

AN INSTRUCTION BASED ON SIMULATION STRATEGY WITH COLLABORATIVE LEARNING TO ENHANCE READING AND WRITING ABILITIES FOR UNDERGRADUATE STUDENTS

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Abstract

Numerous examinations and research findings from various schools indicate that students require improvement in language learning, particularly in reading and writing skills, to support effective communication. Enhancing English communication abilities within social and real-life contexts is crucial for students' future success. This research aimed to: 1) compare the English reading abilities of undergraduate students before and after instruction based on simulation strategy and collaborative learning, and 2) compare their English writing abilities before and after the same instruction. The study involved 22 undergraduate students from Sichuan Film and Television University in the academic year 2023, assigned to an experimental group using cluster random sampling. Research instruments included lesson plans, reading ability assessment forms, and writing ability assessment forms. Statistical analysis was conducted using descriptive statistics and a t-test for dependent samples.

The results showed that students who received instruction based on simulation strategy and collaborative learning demonstrated significantly higher English reading and writing abilities post-instruction at the .05 level of significance.

Keywords: Instruction Based on Simulation Strategy and Collaborative Learning, Reading Abilities, Writing Abilities.

Introduction

In the results of many examinations in various schools and research studies were found that many students in third grade and other primary education are also needed to improve reading and writing abilities in language learning, especially English learning to support their communication successful. Whereas these contexts are important learning outcomes for many students in primary educational level, because in social context and their life situation also need to encourage or develop English communication ability for effective learning and enhance their occupation successfully in the future.

For the key characteristics of learning activities based on simulation approach be concentrated in interesting problem situations, that appropriate concern with learner abilities and their needs. In addition, learning activity based on simulation approach can motivate student learning successful to get capacities in aloud reading or speaking for each vocabulary and sentence effectively with correct grammatic or syntax contexts of English learning. This is one key element of language learning to support correct communication through writing practices in class room contexts. It is found that some Third-Grade students in China have reading ability with can't read aloud and sentence writing correctly. Some researchers explained that learning activities those can enhance students speaking or aloud reading and writing words or simply sentences with correct condition must support with drills and practices several times in appropriate situation.

Reading strategy is one of many factors influencing understand in meaning and concept or detail of content that emerge from reading context. If a reader wants to gain a better understanding of what is being read, he or she needs to know which strategies to use, how to use them, and at what time to use those reading strategies during the reading process (Paris et al., 1983). However, the employment of reading strategies depends not only on types of reading strategies but also on the usage and the efficiency and effectiveness of integrating the employed reading strategies with other reading strategies (Anderson, 1991). According to some academic experts employed reading strategy should be selected through three criteria: 1) the chosen reading strategy is consistent with a cognitively based view of the reading process, 2) the chosen reading strategy is appropriate to the target group, and 3) the chosen reading strategy has been proved that it is learnable (Dole et al., 1991). Whereas learning activity to get understand in words and sentences meaning for first elementary level, should assign activities based on simply events and interesting context to motivated student learned successfully.

In reading contexts of oral language. The reader must learn to manipulate the relationships between the symbols of speech (sounds) and the graphic symbols that represent them (Feng, 1990). According to this view, reading is speech coded by letters. Teachers with a phonics orientation emphasize reading as either the synthesis or analysis of words, while de-emphasizing meaning. They tend to believe that reading is, primarily, the mechanical skill of decoding, of turning the printed symbols into sounds (oral symbols) which are language (Harste and Burke, 1977). Proponents posit that such decoding skills should be taught in a systematic, sequential manner. In this orientation, reading is treated as one of the four language arts, each taught separately from the others. Reading is viewed as a set of broad components, each equal in treatment of vocabulary, decoding, grammar, and comprehension (Feng, 1990). Skills advocates believe the key to reading success is word identification from which comprehension follows. Emphasis is placed on helping the reader identify each printed word and then relate

these words to a meaningful context which is affected by the reader's prior knowledge, interests, etc. (Shanklin, 1989).

