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Impact of Virtual Reality-Assisted Role-Play on Learning Styles and English Performance

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Abstract

Speaking and writing skills are essential for madrasah students, as both play a crucial role in forming practical communication skills. In the context of madrasah education, where students not only study general subjects but also religious studies, having good speaking and writing skills will help them convey their ideas and understanding more clearly and precisely. This helps build self-confidence and interpersonal skills that are important in everyday life. The application of role-play is carried out not only in exact subjects but also in English language learning. The role-play environment creates a meaningful context that allows students to learn English in situations that resemble the real world. Cutting-edge technology, such as interactive, spherical video-based virtual reality (ISVVR), can be used in English language learning. Apart from being a way to overcome time constraints, ISVVR media can enrich learning resources and space for practice. This research aims to test the effect of applying role-play assisted by ISVVR and Learning Styles as moderator variables to improve English speaking and writing performance. This research used a quasi-experiment with Pre-test and Post-test Control Group Design. The participants used were 92 class XII students at MAN 5 Jombang using 2x3 factorial Manova analysis. The findings in this study were that speaking and writing performance was different between groups of students who applied role-play assisted ISSVR and conventional video and learning styles, but there was no interaction between model and learning style on speaking and writing performance.

Keywords: Speaking Performance, Writing Performance, Learning Styles, Role-Play

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INTRODUCTION

The Speaking and writing problems among madrasah students are often closely related to their learning styles. Learning style is the most effective way for someone to process and understand the information given (Zairon et al., 2021). In madrasahs, students' learning styles vary greatly, from visual and auditory to kinesthetic. Therefore, educators need to recognize and adjust their teaching methods to suit the needs of each student.

For example, students with a visual learning style may find it easier to understand the material if it is presented in pictures, diagrams, or concept maps. However, they may have difficulty when asked to speak or write spontaneously. Conversely, students with an auditory learning style may master the material better through group discussions or lectures, but they may have difficulty expressing their ideas in writing.

To overcome this problem, madrasah educators must adopt a more holistic and diverse approach to teaching methods. They can combine various learning media such as video, audio, and physical activities to meet the needs of all learning styles. In addition, educators must also provide sufficient practice in speaking and writing, as well as constructive feedback so that students can continue to improve their skills. With the right approach, madrasah students' speaking and writing problems can be overcome to reach their full potential in various aspects of communication.

A study using the role-playing method in writing performance learning encourages learners to develop critical thinking skills and motivates learners to be independent (H.-L. Chen & Wu, 2023; Parody et al., 2022). In addition to the learner survey's findings, learners are very interested and satisfied with applying the role-playing learning method to improve their English writing and public speaking skills (Gonzalez-Torres et al., 2022). Gonzalez-Torres et al. (2022) stated that improving writing performance in general English-speaking text talent should also be an essential consideration because learners can still not speak fluently. The researchers concluded that using the role-playing method has been shown to improve a person's writing and public speaking performance in English.

However, a study (Sherine & Ayyadurai, 2021) stated that role-playing can be pretty effective when used to teach writing. However, from an overall process perspective, it is excellent and has many benefits, primarily when used to foster better understanding, mastery of learning materials, and growth of imagination. Teachers should be able to choose interesting subjects to write using this method. It is claimed that it is difficult for teachers to conduct appreciation games due to elementary school children's cognitive development and understanding. Role-playing is a cooperative learning method that emphasizes learner involvement in acting out case studies related to the discussed topic to improve learners' understanding and memory of the material.

The emergence of virtual reality (VR) technology offers a solution to the problem of social presence and a lack of language learning environment. Learners can interact with virtual characters or objects in an interactive scene that replicates the real world thanks to virtual reality. Virtual reality (VR) offers learners a realistic learning environment that has the potential to significantly improve English learning outcomes in terms of speaking and writing performance (Shadiev et al., 2024). In addition, VR technology can increase learners' motivation to learn (Mcfaul & Fitzgerald, 2019). Also (Soto et al., 2020) in their study found that immersive VR platforms like this are ideal for improving various English as a foreign language (EFL) performances from an immersive focus by considering different contexts and thoughts on the development of communicative performance and interaction with native speakers in higher education. Recommendations are given for teacher and learner participation and motivation for its implementation, considering several advantages of immersing learners in a virtual environment. However, most teachers struggle to understand how to create VR content (Merchant et al., 2014).

