Belajea Jurnal Pendidikan Islam
Institut Agama Islam Negeri (IAIN) Curup, Indonesia
ISSN: 2548-3390 (p); 2548-3404 (e)
Volume 10, Number 1, 2025 | page: 25-46

The Effect of Contextual Teaching and Learning (CTL) with QuizWhizzer on Learning Outcomes in Islamic Religious Education

Ladia Dwi Utami
Universitas Muhammadiyah Prof. DR. HAMKA, Indonesia
ladiadwiu27@uhamka.ac.id

Shobah Shofariyani Iryanti
Universitas Muhammadiyah Prof. DR. HAMKA, Indonesia
shobah_si@uhamka.ac.id

Abstract: This study examines the effectiveness of the Contextual Teaching and Learning (CTL) model integrated with the Quizwhizzer application compared to conventional methods. The research employs a quasi-experimental design with a pretest-posttest control group design at SMA Islam Harapan Ibu, South Jakarta. The study sample consists of 38 students, divided into an experimental group (19 students) using the CTL model with Quizwhizzer assistance and a control group (19 students) using conventional methods. Data collection was conducted through learning achievement tests. Data analysis utilized the Paired Sample T-Test to measure differences in learning outcomes within each group before and after treatment, and the Independent Sample T-Test compared learning outcomes between the experimental and control groups after treatment. The results indicate that the CTL model integrated with Quizwhizzer significantly improves student learning outcomes. The average pretest score for the experimental group increased from 65.42 to 85.79, while the control group improved from 64.37 to 74.21. The Paired Sample T-Test showed a significance value of 0.000 < 0.05, indicating a significant improvement within each group. The Independent Sample T-Test also showed a significance value of 0.012 < 0.05, meaning there was a substantial difference between the experimental and control groups after treatment. These findings emphasize integrating the CTL learning model and technology in Islamic Religious Education (PAI) to create an interactive and relevant learning experience.

Keywords: Contextual Teaching and Learning, Islamic Religious Education, Quizwhizzer

Abstrak: *Penelitian ini mengkaji efektivitas model Contextual Teaching and Learning (CTL) berbasis aplikasi Quizwhizzer dibandingkan metode konvensional. Penelitian menggunakan desain quasi-eksperimen dengan pretest-posttest control group design di SMA Islam Harapan Ibu, Jakarta Selatan. Sampel penelitian terdiri dari 38 siswa, yang diambil dari 2 kelas, yaitu kelas XI IPS (kelompok eksperimen) dengan 19 siswa yang mendapatkan model pembelajaran CTL dan kelas XI IPA (kelompok kontrol) dengan 19 siswa yang mendapatkan model pembelajaran konvensional. Pengumpulan data dilakukan melalui tes hasil belajar. Analisis data menggunakan Paired Sample T-Test untuk mengukur perbedaan hasil belajar dalam masing-masing kelompok sebelum dan sesudah perlakuan, serta Independent Sample T-Test untuk membandingkan perbedaan hasil belajar antara kelompok eksperimen dan kontrol setelah perlakuan. Hasil analisis menunjukkan bahwa model CTL berbasis Quizwhizzer secara signifikan meningkatkan hasil belajar siswa, dengan nilai rata-rata pretest kelompok eksperimen sebesar 65,42 yang meningkat menjadi 85,79 pada posttest. Sementara itu, kelompok kontrol mengalami peningkatan dari 64,37 menjadi 74,21. Uji Paired Sample T-Test menunjukkan Signifikasi 0,000 < 0,05, yang mengindikasikan peningkatan signifikan dalam masing-masing kelompok. Uji Independent Sample T-Test juga menunjukkan nilai signifikansi < 0,05, yaitu 0,012, yang berarti terdapat perbedaan signifikan antara kelompok eksperimen dan kontrol setelah perlakuan. Temuan ini menegaskan pentingnya integrasi model pembelajaran CTL dan teknologi dalam pembelajaran PAI guna menciptakan pengalaman belajar yang interaktif dan relevan.*