The focus of the whole language instructional approach is on the learning process rather than the product. Listening, speaking, reading, and writing are taught as closely integrated subjects. In their assessment of needed literacy reform, Allington and Walmsley (1995) conclude that the integrated instructional practices which combined reading with writing and other content areas produced the highest performance results among the 4th, 8th and 12th graders taking the NAEP 1992 Report Card assessment. Allington and Walmsley (1995) also indicate the failure of the best reform efforts may be due to this lack of an integrated approach. With the instructional emphasis being upon integrating the language arts whenever possible, growth in one language arts area leads to growth in one or more of the remaining areas. Manning (2006) points out that products actually get better when processes are emphasized. For example, the frequency of the processes of writing by enhance the comprehension of the content students are studying. both whole language teachers and content area teachers will enhance the comprehension of the content students are studying. The whole language approach emphasizes "empowerment," through which both the teacher and the student have input as to what will be taught and the materials and activities to be used. These activities incorporate children's literature and writing and follow the underlying philosophy of the whole language approach in that children are expected to learn to read and write naturally, just as they learned to listen and speak.

An experiential learning exercise, has been identified as the most important part of simulation learning and is also important for learning in other activities utilized in language arts education. These activities included utilizing simulation preparation activities, aligning their debriefing practices with a specific debriefing method or learning theory, utilizing intentional debriefing, establishing safety, maintaining a supportive demeanor, encouraging student-led debriefing, engaging the student learner, using debriefing aids, promoting recognition of learning, facilitating to the level of the learner, attending to the debriefing environment, and providing post-debriefing activities. Simulation is a pedagogy using one or more typologies to promote, improve, or validate a participant's progression from novice to expert. Bland, Topping, and Wood (2011) analyzed the concept of simulation as a learning strategy in education. Five critical attributes were identified, which included creating a hypothetical opportunity, authentic representation, active participation, integration, repetition, evaluation, and reflection. Simulation was described as an active learning strategy that offers a dynamic approach for theory to be integrated with practice. In addition, simulation learning offers a review of actions, evaluation of self and others, feedback, and a place to develop a plan for future actions (Bland, Topping, & Wood, 2011). Teaching was defined in this review as "what the educator provides the student in terms of goals, methods, objectives, and outcomes".

Learning was defined as “the processes by which the student changes skills, knowledge, and dispositions through a planned experience”. The reference or mention a learning theory in the simulation design or assessment of student learning, while using simulation as a teaching method or strategy. In addition, of the 16 articles that used a learning-based foundation, only two considered learning a cognitive accomplishment. These two studies examined learning from a social/affective and cognitive perspective, whereas many studies focused on how learning is acquired. Therefore, the review concluded that simulation is primarily being used as a teaching modality. Even when student thinking was considered, only components of self-efficacy, not conceptual learning, were measured (Kaakinen & Arwood, 2009).

Whereas instructional theory to support naturally effective collaborative learning that concern with problem solving as much as possible, and naturally effective group Process. The benefits of collaboration can include the opportunity to view a problem from multiple perspectives which may be vastly different from our own, the opportunity to develop better interpersonal skills, and the challenge to critically think through a problem and present our ideas in a cogent manner to others. In addition, the solution or product of our collaborative work can be superior to what any one person could have created alone. Often there is greater creativity in numbers. This is reflected in the notion that the whole is more than the sum of its parts. (Nelson. 1998: 2) More recently, such researchers and theorists as Johnson and Johnson (1975). These approaches fall under the widely used label cooperative learning. The primary aims of cooperative learning are to provide guidelines on how to organize learning groups and to provide structured learning activities, such as the jigsaw method, think-pair-share, and Student Teams Achievement Divisions (Slavin, 1995).

Therefore, the context of simulation activity and collaborative learning approach can encourage learners get successful in reading and writing abilities. In this research study need to encourage research participants to develop effective reading and writing in language learning for undergraduate students successfully.

