the analysis result, experimental students' performance in Syntax class was significantly improved after being exposed to the application as the drilling tool in analyzing the sentence.

As far as the researchers concerned, there are some explanations on why such improvement occurs. Students prefer learning through multimedia, with clear goals, challenges, feedback, and reward (Polakova & Klimova, 2019). All these characteristics are offered by this application. In the process of learning the sentence structure through the application, it requires the students to complete three levels programmed, they are level easy, medium and advanced. The students are challenged to complete all the sentence analysis item to get the certificate of completion as the reward. The target and deadline are set to complete and submit the certificate on time to the teacher.

There is this habit among students of the sixth semester to rely on their friends (those who they consider as smart and intelligent) to answer the drilling task given because they are afraid of making mistakes and being judged. Whereas, practicing through the cellphone application makes them feel more comfortable in the learning process and independently and confidently do the exercises. The feedback from the application when mistakes are made will not be noticed by anyone else.

The features of constructivist learning also are the strongest theory supporting the position of mobile technology in the learning process (Quinn, 2000). The use of the mobile devices in learning can help the students to construct their knowledge based on their need and develop their own learning. It trains students to be independent and they are able to set their own pace in learning without feeling forced.

Regarding the finding of the interest of the experimental group students, the researchers concluded that the students are interested in using Syntactic Tree Diagram Application in Syntax subject with the high level of interest. It is clear that interest holds an important role in the learning process. To have the students learn well, an interesting learning environment should exist. This implies that the use of Syntactic Tree Diagram Application as a supporting tool to practice sentence analysis is good to be used in helping to improve their syntactic performance.

4. Conclusion

Based on the analysis of the data findings and discussion, the researcher draw conclusion as follows:

The performance of the sixth semester students in English Syntax subject was significantly improved after practicing sentence analysis using the Syntactic Tree Diagram Application. This finding indicates that using the application as a supplementary activity outside of the classroom is effective in improving the students' syntactic performance especially in awareness of word order, subject verb agreement, and hierarchical structure of the sentence.

The sixth semester students taught using the Syntactic Tree Diagram Application scored high in the level of interest. The analysis result proves that the use of the Syntactic Tree Diagram Application is interesting for the students to be used in helping the Syntax learning process.

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