Kata Kunci: *Contextual Teaching and Learning; Pendidikan Agama Islam; Aplikasi Quizwhizzer*

INTRODUCTION

Islamic education is learning provided by individuals and educational institutions to help people gain a deeper understanding of Islam, both in theory and daily practice.[1] Islamic Education learning has a vital role in education, improving students' spiritual experience, but also shaping students' character and morals.[2] This is in line with the purpose of PAI, which is to educate individuals who obey the commands of Allah SWT, have faith and piety, have praiseworthy morals, carry out good deeds, and are independent.[3]

However, although the purpose of PAI is very noble, its learning is often faced with various challenges that cause problems. One of the main problems is low student interest and unsatisfactory learning outcomes.[4] Based on data obtained from Harapan Ibu Islamic High School, the average student score only reaches 72, which is lower than the Minimum Completion Criteria of 75. Based on observations, this problem arises because during the learning process, students only act as objects in absorbing information, so they only use the Teacher Centered Learning (TCL) approach, which results in students being unable to channel their opinions during learning. The problem also causes boredom and students' disinterest in PAI subjects. As a result, students have no interest and low learning outcomes. This phenomenon aligns with a study conducted by Sayekti et al. (2021) showing that low learning outcomes in PAI subjects are often caused by a lack of student involvement in the learning process and the use of less interactive methods.[5] In addition, research from Wahyudi and Jutan (2024) also revealed that learning models that only focus on lectures

---

[1] Lismawati et al., "Deconstruction of AKM Literacy in PAI Lessons on the Learning Performance of MBKM Students," *Halaqa: Islamic Education Journal* 7, no. 1 (2023): 1–9, https://doi.org/10.21070/halaqa.v7i1.1634.

[2] Istiqomah and Naswa Alifia Azzahra, "Strategi Pembelajaran Aktif Untuk Meningkatkan Keterlibatan Siswa Dalam Pembelajaran Di Kelas" 01, no. 01 (2024): 19–26, https://doi.org/10.11791/bestari.v99i1.paperID.

[3] Maulidia Putri Aprillia and Shobah Shofariyani Iryanti, "Revitalisasi Pendidikan Islam Di Era Digital: Membangun Keseimbangan Antara Tradisi Dan Inovasi," *AL-MUADDIB: Jurnal Kajian Ilmu Kependidikan* 6, no. 1 (2024): 25–39, https://doi.org/10.46773/muaddib.v6i1.1111.

[4] Nur Qomariah Panjaitan, Elindra Yetti, and Yuliani Nurani, "Pengaruh Media Pembelajaran Digital Animasi Dan Kepercayaan Diri Terhadap Hasil Belajar Pendidikan Agama Islam Anak," *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* 4, no. 2 (2020): 588, https://doi.org/10.31004/obsesi.v4i2.404.

[5] Siskha Putri Sayekti, Zaeni Dahlan, and Muhammad Fikri Al-Faruqi, "Penerapan Model Pembelajaran Talking Stick Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran PAI Siswa Kelas V SDN 02 Mampang Kota Depok," *Jurnal Dirosah Islamiyah* 2, no. 1 (2021): 1–18, https://doi.org/10.17467/jdi.v2i2.365.

without technology integration can cause students to be less motivated in learning.[6]

Given the challenges in Islamic Religious Education, it is crucial to consider essential aspects of learning, including the design of engaging and interactive learning activities. As learning strategy designers, teachers play a pivotal role in creating a learning environment that is more interactive, student-centered, and relevant to the students' world.[7] Learning strategies should include activities that encourage active participation, learning independence, and the utilization of technology as a tool to support interactive and contextual learning.[8]

One of the alternatives to design more interactive learning is to choose and determine the appropriate learning model and media. According to a study by Adrillian et al. (2024), using the right learning model encourages active participation and student learning independence.[9] Therefore, one of the solutions to the problem of low learning outcomes of Islamic religious education requires using appropriate learning models, such as the CTL learning model, in collaboration with technology-based learning media.