Objectives of this Research

1. To compare the reading abilities of undergraduate students in English before and after learning based on simulation strategy and collaborative learning.
2. To compare the writing abilities of undergraduate students in English before and after learning based on simulation strategy and collaborative learning.

Research Methodology

1. Research design

This research study employed a one-group pretest-posttest design. The research samples were 22 undergraduate students, assigned by using cluster random sampling method. The research instruments consisted of 15 lesson plans for learning management based on simulation strategy and collaborative learning, a reading ability assessment form, and a writing ability assessment form. The data collection procedure included administering pre-tests and post-tests of reading and writing abilities before and after the instruction. Data were analyzed using descriptive statistics and a t-test for dependent samples.

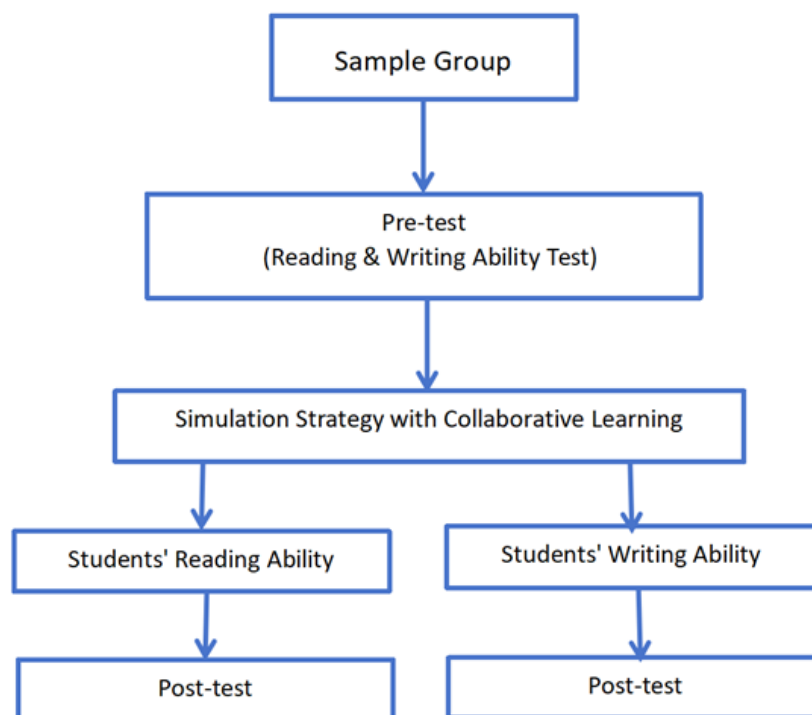


Figure 1 Flow of Research Design

2. Population and Research Samples

The research targeted undergraduate students at Sichuan Film and Television University during the 2023 academic year. A total of 56 students constituted the research population, from which 22 students were selected as the research sample through cluster random sampling to form the experimental group.

3. Research Instruments

To achieve the objectives of this study, three primary research instruments were used: instructional plans, a reading ability test, and a writing ability test. Each instrument was carefully designed and validated to ensure its effectiveness in supporting data collection and measuring the impact of the instructional intervention on students' language abilities.

3.1 The instructional plans: A total of 15 lesson plans were constructed to incorporate simulation strategies and collaborative learning activities. The researcher first reviewed relevant theories, principles, and prior studies to guide the instructional design. Each plan included essential components such as learning objectives, content outlines, instructional processes, teaching materials, and assessment methods. After the initial development, the plans were reviewed by experts to evaluate their content accuracy, appropriateness, and overall quality using a 5-point rating scale. Revisions were made based on expert feedback, and a try-out was conducted with a sample student group to identify areas for improvement. The finalized instructional plans were then used during the experimental phase to guide the learning process and collect data on the dependent variables.

