



The Effectiveness of SOLE on EFL Learning for Vocational Students in Indonesia

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ABSTRACT

Improving education in the 4.0 era needs to be adjusted to the teaching and learning in higher education. Thus, it is necessary to have a learning strategy that prioritizes student independence in learning by using facilities in the digital era such as the internet. Therefore, SOLE can be one of the strategies that are in accordance with this 4.0 education. The purpose of this study was to find out the effectiveness of SOLE for apprentices in English as a Foreign Language (EFL) classrooms. In this study, we used quasi-experimental studies conducted through pre-test and post-test on study subjects as primary data for the study. The analysis showed a significant difference between students taught using SOLE and conventional methods in English proficiency. The Wilcoxon test results prove that the two-sided asymptotic significance of the Wilcoxon test is 0.000 for experimental class, and 0.000 for control class which the Asymptotic significance 2-tailed below Alpha (0.05). It means that SOLE can be more effective than lecturing.

KEYWORDS

Effectiveness; SOLE; EFL

ABSTRAK

Peningkatan pendidikan di era 4.0 perlu disesuaikan dengan proses belajar mengajar di perguruan tinggi. Dengan demikian perlu adanya strategi pembelajaran yang mengutamakan kemandirian siswa dalam belajar dengan memanfaatkan fasilitas di era digital seperti internet. Oleh karena itu, SOLE dapat menjadi salah satu strategi yang sesuai dengan pendidikan 4.0. Penelitian ini bertujuan untuk menentukan efektifitas SOLE untuk taruna pada pembelajaran English as Foreign Language (EFL). Dalam penelitian ini digunakan penelitian quasi-experimen yang dilakukan melalui pre-test dan post-test pada subjek penelitian sebagai data primer penelitian. Analisis menunjukkan perbedaan yang signifikan antara taruna yang menggunakan metode SOLE dan konvensional dalam kecakapan bahasa Inggris. Hasil uji Wilcoxon membuktikan bahwa signifikansi asimtotik dua sisi pada uji Wilcoxon adalah 0,000 untuk kelas eksperimen, dan 0,000 untuk kelas kontrol yang signifikansi asimptotiknya 2-tailed di bawah Alpha (0,05) dengan ini menunjukkan bahwa SOLE lebih efektif daripada metode ceramah.

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INTRODUCTION

Education as a basis in increasing self-confidence, increasing awareness to change and being able to face global challenges in every generation. It equips students with professional skills by increasing their understanding of new knowledge that supports the development of such personality and character, mastering new skills, and teaching skills for work (Suwandi, 2021). Education aims to improve every child's knowledge and skills sufficiently (Goma, 2021; Mustangin, 2020; Saptadi, 2020; Suryaningsi, 2021; Widiastri, 2020).

Due to the progress of the development education in 4.0, in the 21st century frameworks, today's education system needs to be updated with technology, beginning from the corporation and class control, assessment, pedagogy, ethics, and professional growth; and professional development; the issues during the pandemic involve require complicated reasoning, communication, and far flung international management skills (Chaka, 2020). In addition, in order to use technology to redesign education and training systems, professionals, educators, and students must reevaluate their fundamental beliefs because technology plays a crucial role (Etfiti, 2019). The term "Education 4.0," which reflects the "Industry 4.0" era, refers to a period in which educational paradigms, approaches, and the utilization of cutting-edge educational technologies have evolved.

The national education is taught English to support the education outcome to meet the life and career skills. The education of English also needs to improve to adequately scale and impact to produce globally competent students. English instruction also needs to improve to effectively scale and impact to produce globally competent students. In improving students' English proficiency, the students' also need to meet the approaches that related to the development of 4.0 education. technology can create an optimized and efficient context to help students explore new ideas easier than before (Diva, 2022). Based on this idea, Self-Organized Learning Environment (SOLE) Teaching Strategy would be an alternative factor of dealing with the 4.0 education.

