Role-Reversal and Discussion-Oriented Models for Flipping Digital Vocabulary Achievement in English Classrooms for Electronic Engineering Learners

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ABSTRACT

This research aims to verify whether two classroom models, discussion-oriented and role-reversal, have an effective strategy for teaching vocabulary achievement to English language learners. The proposed models were examined as a successful method for teaching and learning vocabulary. A quasi-experimental strategy was used with three intact classes: one control (Electronic Engineering Learners A class) and two experimental (B and C class) (Electronic Engineering Learners B and C class). Using pre- and post-test writings, the effectiveness of the two models, which incorporated two digital applications, was determined. Additionally, a questionnaire created by the researcher and a semi-structured interview was used to assess vocabulary achievement. Covariance analysis revealed that classrooms that emphasized discussion and role reversal were more effective than those that did not. in terms of vocabulary growth in post-test expository writing, the role-reversal group also outperformed the discussion-oriented group. Further analyses revealed the positive perceptions and experiences surrounding flipped classrooms, highlighting four themes: instructor support, personal sentiment, peer support, and activities beyond the classroom.

1. Introduction

Recently, The world's currently facing a pandemic due to the Covid – 19 virus. Due to this circumstance, all sectors of society have been affected, including the education sector. There are significant changes in the teaching and learning processes. The emphasis s on distance education. Distance education or distance learning s an educational field that focuses on the incorporation of pedagogy, technology, and instructional system design into the delivery of education to students who are not physically "on site" to receive their education. Alternately, by exchanging printed or electronic media, or through technology that enables real-time communication (synchronously). Moore and Kearsley (2004), p. in today's world, lectures are delivered using technology. For lectures, ed-tech tools such as video conferencing are utilized, and students are physically separated

from their teachers but connected via a virtual platform. The lectures delivered on a virtual platform can be combined with a new method, the Flipped Learning method. The lectures are made available to students for viewing at home, while homework assignments are discussed in class. The flipped learning model fosters an environment that enhances student-teacher interaction and encourages students to learn through application and practice. in this regard, flipped learning s student-centered because t focuses on student learning, places more responsibility for learning on students than on teachers, and encourages students to experiment more (Sams, 2012). Teachers and students can communicate asynchronously (at their own convenience)

Language study has always been the main feature of teaching and learning activities, as people may express themselves about everything. numerous empirical study has showed that many teachers struggle with vocabulary training (Sari & Wardani, 2019). Alkamel & Chouthaiwale, (2018) suggested that CT enables teachers to develop their teaching approaches in language classrooms, resulting in more diversified instruction. To be more precise, adopting CT in the English language classroom can increase and maximize students' language acquisition, motivate them to continue their study, and stimulate their creativity (Azmi, 2017). By employing CT in vocabulary training, teachers can apply effective techniques to create an engaging language classroom environment that promotes students' learning.

All classes in Covid-19 were required to be online, demonstrating the unquestionable incorporation of CT in language education. The first step involved integrating CT into the teaching and learning system and transitioning t to the digital age. According to Mallick et al. (2020), t s essential to combine CT tools with conventional teaching methods in order to create an effective learning environment. Moreover, as the teaching and learning process transitions from face-to-face to face-to-screen, the need for CT tools s growing in significance and becoming increasingly obligatory.

Although CT tools for language acquisition have been accessible for some time, there s a dearth of variation in how they are employed in class, particularly in vocabulary instruction (Yoon, 2017). Using CT platforms on Student Response Systems (SRS) increased student participation, engagement, and outcomes, according to specialized research (Waluyo, 2020). Google Forms, Kahoot, Socrative, Quizizz, and Quizlet are among the available SRS platforms. This study selected two SRS platforms, Kahoot! and Socrative, due to their familiarity with students and potential learning benefits. Based on the foregoing, the primary objective of this study s to evaluate the impact of digital English lessons on the vocabulary achievement of the Electronics Engineering Learners program. Consequently, the present study addresses the following research questions.