3.2 The reading ability test: Its construction was based on a thorough review of relevant theories and frameworks related to reading and cognitive ability. Each test item was carefully aligned with specific cognitive skills and included clear scoring criteria. The test was evaluated by three experts to determine the validity of each item, with the Index of Objective Congruence (IOC) for all items ranging between 0.66 and 1.00. Following expert review, necessary revisions were made to enhance the test's clarity and effectiveness. A pilot test was conducted with a small group of students to ensure reliability before administering the test to the experimental group both before and after the instructional intervention.

3.3 The writing ability test: Also consisting of 30 multiple-choice items, the test was constructed based on theories of writing and cognitive skill assessment. Each item was designed to reflect specific aspects of writing ability and included criteria for scoring based on correct or incorrect responses. Like the reading test, the writing test underwent expert validation, achieving IOC values between 0.66 and 1.00. Revisions were made to address any weaknesses identified by the experts. A try-out was then conducted, and final adjustments were made to ensure the test's appropriateness and quality. This instrument was used to evaluate students' writing performance before and after the instructional treatment.

4. Data Collection

Researcher planned to implement each type of research instrument to collect related data from participants in appropriate situation and support with research participants based on correct approach, such as present the consent document with concern participants before collecting data in each process

5. Data Analysis

Researcher categorized research data to support using statistical analysis with appropriate types that based on each research purpose for both of descriptive statistics and inferential statistics. And also check to approve for correcting with statistical assumptions and its purposes, to analyze for Reading ability and Writing ability of students based on test result

data. 1) Presented Descriptive Statistics for pre-test and post-test of students with Mean and Standard Deviation values. 2) Presented the results of t-test for dependent samples to explain the result of testing inferential statistic to explain comparison results of difference between pre-test and post-test scores based on research purposes and research hypotheses. Researcher categorize research data to support using statistical analysis with appropriate statistical types that based on each research purpose for both of descriptive statistics and inferential statistics (t-test for Dependent sample). And also check to approve for correcting with statistical assumptions and its purposes.

6. Statistic Data Analysis

Statistical methods require systematic collection of data so that relevant groups are represented in the data (Appannaiah, Reddy and Ramanath, 2010). This study was implemented through assessment forms of dependent variables that composed of reading and writing abilities of research samples. Whereas, the research data then was analyzed by statistical methods described below.

Descriptive statistics analysis was used to examine the distribution, mean, and additionally, dependent samples t-test was used to examine whether there was a difference among before and after scores of dependents variables in this study.

Research Results

1. To compare the reading abilities of undergraduate students in English before and after learning based on simulation strategy and collaborative learning.

Descriptive statistics and Paired-Samples t-test results of reading ability for research samples.

For the same group of students, a paired-samples t-test was conducted to examine potential differences between average test scores of reading ability at two different points in time. The paired-samples t-test results, presented in Table 4.1, reveal a significant difference in scores between the pre-test and post-test: $t(21) = 29.78, p < 0.05$. This indicates a statistically significant improvement in students' reading ability on the first and the second test comparison.

Table 1 Paired-Samples T-Test Results for Reading ability

Variable of Reading Ability	M	SD	t	df	p
Students' Scores in Different Tests			29.78	21	0.000*
Test Scores (First Test)	15.36	2.06			
Test Scores (Second Test)	20.30	1.56			

* $p \leq .05$

The results obtained from the paired samples t-test indicate that students assigned learning management through Simulation strategy and Collaborative learning revealed higher of post-test scores than pre-test scores of reading ability in this instructional procedure, at the .05 level of significance. In addition, students had reading ability before and after learning of average scores 15.36 and 24.91 respectively