CTL is a learning model that connects learning materials with students' real lives.[10] In its application, students are expected to be able to link the insights gained with their experiences, so that the material is easier to understand and learning outcomes improve. Understanding can be achieved more easily if the learning approach is appropriate and interesting, so learning outcomes increase. This is proven through Irwan and Hasnawi's research (2021), which shows that

---

[6] Nanang Gesang Wahyudi and Jatun, "Integrasi Teknologi Dalam Pendidikan: Tantangan Dan Peluang Pembelajaran Digital Di Sekolah Dasar," *Indonesian Research Journal on Education* 4 (2024): 444–51, https://irje.org/index.php/irje.

[7] Muhammad Fatkhul Hajri, "Pendidikan Islam Di Era Digital: Tantangan Dan Peluang Pada Abad 21," *Al-Mikraj: Jurnal Studi Islam Dan Humaniora* 4, no. 1 (2023): h. 36, https://ejournal.insuriponorogo.ac.id/index.php/almikrajDOI:https://doi.org/10.37680/almikraj.v4i1.3006.

[8] Pitchada Prasittichok et al., "Technological Solutions to Fostering Students' Moral Courage: An Augmented Reality-Based Contextual Gaming Approach," *Cogent Education* 11, no. 1 (2024), https://doi.org/10.1080/2331186X.2024.2378276.

[9] Hendrisa Adrillian and Detalia Noriza, "Pengaruh Model Pembelajaran Problem Based Learning Dengan Pendekatan Kontruktivisme Terhadap Kemampuan Berpikir Kritis Matematis Peserta Didik," *PRISMA, Prosiding Seminar Nasional Matematika* 7 (2024): 57–65, https://proceeding.unnes.ac.id/prisma.

[10] Moh Rifa'i et al., "Implementasi Contextual Teaching And Learning (CTL) Dalam Meningkatkan Prestasi Belajar Siswa Pada Materi Bahasa Arab (Studi Kasus Di MTs Nurul Jadid Paiton Probolinggo)," *Jurnal Pendidikan Agama Islam Dan Madrasah Ibtidaiyah* 01, no. 02 (2022): 68–82.

the CTL model can affect student learning outcomes.[11] However, to support the success of the learning model, integrating learning technology media is very important. In this digital era, the use of technology in education has opened up various opportunities for teachers and students to improve the quality of learning.[12]

Technology-based learning approaches, such as integrating interactive applications like Quizwhizzer, offer innovative solutions to improve student learning outcomes in Islamic Religious Education. This application is designed to provide a more dynamic and competitive learning experience, allowing students to receive the material passively and actively participate in the learning process.[13] Some previous studies have discussed the benefits of technology in learning. Such as a study conducted by Nurfadillah et al. (2021) that showed using technology-based media can increase student interest and learning outcomes.[14]

This study refers to research conducted by Zahra Aulia Rahmah (2022) on the *Effect of CTL Learning Model on Mathematics Learning Outcomes of Elementary School Students*. The study used a quantitative approach with a *quasi-experimental* method and a *pretest-posttest* design in one group. The analysis results show that applying the CTL model can improve students' math learning outcomes by creating a dynamic and efficient group atmosphere.[15] However, this study is weak because it does not involve a control group for comparison.

This research is similar to previous research because it raises the topic of the CTL model. Although previous studies have proven the effectiveness of CTL models, there are still limitations in the comprehensive integration of technology in learning. Therefore, this research aims to fill the gap by developing a CTL model combined with the Quizwhizzer application to create a more interactive and engaging learning atmosphere.