1. Is a discussion-based flipped classroom more effective than a traditional/conventional teacher-centered classroom for increasing EFL students' vocabulary achievement?

2. Is a role-reversal flipped classroom more effective than a traditional/conventional teacher-centered classroom at improving the vocabulary achievement of EFL students?

3. Is a role-reversal flipped classroom more beneficial than a discussion-based flipped classroom for EFL students' development of expository vocabulary?

4. How do EFL learners evaluate the proposed flipped classroom strategies for teaching and learning expository vocabulary?

2. Methodology

Sixty EFL students from Ahmad Dahlan University's Electronics Engineering Learners participated in the initial experiment. They ranged in age from 18 to 23 and spoke Indonesian as their native tongue. This study utilized a quasi-experimental design, with three intact classes serving as control and experimental groups. The control group (n = 17) consisted of students from a first language institute. Participants from the third language institute were assigned to the second experimental group or role-reversal flipped group/classroom (n = 24).

To confirm the homogeneity of the participants in terms of their estimated English proficiency and to identify advanced EFL students, an English placement test was administered. The exam consisted of 50 multiple-choice questions on grammar and vocabulary, as well as separate oral and vocabulary sections. in a pilot study with 100 EFL students, tem analysis was used to validate this test. in addition, the internal consistency reliability index for the placement test was 0.89, indicating the test's high dependability.

A questionnaire created by the researcher was used to assess the presented models from the perspective of EFL students. The questionnaire contained 11 statements that were scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), with scores ranging from 1 to 4 for each statement. The questionnaire was piloted with fifty EFL students from two language institutes who shared many characteristics with the primary sample. Utilizing tem and multivariate analysis, the questionnaire was validated. The test-retest reliability and intra-observer reliability (Cronbach's alpha) estimates for the items were used. Both test-retest reliability (Kap-pa = 0.94) and Cronbach's alpha (=.91) were satisfactory.

During the post-test phase, interviews were conducted to assess the effectiveness of the flipped models in the two experimental groups. A number of questions were prepared to assist the interviewer. One instructor with prior experience teaching English evaluated the questions and provided feedback regarding their precision and utility in eliciting the pertinent information. They included both multiple- choice and free-response questions, such as "How would you describe your experience in this vocabulary course?" "Did you comprehend the new topic explained in the video?" in addition to "How did you find the instruction provided for assigned assignments inside and outside the classroom?"

This study followed 60 female EFL students who enrolled in English for specific purposes courses and took the English placement examination between 2018 and 2019. The current study employed a quasi-experimental, pretest-posttest design, with one control group and two experimental groups completing pre-test and post-test essays, respectively. in addition to the essays, a researcher-created evaluation questionnaire and semi-structured interview were used to answer the study's final research question at the post-test stage. The duration of this investigation was 15 weeks, as shown in Table 1. Following the administration of the English placement test in the first week, pre-test vocabulary lists were distributed to all three groups (one cause and effect essay and one comparison and contrast essay)

3. Findings and Discussion

This study's first goal was to see f there was a significant difference in student expository vocabulary proficiency between students who received discussion-oriented instruction and those who received standard instruction, using descriptive and inferential statistics. The researcher used descriptive statistics on the data from both groups to make sure that a normal distribution and to get an idea of how well both groups could use words to explain things.

Table 1.   Pre-test and Post-test Descriptive Statistics for the Control and Discussion-Focused Groups

Tests	Groups	M	SD	Skewness	Kurtosis
Pretest	Control (N = 17)	13.06	2.51	-.03	-.09
	Discussion-oriented (N = 24)	13.05	2.84	.39	.87
Posttest	Control (N = 17)	13.47	2.43	- 42	-13
	Discussion-oriented (N = 24)	16.16	2.01	54	82

Table 1 demonstrates that the kurtosis and skewness values were small and within the range of 2 before and after the test, indicating that the data had a normal distribution (Kun-nan, 2005). Also, the mean vocabulary scores before the test were almost the same, which shows that both the control group and the discussion-oriented group had similar expository vocabulary skills before the test. On the post-test, which was subjected to inferential statistical analysis, the mean vocabulary scores appeared to be quite different.