Reading Comprehension Score Visualization

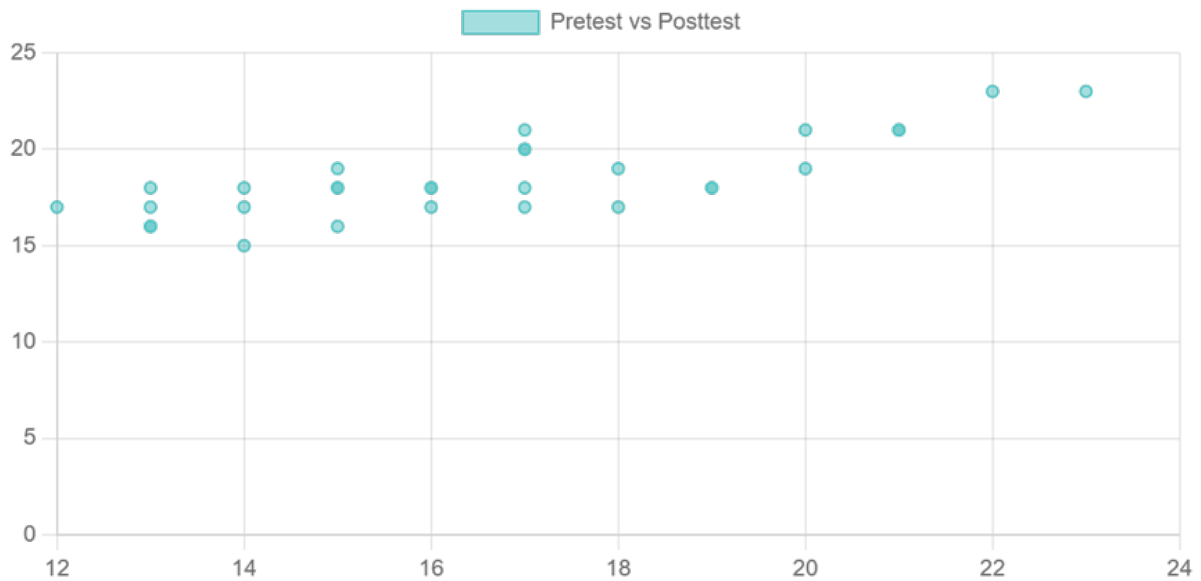


Figure 2 Scatter-plot of Pretest and Post-test Scores

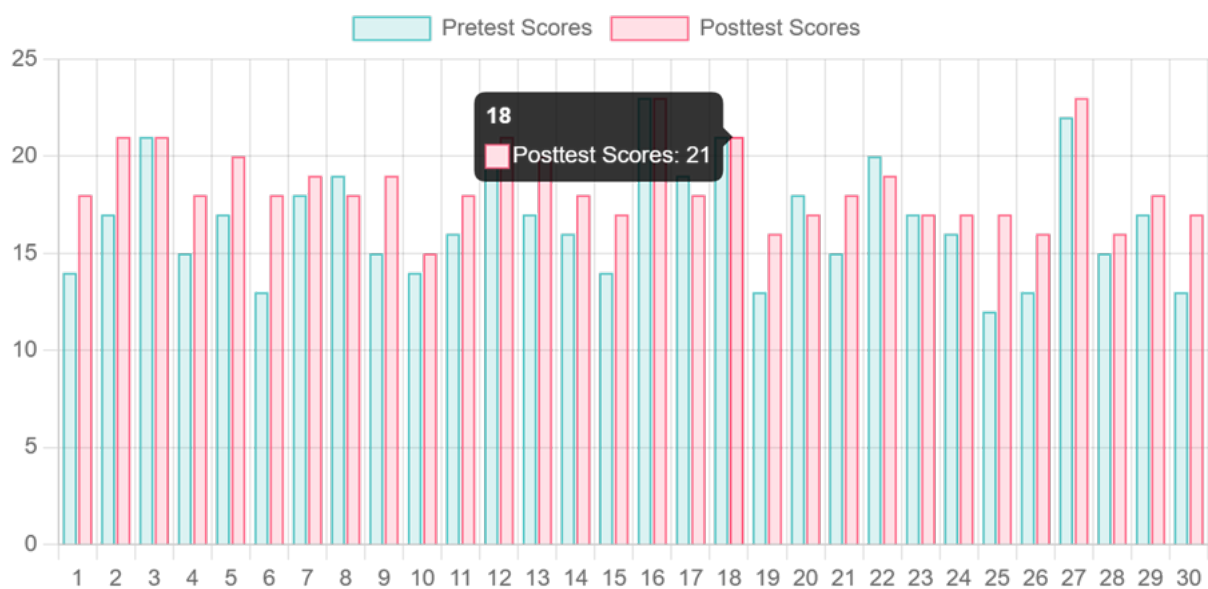


Figure 3 Bar Chart of Pretest and Post-test Scores

Based on the provided scatter plot (Before vs After Test Scores) and bar chart (Average and Standard Deviation of Before versus After Test Scores) for the students' reading comprehension skill, here are some observations:

Similar to the previous dataset, the scatter plot reveals a general upward trend. The majority of data points are positioned above the diagonal line, suggesting that, on average, students demonstrate higher scores in the post-test as compared to the pretest.

As can be seen from the bar chart, the post-test scores of the experimental group seem to be higher than the pretest scores in most cases, which may indicate that the experimental group has made some progress in reading comprehension ability.

2. To compare the writing abilities of undergraduate students in English before and after learning based on simulation strategy and collaborative learning.

Descriptive Statistics and Paired-Samples t-test Results of writing ability for research samples.

For the same group of students, a paired-samples t-test was conducted to examine potential differences between average test scores of writing ability at two different points in time. The paired-samples t-test results in Table 4.2, reveal a statistically significant difference in their scores across the two tests, $t(21) = 28.35, p < 0.05$. This indicates a statistically significant improvement of students' writing ability on the first and the second test comparison.

Table 2 Paired-Samples T-Test Results for Writing Ability

Variable of Reading Ability	M	SD	t	df	p
Students' Scores in Different Tests	-	-	28.35	21	0.000*
Test Scores (First Test)	16.36	1.62			
Test Scores (Second Test)	23.68	1.96			

* $p \leq .05$

The results obtained from the paired samples t-test indicate that students assigned learning management through Simulation strategy and Collaborative learning revealed higher of post-test scores than pre-test scores of writing ability in this instructional procedure, at the .05 level of significance.