---

[11] Irwan and Hasnawi, "Analisis Model Pembelajaran Contextual Teaching and Learning Dalam Meningkatkan Hasil Belajar PPKn Di Sekolah Dasar," *Edukatif : Jurnal Ilmu Pendidikan* 3, no. 1 (2021): 235–45, https://doi.org/10.31004/edukatif.v3i1.343.

[12] Wahyudi and Jatun, "Integrasi Teknologi Dalam Pendidikan: Tantangan Dan Peluang Pembelajaran Digital Di Sekolah Dasar."

[13] Siska Yolanda and Septi Fitri Meilana, "Pengaruh Aplikasi Quizizz Terhadap Minat Belajar IPA Siswa Kelas V Di Sekolah Dasar," *Jurnal Educatio* 7, no. 3 (2021): 915–21, https://doi.org/10.31949/educatio.v7i3.1286.

[14] Septy Nurfadillah et al., "Pengembangan Media Pembelajaran Berbasis Teknologi Untuk Meningkatkan Hasil Belajar Siswa Sd Negeri Pinang 1," *BINTANG : Jurnal Pendidikan Dan Sains* 3, no. 1 (2021): 153–63, https://ejournal.stitpn.ac.id/index.php/bintang.

[15] Zahra Aulia Rahmah and Imas Ratna Ermawati, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar," *Jurnal Basicedu* 6, no. 1 (2022): 364–71, https://doi.org/10.31004/basicedu.v6i1.1916.

The main issue raised in this study is whether the use of CTL learning models affects student learning outcomes. Thus, this study aims to determine the effect of the CTL learning model in improving student learning outcomes in Islamic Religious Education (PAI) subjects through technology integration using the Quizwhizzer application.

LITERATUR REVIEW

The Contextual Teaching and Learning (CTL) learning model is an approach that connects subject matter with students' real lives. Mashudi and Fatimah Azzahro (2020) state that CTL consists of seven main components, constructivism and reflection, which encourage meaningful and active learning.[16] Shawn M. Glynn added that CTL effectively increases students' motivation and critical thinking skills through direct experience and exploration.[17]

Mohammad Awad AlAfnan (2020) emphasized the importance of contextual learning in the digital era to develop higher-order thinking skills and adaptation to technological change.[18] In learning Islamic Religious Education (PAI), Rosidin et al. (2024) explained that CTL helps students internalize religious values through activities relevant to their lives, thus supporting the formation of an overall religious character.[19]

To increase the effectiveness of CTL, learning technology is essential. The QuizWhizzer app is one of the interactive media that uses gamification, with game elements such as challenges, scores, and quick feedback to increase learning motivation. Prensky (2001) says the digital generation is more responsive to technology-based media.[20] Research by Dhenisha and Sarah (2020) also shows that gamification can increase student motivation and engagement in

---

[16] Mashudi and Fatimah Azzahro, *Contextual Teaching & Learning*, ed. Mukni'ah (LP3DI Press Dilarang, 2020).

[17] Shawn M. Glynn and Linda K. Winter, "Contextual Teaching and Learning of Science in Elementary Schools," *Journal of Elementary Science Education* 16, no. 2 (2004): 51–63, https://doi.org/10.1007/bf03173645.

[18] Mohammad Awad Alafnan, "Taxonomy of Educational Objectives: Teaching, Learning, and Assessing in the Information and Artificial Intelligence Era," *Journal of Curriculum and Teaching* 13, no. 4 (2024): 173–91, https://doi.org/10.5430/jct.v13n4p173.

[19] Rosidin et al., *Strategi Pembelajaran Pendidikan Agama Islam*, *Sustainability (Switzerland)*, vol. 11, 2024, http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI.

[20] Marc Prensky, *The Digital Game-Based Learning Revolution*, ed. New York : McGraw-Hill, *Learning*, vol. 1, 2001, https://doi.org/10.1016/j.iheduc.2004.12.001.

online learning.[21] However, Rodrigo Smiderle et al. (2015) warned that if gamification is poorly designed, students could focus more on competition and rewards than on understanding the material.[22] Therefore, there needs to be a balance between entertainment and deep learning, especially in religious education.