Because of the small sample size, normality and homogeneity tests were performed before parametric and nonparametric inferential tests (Kunnan, 2005) Using the Shapiro-Wilk test, the normality of the expository vocabulary scores in this study was determined. The control and discussion groups' expository vocabulary scores were normally distributed on the pretest [D(17) =.98, p =.605 and D(19) =.96, p =.530] and posttest [D(17) =.95, p =.464 and D(19) =.94, p =.277].

Table 2. Analysis of Post-Test Vocabulary Scores for the Control and Discussion-Oriented

	Sum of squares	df	Mean square	F	Sig.	Eta squared
Corrected model	195.64	2	97.82	89.89	.000	.854
Intercept	38.81	1	38.81	35.66	.000	.519
Pretest	130.85	1	130.85	120.23	.000	.785
Group	65.01	1	65.01	59.74	.000	.644
Error	35.91	33	1.09			
Total	8212	36				

The difference in vocabulary scores between the two groups after instruction was statistically significant and had a large effect size, as shown in Table 4, F(1, 33) = 59.74, *p 0.05, 2 =.644. Finally,

Table 3. Pretest and Posttest Descriptive Statistics for the Control and Role Reversal

Tests	Groups		M	SD	Skewness	Kurtosis
Pretest	Control (N = 17)		13.06	2.46	-.21	-.43
Role- Reversal (N = 24)	(N		13.00	. 3.11	26	.34
Posttest	Control (N = 17)		13.47	2.43	-.52	-.82
Role- Reversal (N = 24)	(N	20.29	2.01	.56	.64	20.29

Before treatment, both groups were similar in pre-test vocabulary mean scores and post-test vocabulary mean scores, as shown in Table 3, indicating that both groups were homogeneous before treatment. in addition, as shown in Appendix Tables A3 and A4, the Shapiro-Wilk and Levene tests revealed no significant violation of normality or uneven variances between the two groups (p >.05), indicating that a parametric test may be performed with confidence.

To answer the second research question, a one-way ANCOVA was used to compare the effects of both instruction strategies on the post-test expository vocabulary performance of learners in the control and role-reversal groups. As shown in Table 6, there was a statistically significant difference between the vocabulary ratings of the two groups after instruction: F(1, 38) = 78.79, *p.05, 2 =.675.

in other words, the role-reversal flipped lesson was more effective than the control group's training in enhancing students' expository vocabulary skills.

Table 4. Analysis of the covariance between the Posttest Vocabulary Scores of the Control and Role-Reversal Groups

Source	Sumof squares	df	Mean square	F	Sig.	Eta squared
Corrected model	521.77	2	260.89	52.53	.000	.734
Intercept	138.85	1	138.85	27.96	.000	.424
Pretest	135.18	1	135.18	27.22	.000	.417
Group	391.28	1	391.28	78.79	.000	.675
Error	188.72	38	4.97			
Total	13566	41				

In order to begin answering the third study question, descriptive statistics on the vocabulary scores of participants in the two experimental groups were produced (see Table 4). Second, a one-way ANCOVA was carried out following confirmation of the normality of the distribution and the Levene's test for homogeneity of variance in the experimental groups.

Table 5. Pretest and Posttest Descriptive Statistics for the Role-Reversal and Discussion-Oriented Groups

Tests	Groups	M	SD	Skewness	Kurtosis
Pretest	Discussion-oriented (N=19)	13.05	2.84	.456	.356
	Role-Reversal (N=24)	13.00	. 3.11	389	678
Posttest	Discussion-oriented (N=19)	16.16	2.01	.457	465
	Role-Reversal (N=24)				

As indicated in Table 5, the post-test revealed a considerable difference in mean scores between the two groups. ANCOVA was used to examine the impact of post-treatment vocabulary performance on student discussion-oriented versus role-reversal training