The Self-Organized Learning Environment (SOLE) learning model places an emphasis on the self-learning process that any individual who wishes to learn can perform by utilizing the internet and smart devices that he or she owns (Pratama, 2022). Throughout the process, students engage in self-discovery, share knowledge in the community, and develop a willingness learning on the edge of mess (S. Mitra, 2021). The reason why SOLE can be used to overcome English Language Teaching; (1) Students learn to use computers and internet themselves by anyone, anywhere, and in any language (S. D. Mitra, 2005); (2) students can individually achieve educational goals related (Inamdar, 2007); (3) improving their pronunciation in English (S. T. Mitra, 2003) ; and (4) improve their school performance.

The SOLE strategy was tested in India by the person who develop it, Sugata Mitra, with positive results in academical performance, English pronunciation, educational goals and self-organized behaviour (S. K. Mitra, 2016). The research in Oman also stated that results mentioned that SOLE can improve EFL educational approach effectively (Al, 2019), the study conducted to small groups of Chinese Masters' degree students a British university revealed that in SOLE context, as well as the growing body of educational technology-related research and research on the uses of objects in interaction (Du, 2020). In line with the previous research, a study in held for Omani EFL Learning states that Some of the strengths

of SOLE highlighted by the results include SOLE's suitability for higher education, fostering learning and collaboration, giving students a degree of freedom and creating opportunities for student autonomy, giving students It includes empowering, enabling Internet use, suitability for different learning styles, and student motivation (Al Zakwani, 2020; S. Mitra, 2005). Thus, this study aimed to know the efficiency of Self-Organized Learning Environment (SOLE) to the vocational students in Indonesia especially in English as Foreign Language (EFL) classroom.

METHOD

This research used a quasi-experiment research which involve 2 sample classes, experimental and control class. This type of research aimed to assign the treatments classes to gain the differences between them. A type of quasi-experimental study that allows researchers to manipulate the conditions for teaching and learning processes, in which researchers work with a group belonging to an experimental group and look for changes in student performance compared to other groups belonging to the experimental group analysed (Garcia, 2021). The control group was also the group taught without any treatment applied. The sample of this research was census sample. The researcher took the whole class students of Railways Building and Track Technology major which consists of 48 students as the sample of the research. The 48 students then separated into 2 classes, experimental and control class. Teaching and learning process conditions experimental classes were treated with SOLE as a teaching method, while control class used lecture method. Technique of data collection in this research includes a pre-test and post-test to determine the immediate effects of the treatment on the outcome variable. The items of question used in this research based on the subject "conditional sentences" consisting of 20 (twenty) questions to the 30 students. The questions were given by multiple choice through quizziz. Blueprints of the questions states as follows:

Table 1 The Blueprints Pre-Post Test Questions

No	Instrument of the Questions	Number of Questions
1	Conditional Sentence Type 0	5
2	Conditional Sentence Type 1	5
3	Conditional Sentence Type 2	5
4	Conditional Sentence Type 3	5
Total		20

The instruments then analysed its validity, reliability, level of difficulty, and discriminating power. The validity done in this research was aimed to know whether the questions that would be given to the students were meet its validity or not. After conducting validity of the test, then the questions tested its reliability to gain whether the questions reliable or not. The level of difficulty done to know the difficulty level so the questions meet good quality test of the items. The discrimination power shows how well the question differentiates students who are well-versed in the subject from those who are not (Karim, 2021).

Both the experimental and control classes are given pre-test at the first meeting. Pre-tests were administered by researchers to determine or measure the level of intelligence in English proficiency. After calculating students' English proficiency followed by treatment in both experimental and control groups. Test group specified the SOLE method in order to stimulate and explore student's creativity in solving the problems within group/team work. Another treatment in control group was given the lecture method of teaching and learning process. After treatment of experimental and control groups, the researcher gave a post-test at the final of the meeting to know if there was any different after the completion of treatments.

To analyse the data in this research used descriptive analysis and Wilcoxon test using SPSS 26.0 to know whether there was significance difference between the cadets who taught using SOLE in teaching EFL or not. The hypotheses of this study are: The alternative hypothesis (Ha) that there is a significant difference between SOLE-taught and conventionally educated cadets, and the null hypothesis (Ho) that there is no difference between cadets who taught using SOLE and lecture method.