This problem has been overcome in recent years with the advancement of interactive spherical video-based virtual reality (ISVVR). In addition to being more realistic than 3D animation, ISSVR presents educational materials in 360º photos

or videos that can drastically reduce the cost and time of creating VR content (Shadiev et al., 2024). More importantly, ISVVR content creation does not require very sophisticated technological performance, so most school teachers may be able to create their teaching materials.

Concerning writing performance, (Dolgunsöz et al., 2018) used ISVVR to test the influence of ISVVR experience in developing EFL writing performance. The results showed that EFL learners were aware of ISVVR technology, ISVVR experience did not affect writing performance in the short term but was found to be promising in the long term, and most learners enjoyed ISVVR. However, they also expressed several technical limitations, such as low video quality and physical discomfort when used for a long time. Furthermore, (Huang et al., 2020) in their study recommend utilizing ISVVR technology to improve writing performance in descriptive texts. Based on this approach, an ISVVR writing learning system was developed, and a quasi-experiment was conducted to compare the effects of the proposed approach with conventional technology-supported learning approaches in high school writing classes. The ISVVR technology can improve students' writing performance in terms of content, appearance, creativity tendencies, and writing self-efficacy, while reducing their cognitive load (Yang et al., 2020).

The purpose of this study is to examine the impact of using role-play assisted by Virtual Reality (VR) technology on students' learning styles and performance in English language subjects. This study identifies whether innovative learning methods such as VR can improve students' language comprehension, speaking skills, and learning motivation compared to conventional methods. The urgency of this study lies in the need to find and implement more effective and engaging teaching techniques in today's digital era. With the advancement of technology, it is important to explore how these new tools can be used to improve the quality of education and prepare students with relevant skills for the future.

METHODS

Quantitative research approaches offer a structured way to investigate the impact of virtual reality-assisted role-play on learning styles and English performance. This method involves the collection and analysis of numerical data to identify patterns, relationships, and trends. Typically, researchers might employ surveys, standardized tests, or experiments to gather data from a large sample of participants. For instance, students' performance in English could be measured before and after their exposure to virtual reality-assisted role-play activities. Statistical tools and software are then used to analyze the data, providing objective insights into how these innovative teaching methods influence learning outcomes. By employing quantitative research, educators and researchers can draw evidence-based conclusions about the effectiveness of virtual reality in enhancing language skills and adapting to various learning styles.

This type of research is quasi-experimental quantitative to test and measure the impact of the application of role-play assisted by Interactive Spherical Video-Based Virtual Reality (independent variable) on learning styles visual, auditory, and kinesthetic (moderator variable) in improving students' English speaking and

writing performance (dependent variable) in the experimental group and control group (Sugiyono, 2017). What differs from the pre-test-post-test control group is that the two groups of subjects were not chosen randomly. Both groups of subjects were class XII students at MAN 5 Jombang.

This research involved two groups and four classes. The first two are control classes (46 students), while the second two are experimental (46 students). The conventional video-assisted role-play learning method will be applied in the control class, while the ISVVR-assisted role-play will be applied in the experimental class. In the experimental class, the devices used were a Google Cardboard Headset Stereo VR Box, a cellphone, and an ISVVR-assisted role-play video that the researcher had made, while in the control class, the devices used were a cellphone and a conventional role-play video taken from YouTube. These learning styles are divided into visual, auditory, and kinesthetic. The influence of the independent variable on the dependent variable and its interaction with the moderator variable is designed using a post-test control group design.