Based on the theoretical studies that have been explained, the research hypothesis can be formulated as follows: H_1 (alternative hypothesis) states that there is a significant influence between the *Contextual Teaching and Learning* (CTL) learning model assisted by the QuizWhizzer application on student learning outcomes in Islamic Religious Education (PAI) subjects. Conversely, H_0 (null hypothesis) states that there is no significant influence between the CTL learning model assisted by the QuizWhizzer application on student learning outcomes in the subject.

RESEARCH METHOD

This study used a quantitative method with a quasi-experimental design due to limited control in a real classroom environment. The research was conducted at Harapan Islamic High School, South Jakarta. Samples were taken from 2 classes, namely class XI IPS (experimental group) with 19 students who received the CTL learning model and class XI IPA (control group) with 19 students who received the conventional learning model, so the total research sample was 38.

The data collection process is conducted through tests, which include multiple-choice questions and descriptions. The test assesses students' competencies. The test was performed twice in each group. The pre-learning test (pretest) helps assess students' basic abilities, while the post-learning test (posttest) measures student learning outcomes after using a particular model.[23]

---

[21] Dhenisha Agustine Fadilla and Sarah Nurfadhilah, "Penerapan Gamification Untuk Meningkatkan Motivasi Belajar Siswa Dalam Pembelajaran Jarak Jauh," *Inovasi Kurikulum* 19, no. 1 (2022): 34–43, https://doi.org/10.17509/jik.v19i1.42778.

[22] Rodrigo Smiderle et al., "The Impact of Gamification on Students' Learning, Engagement and Behavior Based on Their Personality Traits," *Smart Learning Environments* 7, no. 1 (2020): 1–11, https://doi.org/10.1186/s40561-019-0098-x.

[23] Yanti Taba Lokat, Vidriana Oktoviana Bano, and Riwa Rambu Hada Enda, "Pengaruh Model Pembelajaran Kooperatif Tipe Picture and Picture Terhadap Hasil Belajar Siswa," *Binomial* 5, no. 2 (2022): 126–35, https://doi.org/10.46918/bn.v5i2.1450.

Before testing the hypothesis, an assumption test was carried out to ensure the suitability of the data. The test of the homogeneity assumption is that the p-value> 0.05.[24]

If the assumptions are met, the t-test measures the average difference in learning outcomes between the experimental and control groups.[25] The t-test based on the t-Student distribution is used to compare two independent samples that are assumed to be normally distributed and have homogeneous variances. If the p-value <0.05, the null hypothesis is rejected, meaning that the learning model significantly affects student learning outcomes.[26]

Thus, data analysis in this study was carried out systematically to ensure valid and reliable conclusions. The design used in this research is as follows.

Table 1. Research Design

K1 X K2
K3 X K4

Description:

K1: Pre-learning test for the experimental group.

K2: Post-learning Test for the experimental group

X: Application of a specific model.

K3: Pre-learning test for the control group.

K4: Post-learning test for the control group.

Independent and dependent variables are included in this study. The CTL learning model is included in the independent variable, and student learning outcomes are included in the dependent variable.[27]

---

[24] Rektor Sianturi, "Uji Homogenitas Sebagai Syarat Pengujian Analisis," *Jurnal Pendidikan, Sains Sosial, Dan Agama* 8, no. 1 (2022): 386–97, https://doi.org/10.53565/pssa.v8i1.507.

[25] B Alfi, "Assessing Student Engagement in Qurdis Subject Using Wordwall," *Halaqa: Islamic Education Journal* 8, no. 1 (2024): 8–25, https://doi.org/10.21070/halaqa.v8i1.1672.