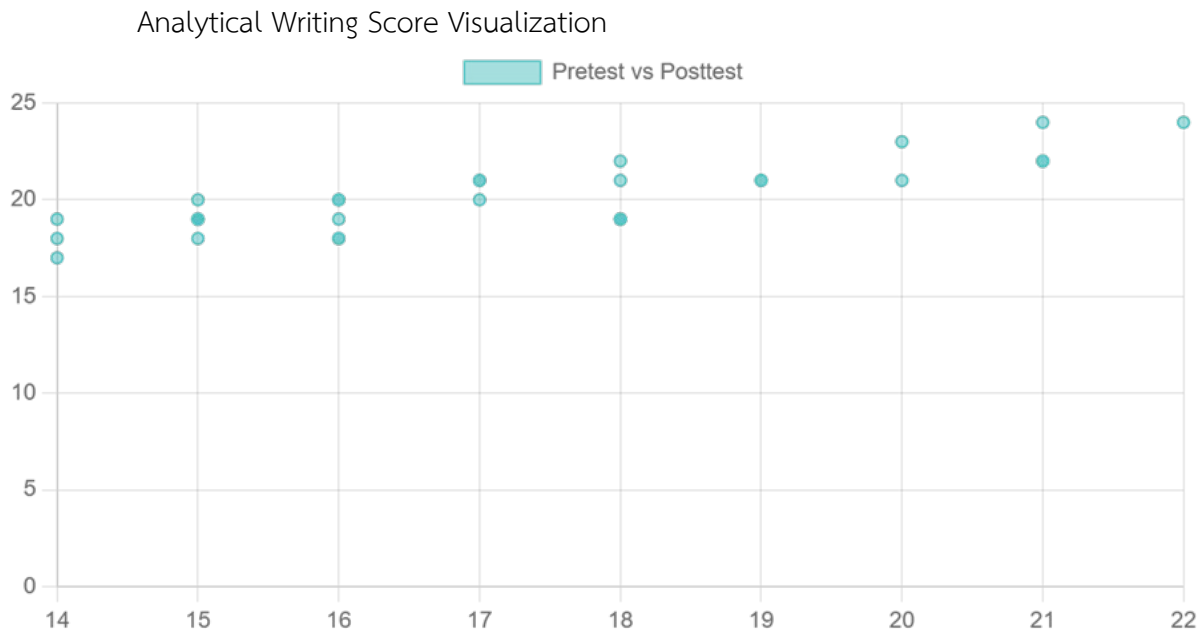


Figure 4 Scatter-plot of Pretest and Post-test Scores

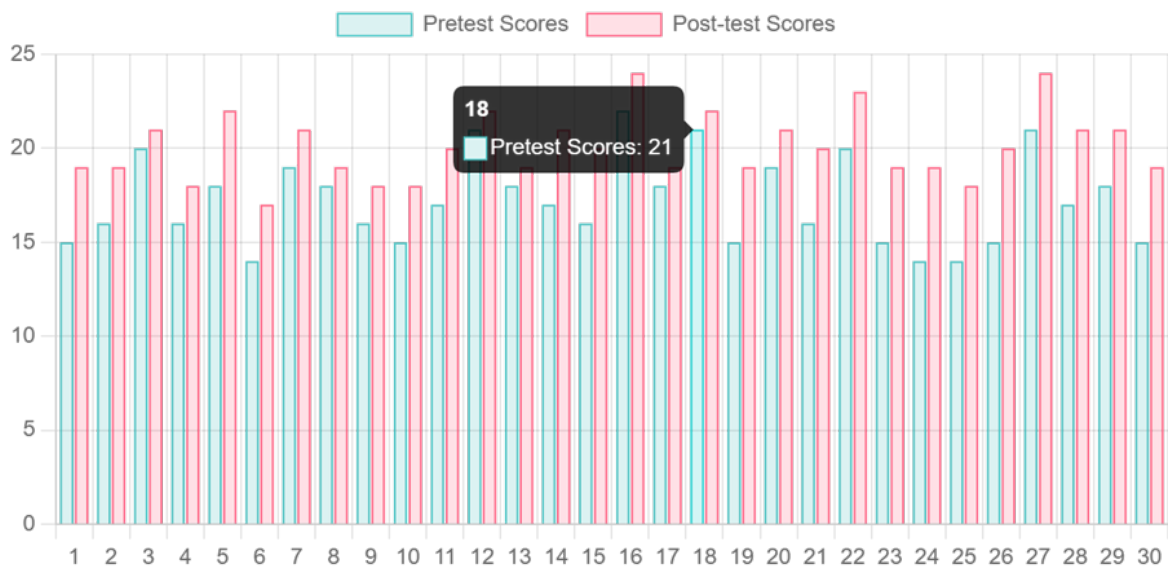


Figure 5 Bar Chart of Pretest and Post-test Scores

Based on the provided scatter plot (Before vs After Test Scores) and bar chart (Before vs After Test Scores) for the students' writing ability (See figures 5.3, 5.4), here are some observations:

Similar to the previous dataset, the scatter plot reveals a general upward trend. The majority of data points are positioned above the diagonal line, suggesting that, on average, students demonstrate higher scores in post-test as compared to the pretest.

As can be seen from the bar chart, the post-test scores of the experimental group seem to be higher than the pretest scores in most cases, which may indicate that the experimental group has made some progress in analytical writing skill.

Research Discussion

The paired-samples t-test results indicate a significant improvement in reading ability scores within the experimental group, that learning based on simulations and collaborative strategies. The average test score on the Reading Ability Test Paper increased from 15.36 (pre-test mean) to 24.91 (post-test mean), $t(21) = 29.78$, $p < .05$. This improvement was showed statistically significant at .05 level.

Similarly, the students' competencies in writing ability revealed empowerment based on simulations and collaborative strategies, noteworthy enhancement in writing ability of post-test higher than pre-test. The paired-samples t-test demonstrated a statistically significant increase in average scores from 16.36 (pre-test mean) to 23.68 (post-test mean), $t(21) = 28.35$, $p < .05$. This improvement was showed statistically significant at .05 level.