Table 6. Covariance Analysis of Post-Test Vocabulary Scores for the Discussion-Oriented and Role-Reversal Groups

Source	Sumof squares	df	Mean square	F	Sig.	Eta squared
Corrected	354.06	2	177.03	67.67	.000	.772

model						
Intercept	177.37	1	177.37	67.80	.000	.629
Pretest	172.84	1	172.84	66.07	.000	.623
Group	184.38	1	184.38	70.48	.000	.638
Error	104.64	40	2.62			
Total	15120	43				

During the post-treatment period, the majority of participants in both the discussion-oriented and role-reversal groups indicated agreement with the majority of the questionnaire statements. That they had a favorable opinion of the models as a group s evidence of their good feelings about them. The discussion-oriented group had the highest means on items 10 (M = 3.64), and 3 (M = 3.63). tem 8 (M = 3.75) and tem 1 (M = 3.61) had the highest means in the group with the roles reversed. According to these data, participants highly recognized the instructor's abilities to teach writing, facilitate pre-class activities, utilize the digital platform, and maintain class flexibility.

Table 7. Descriptive Statistics for items in Groups Oriented Around Discussion and Role Reversal

Items	Discussion-oriented		Role-reversal	
	M	*SD*	*M*	*SD*
1. The classroom's adaptability (moving chairs for a group activity, for example) aided me in improving my Vocabulary Achievement .	3.13	.92	3.61	.97
2. The instructor was able to coach me in such a way that was able to concentrate on my vocabulary abilities.	3.36	.89	2.97	.71
3. Pre-class materials (e.g., movies) accessible on the platform prior to class could have increased my awareness of the need to develop vocabulary.	3.63	1.01	3.50	1.03
4. was able to maintain a higher level of concentration when the instructor and classmates collaborated on problem-solving tasks.	3.26	.92	3.02	.95
5. Pre-class activities were beneficial for the class, and grasped the essential concepts, which helped me in organizing my work.	3.21	.79	3.33	1.05
6. believe the instructor was able to assist and clarify tough ideas as needed.	3.50	.97	3.32	.85
7. Vocabulary became more enjoyable as a result of the instructor's approach in the vocabulary class.	3.58	1.00	3.54	1.21
8. The class was activity-based, which aided in my development of Vocabulary Achievement .	3.09	1.01	3.75	.93

9. Became interested in vocabulary as a result of the instructor's assistance with the app and my discussions with my classmates.	3.13	1.03	3.54	.94
10. The lecturer was able to engage me in a variety of ways throughout classroom activities.	3.64	.89	3.01	.87
11. The course's digital platform aided significantly in my vocabulary progress.	3.24	.91	3.32	.88
Total	3.33	.94	3.36	.94

Table 8. Summarizes the themes and sub-themes gleaned from the interviews, along with their descriptions

Codes	Description	Sub-codes	Description
Teacher support	This code demonstrates how the teacher guided the students. Additionally, t s concerned with how the teacher facilitated collaboration and provided assistance in resolving their challenges.	Enriching understanding	This sub-code s about students' perceptions of how their teacher assisted them in grasping new vocabulary aspects, either by description or by altering the content.
		Establishing relationships	The students gave their impressions of their teacher's approachability and how they were handled in this sub-code.
		Supporting group work	This sub-code describes the teacher's support of collaboration through providing opportunities for students to work in groups.
Peer support	This code explains how the students enlisted the assistance of their peers. to encompasses the aid provided by students when they requested assistance from one another and the relationship formed as they collaborated.	Assistance and encouragement to learn	This sub-code illustrates the different methods in which students assisted and encouraged one another while participating in an activity.
		Friendly relationship	This sub-code pertains to a report on the interactions formed