[26] Hasny Delaila Siregar et al., "Analisis Uji Hipotesis Penelitian Perbandingan Menggunakan Statistik Parametrika," *Al Itihadu Jurnal Pendidikan* 1, no. 1 (2022): 3, https://jurnal.asrypersadaquality.com/index.php/alittihadu/article/view/44%0Ahttps://jurnal.asrypersadaquality.com/index.php/alittihadu/article/download/44/74.

[27] Gede Putu Widyaiswara, Desak Putu Parmiti, and I Made Suarjana, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar IPA," *International Journal of Elementary Education* 3, no. 4 (2019): 306–14, https://doi.org/10.23887/ijee.v3i4.21311.

RESULTS AND DISCUSSIONS

Before conducting the research, the researcher arranged cooperative learning with the CTL approach by developing teaching modules aligned with the CTL learning model.[28] After the planning, researchers will analyze the data to determine the impact and results of applying the CTL learning model.

Normality Test

In this study, a propositional research was conducted, which included hypothesis testing and a t-test. Before the t-test, normality and homogeneity tests were undertaken to ensure the data met the required statistical assumptions.[29]

The data is needed before and after the special treatment in the experimental and control groups. Post-Control students to conduct the normality test. This test is essential to ascertain whether the data meets the assumption of normality, which is one of the requirements in parametric statistical testing.[30] Data can be declared normal if the significance value is more than 0.05.[31] The following are the results of the normality test in this study:

Table 2. Normality Test

Tests of Normality				
	Group	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Student Learning Outcomes	Pre-Experiment (CTL)	.962	19	.615
	Post-Experiment (CTL)	.936	19	.225
	Pre-Control (Conventional)	.964	19	.652
	Post-Control (Convention)	.908	19	.069

[28] Wiji Putri Lestari et al., "Efektivitas Model Pembelajaran Kooperatif Dengan Pendekatan Contextual Teaching and Learning (CTL) Terhadap Hasil Belajar Matematika," *Jurnal Penelitian Tindakan Kelas* 1, no. 1 (2023): 28–33, https://doi.org/10.61650/jptk.v1i1.155.

[29] Muhammad Rizqi and Dwiana Asih, "Efektivitas Model Role Playing Berbantu Media Topeng Karakter Untuk Meningkatkan Keterampilan Berbicara Krama Alus Pada Siswa Kelas IV SDN 03 Menganti" 6, no. 1 (2025): 27–36.

[30] Eksa Aqila Cindyana, Jesi Alexander Alim, and Eddy Noviana, "Pengaruh Pembelajaran Berdiferensiasi Berbantuan Materi Ajar Geometri Berbasis Rme Terhadap Kemampuan Penalaran Matematis Siswa Kelas 3 Sekolah Dasar," *JURNAL PAJAR (Pendidikan Dan Pengajaran)* 6, no. 4 (2022): 1179, https://doi.org/10.33578/pjr.v6i4.8837.

[31] Rifqi Arief Permana and Diana Ikasari, "Uji Normalitas Data Menggunakan Metode Empirical Distribution Function Dengan Memanfaatkan Matlab Dan Minitab 19," *Semnas Ristek (Seminar Nasional Riset Dan Inovasi Teknologi)* 7, no. 1 (2023): 7–12, https://doi.org/10.30998/semnasristek.v7i1.6238.

Table 2 shows that the significance value for the experimental group is 0.615 in Pre-Experiment and 0.225 in Post-Experiment, while for the control group, the significance value (Sig.) is 0.652 in Pre-Control and 0.069 in Post-Control (normally distributed). Thus, parametric statistical tests can be used for in-depth analysis.[32]

Homogeneity Test

The homogeneity test was used to ensure that the two groups are homogeneous or have the same distribution.[33] The following are the results of the homogeneity test:

Table 3. Homogeneity Test Analysis Results

Test of Homogeneity of Variance					
		Levene Statistic	**df1**	**df2**	**Sig.**
Student Learning Outcomes	Based on the Mean	3.153	1	36	.084
	Based on the Median	1.345	1	36	.254
	Based on the Median and With adjusted df	1.345	1	25.093	.257
	Based on the trimmed mean	2.731	1	36	.107

The output of Table 3 shows a substantial value of 0.084 > 0.05 because the number of significance is> 0.05; therefore, the inference can be drawn that the variance of the pretest results is homogeneous.[34] Thus, the assumption that the t-test statistical analysis will continue has been met.[35]

[32] Widyaiswara, Parmiti, and Suarjana, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar IPA."