Table 1. The 2x3 Factorial

Independent Variables / **Dependent Variables**		**Learning Method**	
		ISVVR-assisted Role-Play (X_1)	**Conventional Role-Play (X_2)**
Learning Style	Visual (Y1)	X1YI	X2Y1
	Auditorial (Y2)	X1Y2	X2Y2
	Kinesthetic (Y3)	X1Y3	X2Y3

Validity test results were based on Pearson Correlation, and all instruments (learning style, speaking, and writing performance) showed valid criteria. Criteria for reliability test results based on Cronbach's Alpha value according to (Sugiyono, 2019): 1) Cronbach's alpha value is 0.00 to 0.20. means less reliable, 2) Cronbach's alpha value 0.21 to 0.40. means somewhat reliable, 3) Cronbach's alpha value 0.41 to 0.60. means quite reliable, 4) Cronbach's alpha value is 0.61 to 0.80. means reliable, 5) Cronbach's alpha value is 0.81 to 1.00, meaning very reliable.

Table 2. Validity and Reliability Tests

Instruments	**Validity**	**Reliability Statistics**	
		Cronbach's Alpha	**N of Items**
Learning Styles	24 item valid	0,928	24
Speaking Performance	5 item valid	0,752	5
Writing Performance	5 item valid	0,7746	5

Table 2 shows the validity results of the Learning Styles, Speaking Performance, and instruments writing performance meets valid criteria. The reliability test shows that the learning style instrument is very reliable, and speaking and writing performance is reliable.

In the analysis for the requirements test, a normality test and homogeneity test are carried out. This research uses MANOVA (Multivariate Analysis of Variance) analysis with 2x3 factorial using SPSS software (*Pillai's Trace*, *Wilks' Lambda*, *Hotelling's Trace*, and *Roy's Largest Root*: Check for significance values to determine if there is a main effect or interaction. *Post-Hoc Test*: If a significant effect is found, perform a post-hoc test to determine where the difference lies.

RESULTS & DISCUSSION

Overview of Research Subjects

This research was conducted at MAN 5 Jombang class XII. There are six classes in class XII. English language subjects are given to students from class X to class XII. This research was conducted in class XII (four), focusing on speaking and writing skills. This course provides final-level English learning, focusing on English in preparation for practical and national standard Madrasah exams.

Participants in this study were divided into two groups: the experimental group, which will receive the ISVVR role-play-assisted learning method, and the control group, which will receive the conventional video-assisted role-play learning method. The total number of participants was 92 students. In the experimental class, there were 46 students. Likewise, in the control class, there were 46 students. Table 3 presents participant details based on the learning methods provided.

Table 3. Descriptive Statistics

	Class	Learning_style	Mean	Std. Deviation	N
Speaking	Control	Visual	74.0000	3.75832	17
		Auditorial	72.1176	3.58613	17
		Kinesthetic	75.2500	2.83244	12
		Total	73.6304	3.62926	46
	Experiment	Visual	81.3636	2.93656	22
		Auditorial	80.0833	2.15146	12
		Kinesthetic	81.1667	3.01008	12
		Total	80.9783	2.76879	46
	Total	Visual	78.1538	4.93931	39
		Auditorial	75.4138	5.01083	29
		Kinesthetic	78.2083	4.15963	24
		Total	77.3043	4.89391	92
Writing	Control	Visual	74.8235	3.10715	17
		Auditorial	72.5882	3.08340	17
		Kinesthetic	73.0833	3.23218	12
		Total	73.5435	3.22288	46
	Experiment	Visual	84.0000	3.81725	22
		Auditorial	81.9167	4.56186	12
		Kinesthetic	83.5000	4.07877	12
		Total	83.3261	4.08822	46
	Total	Visual	80.0000	5.77654	39
		Auditorial	76.4483	5.95571	29
		Kinesthetic	78.2917	6.42332	24
		Total	78.4348	6.13100	92

Table 4. Data Normality Test

		Residual for Postest_speaking	Residual for Postest_writing
N		92	92
Normal Parameters[a,b]	Mean	.0000	.0000
	Std. Deviation	3.05928	3.53852
Most Extreme Differences	Absolute	.077	.108
	Positive	.074	.108
	Negative	-.077	-.100
Test Statistic		.077	.108
Asymp. Sig. (2-tailed)		.200c,d	.010c

Monte Carlo Sig. (2-tailed)	Sig.		.624e	.220e
	99% Confidence Interval	Lower Bound	.612	.209
		Upper Bound	.636	.231

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.
e. Based on 10000 sampled tables with starting seed 2000000.