FINDING AND DISCUSSION

In this study formed tests a tool to examine student comprehension in terms of English proficiency. Thus, the investigation on the instruments were states as follows:

1. The Instrument Test

Validity of the instrument

Based on the data analysed using SPSS 26.0, the r-table is 0.3494. When the Pearson Correlation is lower than the r table, the data means invalid, and when it is greater than r-table, the data means valid. From the items of 20 questions, there were 15 questions interpreted valid and 5 questions were invalid. Thus, the invalid items removed.

Table 1: The validity of the instrument

No Items	Description	Total
2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 16, 17, 18, 19, 20.	Valid	15
1, 8, 10, 14, 15	Invalid	5
Total		20

Reliability of the instrument

The reliability of the test than calculated using SPSS 26.0 as follows:

Table 2: Reliability of the instrument

Reliability Statistics	
Cronbach's Alpha	N of Items
.748	20

The test reliability results showed a Cronbach alpha of 0.748. His Cronbach's alpha for the reliability test for this study was 0.748, so the instrument can be classified as reliable.

Difficulty level

The difficulty level was calculated using the SPSS 26.0 application. After getting the value of the difficulty index, we can classify the problem with the criteria of the interval. 0.00-0.29 were classified as difficult, 0.30-0.69 were classified as sufficient, and 0.70-1.00 were classified as easy (Arikunto, 2016).

And Based on the calculation using SPSS 26.0, the difficulty level of the instrument then classified into following table.

Table 3: Difficulty level of the instrument

Difficulty level	No Item	Total
Difficult	2	1
Sufficient	1, 3, 4, 6, 7, 8, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20	16
Easy	5,9,12	3
Total		20

From the data above, it can be concluded that there were 1 number categorized as difficult, 3 items categorized as easy, and the other 16 items categorized as sufficient.

Discriminating power

To measure how well an item discriminates between weak and strong student, discriminating power was used in this research. The classification of discriminating power divided into 5 criteria; less than 0.20 classified as poor, 0.20-0.40 as satisfactory, 0.40-0.70 as good, 0.70-1.00 as excellent, and Negative sign (-) which means it has negative discriminatory power (very bad) (Arikunto, 2016). The result of data classification based on the discrimination power index stated in table 4.

Table 4: The Discriminating Power Classification

No Items	Description	Total
1, 8, 10, 14, 15	Poor	5
2, 3, 4, 5, 7, 9, 11, 12, 13, 19, 20	Satisfactory	10
3, 6, 16, 17, 18	Good	5
Total		20

Based on the data above, from 20 questions tested, there were 5 items removed or dropped. The reason of dropping the 5 items because the data were invalid and categorized discriminating power as poor. The removed data were items 1, 8, 10, 14, and 15. And the instrument used were 15 items (2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 16, 17, 18, 19, and 20).

2. Data Analysis

Frequency Distribution of Students' Score

Before giving the material about conditional sentence, the students were given pre-test both in experimental and control class to evaluate students' understanding about the material. After implementing SOLE for the experimental class, and Lecture method in control class, again, the students were given post-test to know their improvement after the treatment. The result of the students' score stated in the following table.

Table 5: Frequency Distribution of Students Score

No	Pre-Test						Post-Test					
	Experimental Class			Control Class			Experimental Class			Control Class		
	Value Interval	F	%	Value Interval	F	%	Value Interval	F	%	Value Interval	F	%
1	13-28	5	21%	20-33	3	13%	67-72	1	4%	67-72	1	4%
2	29-42	6	25%	34-47	12	50%	73-78	0	0%	73-78	3	13%
3	43-57	9	38%	48-60	2	8%	79-84	2	8%	79-84	1	4%
4	58-71	2	8%	61-73	2	8%	85-90	3	13%	85-90	5	21%
5	72-86	1	4%	74-87	2	8%	91-95	7	29%	91-95	5	21%
6	87-100	1	4%	88-100	3	13%	96-100	11	46%	96-100	9	38%
		24	100%		24	100%		24	100%		24	100%

Descriptive Analysis

Descriptive analysis in this research aimed to measure of central propensity, such as mean, median, and mode, summarize the level of performance of the outcome group, whereas measures of variability describe the dispersion of outcomes among participants.