			between students and the extent to which their teaching/learning environment engaged them.
Personal feeling / perception	This code encapsulates students' impressions about educational opportunities. the summarizes the most salient characteristics that contributed to their positive attitude toward the course.	New ways of learning	In this sub-code, students stated a desire for novel teaching methods that would aid them in improving their Vocabulary Achievement, as well as their feelings regarding their new method in the vocabulary course.
		Commitment and independence in learning	In this sub-code, students discussed how their learning approaches shifted and they developed a sense of commitment and independence.
Activities within and outside the classroom	This rating indicates how students feel about the activities and learning opportunities available in and out of class.	The online discussion	This sub-code reflects how students participated in extracurricular activities and discussions outside of class via the Edmodo or Schoology apps.
		Activity-oriented approach	The sub-code denotes the strategy that s learner-centred and activity-based in and out of class.
		Flexibility in approach	This sub-code reflects the adaptability of the flipped classroom approach to teaching/learning vocabulary.

The interview data analysis revealed that students described their evaluative experiences with the instructions in a variety of ways, which were categorized into four emerging themes: (a) teacher support, (b) peer support, (c) personal feeling/perception, and (d) classroom and extracurricular activities. In all groups, respondents expressed positive attitudes about their teacher, particularly in terms of providing feedback, addressing their questions, and supporting them when they encountered difficulties during the vocabulary process. Additionally, they discussed how their practice aided in their development of an understanding of expository vocabulary. Additionally, the kids' interviews included information about their interactions with their peers. Their active interaction with their peers aided in their academic success and development of positive relationships with their classmates. Additionally, they expressed satisfaction with their educational

style and a shift in their opinions of vocabulary as a demanding undertaking. Additionally, there were numerous instances of agreement with the activity-based approach both within and outside the classroom, particularly with the online conversation conducted outside of class.

This section contains the discussion of the findings based on the problem formulations. Expository Vocabulary Achievement increased greater for EFL students receiving discussion- based instruction than for those receiving only traditional instruction. The discussion component, which increased student engagement, may have made the discussion-based flipped classroom method more effective than the conventional approach. numerous researchers, such as Henning (2005), have emphasized the significance of learner participation in the development of language skills, which is fostered by debate and dialogic practice. One may argue that the EFL learners in the discussion-oriented group were more engaged in the vocabulary learning process, which aided in the acquisition of the framework of the explanatory genre. Prior research demonstrates the importance of discussion-based participation in the vocabulary development process for expository essays. Using an action research study, Burgos (2017) demonstrated how group interaction helped Chilean undergraduates enhance their vocabulary during the joint production process of writing explanatory essays. The use of technology, specifically the digital app, may also contribute to the increased success of the discussion-based paradigm of the flipped classroom.

In today's world, almost every student makes regular use of technology. Using technology to flip the classroom can encourage a more communicative learning atmosphere, according to Hung (2017). It is likely that the Schoology app functioned as an incentive for the EFL students in this study, helping them to learn more about classroom topics and lexico-grammatical patterns associated with expository writing. Students were provided with their own channel to access educational materials, such as video lectures, to assist them in internalizing their expository essays. They may be able to increase their explanatory Vocabulary Achievement by using the application and receiving a reward. The adaptability of the teaching/learning method could be the following factor to consider. This group of students had access to course materials outside of class and could practice anywhere and whenever they wished, demonstrating course flexibility. According to Shurville et al. (2008), flexible education empowers students by allowing them to choose where, when, and how to learn. Consequently, the current study hypothesizes that learners' vocabulary quality improved as a result of flexible learning in a discussion-based group. The finding is also consistent with previous research on the effectiveness of flipped classrooms for the development of EFL vocabulary. Moreover, according to the data, students in the role-reversal flipped classroom outscored those in the control group. The learner-centered orientation of the role-reversing, flipped classroom method may have an impact. This strategy put students at the center of their own learning by holding them accountable for earlier experiences, pressing them to create films for the class, and demanding them to answer their own questions regarding various sections of a written exposition. In the flipped classroom, the option of content presentation (instructional films) boosted student autonomy. Learner autonomy is the willingness to assume responsibility for one's own education and regain control over one's language learning (Smith, 2008). Learner autonomy is characterized as EFL students' ability to create films, edit them, discuss them, and study independently. This may have enhanced their motivation to pursue their own interests and improve their achievement in explanatory Vocabulary.