The residual normality test resulting from the influence of the role-play method assisted by ISVVR and learning styles on speaking produced Kolmogorov-Smirnov statistics of 0.077 with a Monte Carlo probability of 0.620, the role-play method assisted by ISVVR and learning styles on writing produced Kolmogorov-Smirnov statistics of 0.108 with a Monte Carlo probability of 0.217. It can be seen that testing the normality of the role-play method assisted by ISVVR and learning styles for speaking and the role-play method assisted by ISVVR and learning styles for writing produces a probability > alpha (5%), so that the residual is declared normal.

Table 5. Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Postest_speaking	Based on Mean	2.395	5	86	.044
	Based on Median	1.111	5	86	.360
	Based on Median and with adjusted df	1.111	5	74.625	.362
	Based on trimmed mean	2.371	5	86	.046
Postest_writing	Based on Mean	1.540	5	86	.186
	Based on Median	.773	5	86	.572
	Based on Median and with adjusted df	.773	5	57.155	.573
	Based on trimmed mean	1.497	5	86	.199

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
a. Design: Kelas + Learning_style + Kelas * Learning_style

The residual homogeneity test resulting from the influence of the role-play method assisted by ISVVR and learning styles on speaking produced a Levene statistic of 2.395 with a probability of 0.044. The role-play method assisted by ISVVR and learning styles for writing produces a Levene statistic of 1.540 with a probability of 0.186. It can be seen that the resulting residual test produces a probability < alpha (5%) is declared to have a homogeneous variance.

Implementation of Learning

This research applies a combination of ISVVR-assisted role-playing learning to improve students' speaking and writing performance. The application of role-playing, assisted by ISVVR, is expected to meet the demands of Industrial Revolution 4.0 with the 4C formulation, namely communication, collaboration, creativity, and critical thinking, to meet the modern era's learning demands. To realize this, it is necessary to apply student-centered learning methods to the latest technology and support the 4 Cs of character development, especially for communicating in English. To make it easier to implement the above things, researchers used affective factors in the form of learning styles to find out students'

preferences before being given treatment in the form of ISVVR-assisted role-playing methods. Many previous studies have proved that learning style is a predictor of performance. Several studies in the EFL field have shown that learning style is a reliable predictor. This research uses learning style as a moderator variable because auditory, visual, and kinesthetic influence performance.