According to statistical data, the undergraduate students who learned based on simulations approach with collaborative learning activities, show higher of reading comprehension and writing abilities than before learning.

Research Body of Knowledge

The body of knowledge for this study was concentrated in simulation strategy and collaborative learning, which integrated concerned theoretical and pedagogical frameworks.

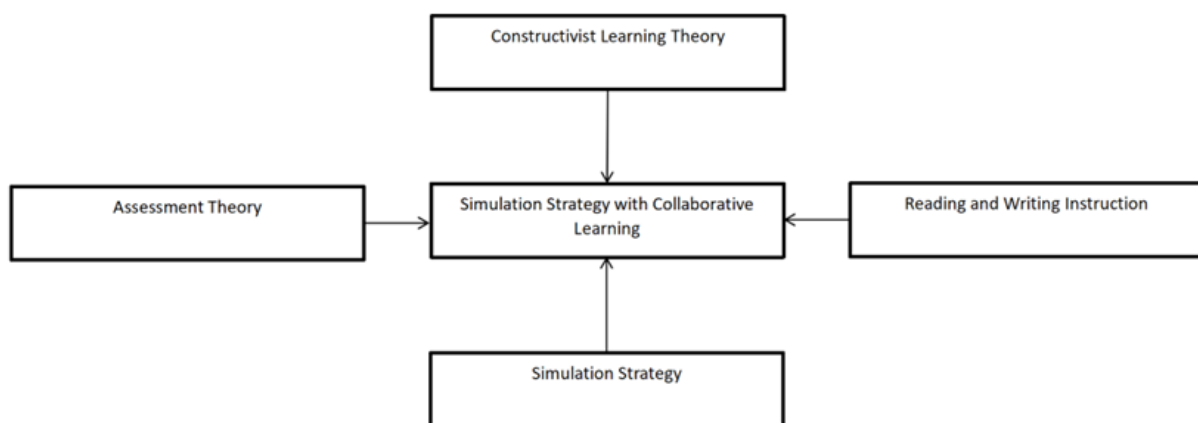


Figure 6 Knowledge framework

Research Suggestion

1. Suggestions in practice

1.1 Sample Selection Limitations

Our study primarily focuses on undergraduate students, thus the generalizability of our conclusions to students of different grades and age groups may be constrained. Future research could broaden the sample range, including students from various grades and disciplines, to validate the universality of our approach.

1.2 Duration of the Study

Due to time and resource constraints, our study was conducted over a relatively short period. A more extended research duration could offer more comprehensive data, better assessing the long-term impact of our methods on students' learning outcomes.

1.3 Differences in Educational Environments

Our research was conducted in a specific educational setting, potentially limiting the external validity of our results. Future research could be conducted in diverse cultural and educational systems to confirm the effectiveness of our methods in different contexts.

2. Suggestions for research

2.1 Long-term Outcome Tracking

Further research can track students' learning outcomes over a more extended period to gain a deeper understanding of the impact of vocabulary-based and collaborative learning methods on reading comprehension and writing abilities in the medium to long term.

2.2 In-depth Investigation of Individual Differences

Future research can delve more deeply into exploring the responses of different student groups to vocabulary-based and collaborative learning methods, considering factors such as learning styles, proficiency levels, and interests.

2.3 Comparison of Different Teaching Activities

Future research could conduct more nuanced comparisons, juxtaposing our approach with other teaching strategies to comprehensively understand the effectiveness of various teaching methods in enhancing reading comprehension and writing abilities.

2.4 Integration of Educational Technology

Consider integrating educational technology into vocabulary-based and collaborative learning methods to further enhance student engagement and disciplinary application.

By openly addressing limitations and proposing future research directions, we aim to provide a helpful framework for other researchers to continue refining and advancing the study of vocabulary-based and collaborative learning methods.

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