This group of students not only took charge of their own education, but they also used Edmodo to connect with their peers, share videos, and work through their vocabulary challenges. These types of activities could be advantageous for students. They may learn more from one another, feel more confident and less anxious, and produce more meaningful writing when they interact. Consequently, the high level of collaboration among the learners in this group could be another factor contributing to the efficiency of the paradigm. According to Slavin (2013), cooperative learning fosters a comfortable learning environment in which EFL students can express themselves. In contrast, the approach's adaptability distinguishes it from other types of collaborative or team language. According to collaborative vocabulary, "several authors contribute information in order to evolve but not reconstruct an entire work" (Rbuiaee et al., 2015). In the current study, the development of expository vocabulary was viewed as a process in which multiple learners contributed information

to the construction and reconstruction of an expository text by editing others' work and vocabulary and revising a text in response to the input of inon-pair group members. Depending on their learning style, this may be completed outside of class, at any time, using the digital app, and at their own leisure.

According to the findings, the role-reversal group also scored better on the post-test than the discussion-oriented group. The fundamental explanation for this could be that role-reversal training places a larger emphasis on the learner. Learners earned a better sense of responsibility for their own learning by reversing traditional teaching approaches, resulting in more independent attitudes regarding Vocabulary Achievement development. Additionally, students in the role-reversal group displayed higher collaboration and peer assistance in grasping the session's major theme by creating films and spending additional outside-of-class time focusing on vocabulary issues. Furthermore, collaborative learning, which was included into the online learning environment via the Edmodo app, is likely to have considerably engaged and influenced their attitudes about vocabulary, providing a more conducive milieu for vocabulary increase. This finding is supported by the relevant literature. Collaborative blogging may help students improve their views regarding expository vocabulary, according to Drexler et al. (2007). The discussion-based flipped classroom, which was intimately linked to another, relied greatly on teacher assistance (activities within and outside the classroom) (activities within and outside the classroom). During numerous exercises, students in the discussion-based group did analyze their role model experiences depending on their teacher's help. Similarly, the role-reversal flipped classroom's activity-based approach contributed in the establishment of peer support and a favorable climate both within and outside the classroom, enhancing positive views regarding the course's vocabulary. It may be concluded that students' good opinions of the flipped classroom are in line with those of researchers such as Webb and Doman (2020), who found that the discussion-based and role-reversal flipped classroom models were the most popular.

4. Conclusion

For the first time, researchers compared two flipped classroom models, role-reversal and discussion-based, in order to improve the effectiveness of foreign language training. (Albert & Beatty, 2014). As revealed by qualitative data analysis, writers in EFL classes benefit from a variety of factors, including encouragement from their teachers and peers, a flexible teaching approach, numerous opportunities to cultivate positive attitudes toward vocabulary, and active participation in a wide range of classes activities.

According to the study's findings, classroom discussion-based activities, online collaboration and discussion through digital apps, the use of instructional videos prior to class and prior preparation, and a learner-centered classroom environment can all have a significant impact on EFL learners' vocabulary performance and attitudes toward expository vocabulary in English.

The findings show that discussion-based and role-reversal flipped models in English vocabulary courses can replace or enhance traditional teacher-led education. Moreover, the results suggest that the role-reversal model, with its more learner-centered approach and increased demand for learner autonomy, may be even more effective than the other flipped model at enhancing the expository vocabulary skills of EFL students. As a result, EFL teachers may want to consider employing a flipped paradigm in EFL vocabulary classes in order to address some of the difficulties their students encounter during the vocabulary learning process.

The codes derived from the qualitative interview data were restricted to a small number of individuals who expressed their ideas in a distinctive manner. By conducting interviews with different groups of foreign language learners at different times, additional codes may be uncovered. Future research may include EFL teachers, male students, and other sampling methods in order to examine this promising pedagogical method across a spectrum of language skills.

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