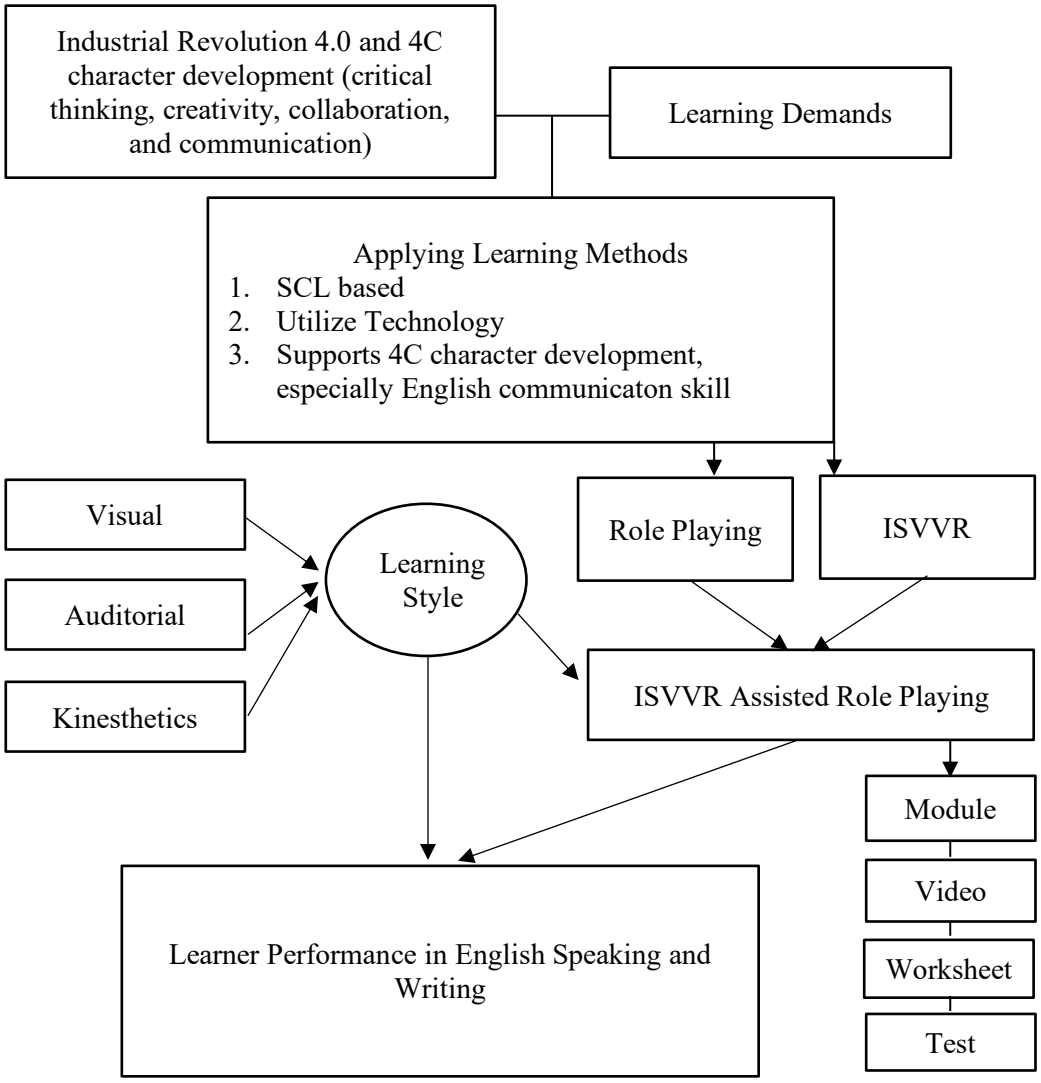

Figure 1. Research Conceptual Framework

ISVVR Assisted Role-Play Method

Before starting learning, a pre-test is carried out, and students are also asked to fill out a learning styles questionnaire. At this stage, a brief explanation regarding the role-play learning method that will be applied to English subjects is also given.

At the stage of agreeing on a learning theme using the role-play method, the researcher and the three English teachers they are agreed to determine four topics that should be taught in speaking performance learning. The four topics are visiting a doctor, traveling, a final project, and a birthday party. For writing performance, the topic created is an application letter. The four topics and one topic for speaking

performance were actualized in a 360º video played by class XII students. Researchers uploaded the videos to the YouTube platform to make it easier for students to access the learning videos. After creating learning media, the teacher divides the class into small groups. One group, on average, consists of two students for speaking performance, while students are not divided (individually) for writing performance. At this stage, for the speaking performance, the teacher asked each group representative to come forward to draw lots to determine which video topic would be watched, studied, and discussed with the help of the Stereo VR Google Cardboard Headset Box and cell phone in turn, likewise, for writing performance. This is given with the aim that students have an idea to ask for and give services and application letters more easily.

The next stage is for the teacher to explain what asking for and giving services is for speaking performances and application letters for writing performances separately on a pre-arranged schedule. Also, at this stage, the teacher explains expressions often used in dialogue, asking for and giving services, language terms, and the flow of writing application letters.

In the next stage, the teacher provides four topics: going to movies, birthday parties, problems with a motorbike, and being hospitalized in the form of cards and pictures. The teacher divides into groups of 2 students (students are free to choose their partners). The teacher asks one of the students to randomly take a role-play card and write their name in the performance list. Students are asked to study the cards and create dialogues on the worksheet for around 30 minutes. Next, the teacher asked all groups to practice their created dialogue. Teachers also provide opportunities for students to modify situations and dialogue as best as possible.

After completing the dialogue, students and their groups are given time to prepare a dialogue presentation in front of the class without bringing notes. The final stage is evaluation. In the experimental class, the teacher provides opportunities and time for students to provide suggestions and input regarding the learning that has been carried out. Teachers show appreciation by selecting the best dialogue and performance works (asking for and giving services and application letters), the best groups, and other criteria to award students.