Table 5: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Experimental Class X	24	13	87	44.12	18.376
Post-Test Experimental Class X	24	67	100	93.29	8.493
Pre-Test Control Class Y	24	20	100	51.96	23.070
Post-Test Control Class Y	24	67	100	90.25	10.393
Valid N (listwise)	24				

This study used pretest and posttest data from the experimental class X and pretest and posttest data from the control class Y. Based on the descriptive analysis, the minimum pretest score for the class X was 13, and the maximum was 87. While the minimum point for post-test class X was 67 and the maximum was 100. For the class Y, the minimum score in pre-test was 20 and the maximum point was 100. The post-test of class Y was also 67 minimum, and 100 maximum.

Wilcoxon Test

The Sign-Wilcoxon test is a nonparametric test to decide the presence or absence of the difference between two paired or related dependent samples, used in lieu of the paired sample t-test when not normally distributed found out in the data.

Table 6: Wilcoxon Test Result

Test Statistics ^a		
	Post-Test Experimental ClassX - Pre-Test Experimental ClassX	Post-Test Control ClassY- Pre-Test Control ClassY
Z	-4.261 ^b	-4.201 ^b
Asymp. Sig. (2-tailed)	.000	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Hypothesis for Wilcoxon Test is:

If the significance value is $>$ alpha then there is no difference between the values before and after the learning process, and if the significance value is $<$ alpha then there is a difference between the values before and after there is a learning process.

The Asymptotic significance 2-tailed of Wilcoxon test was 0.000 for post-test experimental X - pre-test experimental class X, and 0.000 for post-test control class Y - pre-test control class Y. When the Asymptotic significance 2-tailed below Alpha (0.05), it can be interpreted as differences between experimental and control classes.

From the analysis above, the comparison between experimental and control classes that has been analyzed shows that there was improvement from experimental class. The lowest score of pretest experimental class was in range 13-28 and reached 21% of the students and the lowest score of posttest experimental class was 67 and reached only 4% of the students. The highest score of experimental pretest was 87 that reached 4% of the students, and it increased for posttest in the range of 96-100 that reached 46%. While in control class, even though the lowest score for pretest was in range 20-33 reached 13% and in posttest the lowest score was 67. While the highest score was in range 88-100 that reached 13%, while in posttest reached 38%. The data shows that the improvement of experimental class can be divined by the total of the students that reach the higher score 8% higher that the class taught with lecture method.

Further discussion about the finding shows that teaching and learning process using SOLE is away more effective than lecture method. The other research conducted in Tunisia conducted to the students in engineering majors taught by SOLE shows that the students' multicultural perspective, intercultural communication, and teamwork in multicultural groups had improved (Juárez, 2022). In line with the previous research, the study conducted in India also shows that there was improvement in the retention power of the topic from the students taught using SOLE (Amit, 2020). Applying the SOLE model has obtained data from physics learning outcomes with an entirety presentation of 62.5%, while conventional learning models obtained an entire presentation of 52.9% (Novika, 2022; Pérez González, 2022) while the research in Jourdan states that The study found that the students had high levels of self-regulation skills when it came to practicing and remembering (Mahamid, 2022). Another research that investigates SOLE as the successful method for teaching and learning was conducted in Spain, the result is a case study that describes the use of SOLE as a friendly tool to distance education with technological mediation (Álvarez, 2021; S. Mitra, 2021)

CONCLUSION

This is shown by the results of this study that the English performance of students taught by SOLE and students taught by conventional methods were significantly different. This is evidenced by the results of the Wilcoxon test that the Asymptotic significance 2-tailed of Wilcoxon test was 0.000 for post-test and pre-test experimental class, and 0.000 for post-test control class-pre-test control class which the Asymptotic significance 2-tailed below Alpha (0.05). Thus, SOLE can be one of the solutions in improving students' English achievement. This method also gives students freedom to learn by using technologies and explore the material by their own learning styles. Based on this study, SOLE can be better method than lecturing.

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