Conventional Video-Assisted Role-Play Method

The pre-test stage and the learning styles questionnaire are also carried out in the control class before learning begins. Explanations regarding role-play learning, assessment systems, assignments, and material to be studied are also provided. Learning in the control class is carried out by following the stages according to the role-play learning steps. What differentiates it from the experimental class is that the material presented is based on the material the teaching team has prepared without involving ISVVR technology. The ISVVR tool is also not provided in this class.

Data Description Learning Styles

Participants in this research subject were grouped based on different levels of learning styles, namely visual, auditory, and kinesthetic. To determine the visual, auditory, and kinesthetic learning styles levels, interval values are looked for,

namely, In the learning styles questionnaire, a scale that refers to the University of Texas Learning Center, namely a scale of 1-5. With a total of 24 questionnaire items, the maximum score for the learning styles questionnaire is 120.

Covariance Matrix Similarity Testing

Testing the similarity of covariance matrices is intended to determine whether the dependent variables have the same covariance matrices. In Manova analysis, it is expected that the dependent variables do not have the same covariance matrix. Testing the equality of covariance matrices is carried out using Box's Test of Equality of Covariance Matrices, with the test criteria stating that if the probability ≤ level of significance, then it is stated that there is no similarity between the covariance matrices. The results of multicollinearity testing between dependent variables can be seen in Table 6:

Table 6. Covariance Matrix Similarity Test Results

Box's M	10.944
F	.683
df1	15
df2	24046.339
Sig.	.804

Based on the analysis of the influence of the role-play method assisted by ISVVR and learning styles on speaking and writing, it produces a Box's M value of 10.944 and a probability value of 0.804. It can be seen that testing the similarity of the covariance matrix of the influence of the intervention (role-play method assisted by ISVVR and learning styles) on speaking and writing produces a probability > alpha (5%) so that between the dependent variables, there is similarity between the covariance matrices. Thus, the multivariate testing in Manova was carried out using *Pillai's Trace*, *Wilks' Lambda*, *Hotelling's Trace*, and *Roy's Largest Root*.

Table 7. Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.999	46284.682b	2.000	85.000	.000
	Wilks' Lambda	.001	46284.682b	2.000	85.000	.000
	Hotelling's Trace	1089.051	46284.682b	2.000	85.000	.000
	Roy's Largest Root	1089.051	46284.682b	2.000	85.000	.000
Kelas	Pillai's Trace	.755	131.015b	2.000	85.000	.000
	Wilks' Lambda	.245	131.015b	2.000	85.000	.000
	Hotelling's Trace	3.083	131.015b	2.000	85.000	.000
	Roy's Largest Root	3.083	131.015b	2.000	85.000	.000
Learning_style	Pillai's Trace	.131	3.009	4.000	172.000	.020
	Wilks' Lambda	.871	3.029b	4.000	170.000	.019
	Hotelling's Trace	.145	3.047	4.000	168.000	.019
	Roy's Largest Root	.125	5.383c	2.000	86.000	.006
Kelas * Learning_style	Pillai's Trace	.022	.469	4.000	172.000	.758
	Wilks' Lambda	.978	.466b	4.000	170.000	.761
	Hotelling's Trace	.022	.462	4.000	168.000	.763
	Roy's Largest Root	.021	.912c	2.000	86.000	.406

a. Design: Intercept + Kelas + Learning_style + Kelas * Learning_style

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 8. Tests of Between-Subjects Effects (Univariate Test)

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Postest_speaking	1327.789[a]	5	265.558	26.815	.000
	Postest_writing	2281.187b	5	456.237	34.435	.000
Intercept	Postest_speaking	521127.561	1	521127.561	52621.289	.000
	Postest_writing	534534.517	1	534534.517	40345.005	.000
Kelas	Postest_speaking	1092.690	1	1092.690	110.335	.000
	Postest_writing	2024.822	1	2024.822	152.827	.000
Learning_style	Postest_speaking	65.799	2	32.900	3.322	.041
	Postest_writing	76.433	2	38.216	2.884	.061
Kelas * Learning_style	Postest_speaking	14.238	2	7.119	.719	.490
	Postest_writing	6.190	2	3.095	.234	.792
Error	Postest_speaking	851.689	86	9.903		
	Postest_writing	1139.422	86	13.249		
Total	Postest_speaking	551968.000	92			
	Postest_writing	569406.000	92			
Corrected Total	Postest_speaking	2179.478	91			
	Postest_writing	3420.609	91			

a. R Squared = .609 (Adjusted R Squared = .587)
b. R Squared = .667 (Adjusted R Squared = .648)

DISCUSSION

1. Impact of Virtual Reality-Assisted Role-Play on English Performance (Speaking and Writing)

The Manova test indicated that role-play-assisted ISVVR significantly outperformed conventional video in enhancing speaking performance. This method fosters peer learning and shared responsibility in the learning process. Role-play is highly adaptable, allowing teachers to address various needs and providing a meaningful context for language learners. It enhances real-life communication skills, boosting self-confidence and problem-solving abilities as students engage actively. Benefits include helping learners navigate real-life situations, use common expressions, and collaborate effectively. Role-play also aids shy learners by providing a comfortable platform for conversation and makes learning enjoyable.

The research results showed a difference in the average writing performance scores in the experimental and control classes. In the experimental class, the average value obtained was 83.33, while in the control class, the average value was 73.54. Thus, the average value in the control class is higher. Analysis using SPSS with the Manova technique produces a significance value of 0.000. This value is smaller than alpha, namely 0.05. It can be concluded that there is a significant difference between the groups that received the learning method treatment with role-play-assisted ISVVR and role-play-assisted conventional video.

Further observation of the paragraphs the students wrote showed that both the experimental and control groups had writing performance at a medium level. Both groups were able to produce paragraphs of job application letter text. The errors made by the two groups were relatively similar in terms of grammar, spelling, and organization. Thus, the role-play method, either with or without the help of ISVVR, has quite a good impact on students' writing skills.

Writing skills are productive skills, the same as speaking skills. Writing involves interpretation and negotiation of meaning. Apart from that, writing also includes making decisions because the writer has to make the reader understand several aspects, such as who the reader is, the topic, the author's knowledge, and objectives, which must be considered. Despite the many aspects involved, writing is used as a medium of communication, even though this skill is considered linguistically and cognitively tricky. Both by L1 and L2 learners (Nilubol, 2020). This is demonstrated by observations made by (Renandya et al., 2020) regarding IELTS scores at the advanced level. Writing scores at this level are in the range of 6.0 to 6.5. Meanwhile, the scores for reading and listening are much higher.

2. Impact of Virtual Reality-Assisted Role-Play on Learning Style

The research results show differences in speaking performance between students with visual, auditory, and kinesthetic learning styles. Speaking skills are one measure of success in learning a foreign language, so most students want to master this skill. This is associated with students' great desire to use English for communication, strengthening this opinion. Shopping wants to use foreign language speaking skills for communication purposes (Imelda et al., 2019) also strengthens this opinion. Learners want to use language speaking skills to communicate effectively and successfully learn a foreign language.

Regarding speaking performance, affective factors are essential in encouraging student success. Students who are afraid of making mistakes lack self-confidence and motivation, causing low participation in activities held in speaking classes. The three things mentioned cause students to feel embarrassed and nervous. Cai et al. (2021) research results prove that affective factors greatly influence speaking skills. M.-R. A. Chen & Hwang (2022) also strengthen the statement regarding affective factors on speaking performance, especially learning styles. The results of the research showed that overall learning styles in the third semester of the IAIN STS Jambi English Language Education Program were visual for 14 students (43.75%), auditory for 10 students (31.25%), kinesthetic for eight students (25%). It is known that there is a very high correlation between learning styles and speaking performance, so it can be concluded that learning styles contribute 7.1% to speaking performance.

The position of affective factors in speaking skills is significant. Kiruthiga & Christopher (2022) motivation, self-confidence, and anxiety are three affective variables related to language acquisition. Illyin, I., Hanifah, G. N., & Yunianti (2021) Strengthen Krashen's theory with their findings regarding affective factors in speaking skills. The results of his research show that self-confidence and motivation are the two affective factors that have the most influence on speaking skills. From quantitative calculations, a significance value of 0.007 was obtained for the self-confidence factor. This is in accordance with research (Kalayar & Kalayar, 2017), which states that the benefits of finding learning styles, from a personal perspective, include increasing students' self-confidence, improving students' self-image, teaching students how to use their brains as well as possible, gives learners an insight into the learner's strengths, weaknesses and habits, enables learners to enjoy any learning process, inspires more significant curiosity and motivation for lifelong learning, shows learners how to utilize natural skills and

tendencies. Self-confidence is closely related to learning styles.

The absence of significant differences in speaking performance between groups with visual, auditory, and kinesthetic learning styles could be caused by many factors. One factor that can be identified is that writing is a skill that is quite complex, both linguistically and cognitively (Renandya et al., 2020). Apart from that, writing is a demanding skill, meaning many things are needed to express ideas and communicate through writing. In the theory presented by (Brown, 2004), there are six micro-skills and six macro skills in writing. These micro-skills are applied to imitative and intensive types of writing, while macro skills are considered important in mastering responsive and extensive writing.

3. Interaction of Virtual Reality-Assisted Role-Play on Learning Style

Acquiring speaking skills as a productive skill cannot be separated from the influence of internal and external factors (Abdulaal et al., 2022). Internal factors include motivation, interests, and attitudes, while external factors come from many sources, such as teachers, school conditions, family support, learning activities, learning methods, and learner methods. In this study, speaking skills significantly improved after implementing the project learning method enriched with VR technology devices. The success of implementing this method cannot be separated from the teacher's role as a learning facilitator. Teacher involvement and its role in the successful implementation of a learning method have been proven by several studies (Burns, 2019; Rao, 2019).

The teacher's role in teaching speaking is to provide opportunities for students to communicate so that students have time to practice. This is confirmed by (Selcuk Koran, 2015) regarding the importance of interaction to obtain information and construct verbal and nonverbal knowledge in various contexts, which are speaking elements. By providing opportunities for students to communicate, teachers also encourage students to participate in constructing meaning. So, the goal of improving speaking skills is more likely to be achieved. In implementing role-play, the teacher plays more of a role as a facilitator who designs learning activities and considers how students are involved. In this way, students' opportunities and participation in the speaking learning process are increasingly open (Tarigan, 2017).

The absence of interaction between learning methods and learning styles on writing performance occurs because learning styles influence writing and depend on many factors. As previously discussed, reading habits and frequency of practice influence writers (Erlina, 2019; Siti Aisah, 2019). Apart from that, language competence accompanied by competence in language sub-skills such as listening, reading, and grammar also impacts writing. Frequency of practice plays an essential role in writing (Muamaroh et al., 2020) because this skill requires familiarization with various aspects such as content, organization, cohesion, coherence, and mechanics.

Writing is a cognitive process that involves linguistic abilities. The proper method and a conducive environment to stimulate the emergence of these two things are very important in teaching writing. The approach taken in writing classes is often inappropriate in supporting improving writing skills. This happens because teachers must comply with the curriculum so that the things needed to improve

writing skills are not touched (Ngubane et al., 2021). Teacher performance is identified through factors such as teaching preparation knowledge of the subject. Methods, assessment systems, content, learning subjects, class atmosphere, and material taught impact the overall quality of teaching and targeted outcomes (Bhayo & Yuyou, 2018).

CONCLUSION

There are differences in speaking and writing performance between learning that applies role-play and role-play-assisted ISVVR. This is because the characteristics of role-play provide the opportunity to learn to use English in an authentic forum. So, it can be said that these characteristics are suitable for developing speaking performance. There are differences in speaking and writing performance between learning with learning styles: visual, auditory, and kinesthetic. The high contribution of learning styles to speaking performance. This contribution is much higher than anxiety and personality. In addition, learning style was one of the affective variables that play a role in foreign language acquisition. There is no interaction between the ISVVR role-play-assisted learning method and learning styles regarding speaking and writing performance. The absence of interaction could be caused by the teacher's success in implementing role-play. This is because these skills have many dimensions that must also be sharpened, such as finding ideas, composing sentences, identifying punctuation marks and elements of cohesion, grammar, and vocabulary.

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