[33] Sianturi, "Uji Homogenitas Sebagai Syarat Pengujian Analisis."

[34] Fajar Prasetyo and Firosalia Kristin, "Pengaruh Model Pembelajaran Problem Based Learning Dan Model Pembelajaran Discovery Learning Terhadap Kemampuan Berpikir Kritis Siswa Kelas 5 SD," *DIDAKTIKA TAUHIDI: Jurnal Pendidikan Guru Sekolah Dasar* 7, no. 1 (2020): 13–27, https://doi.org/10.30997/dt.v7i1.2645.

[35] Rizqi and Asih, "Efektivitas Model Role Playing Berbantu Media Topeng Karakter Untuk Meningkatkan Keterampilan Berbicara Krama Alus Pada Siswa Kelas IV SDN 03 Menganti."

Paired Sample T Test

This test aims to analyze the mean comparison of student learning outcomes before and after special treatment (application of the CTL model) to prove whether there is a significant effect.[36]

Table 4. Paired Sample T Test Analysis Results

		Paired Samples Test					
		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	Pre-Ex, Post-Ex	-16.895	12.274	2.816	-6.000	18	.000
Pair 2	Pre-Con, Post-Con	-7.632	14.009	3.214	-2.375	18	.029

Based on Table 4, the experimental group showed a significant improvement with a mean difference between Pre-Experiment and Post-Experiment of -16.895, indicating that the Pre-Experiment mean was higher than the Post-Experiment mean. Furthermore, from the output of Pair 1, a significance value of 0.000 < 0.05 was obtained, leading to the conclusion that the CTL model substantially affects students' learning outcomes.[37]

Independent Sample T Test

This test helps correlate the means of two unrelated groups to determine whether the difference is significant, with the main condition that the data has been tested for normal distribution and homogeneity, although homogeneity is not absolute.[38] The independent sample t-test is conducted as follows:

[36] Andi Wahyudi, Berth Penny Pahan, and Ratih Sulistyowati, "Peningkatan Hasil Belajar Siswa Melalui Kooperatif Picture And Picture: Suatu Studi Di SDN 5 Menteng," *Harati: Jurnal Pendidikan Kristen* 3, no. 2 (2023): 109–23, https://doi.org/10.54170/harati.v3i2.228.

[37] Lokat, Bano, and Enda, "Pengaruh Model Pembelajaran Kooperatif Tipe Picture and Picture Terhadap Hasil Belajar Siswa."

[38] Azka Dhianti Putri et al., "Pengaplikasian Uji T Dalam Penelitian Eksperimen," *Jurnal Lebesgue : Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika* 4, no. 3 (2023): 1978–87, https://doi.org/10.46306/lb.v4i3.527.

Table 5. Independent Sample T Test Analysis Results

		Levene's Test For Equality of Variances		t-test for Equality of Means		
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
Student Learning Outcomes	Equal Variances assumed	3.153	.084	2.640	36	.012

Based on Table 6, the number of significance values <0.05 is obtained, namely 0.012 in the Equal Variances Assumed option. It can be concluded that the increase in learning outcomes in the experimental group was significantly influenced by applying the contextual learning model (CTL). This is in line with the findings of research conducted by Yuniar Elmanura (2024), which examines the CTL model, which can improve learning outcomes.[39]

Descriptive Analysis

Descriptive analysis explains and describes research values such as total, maximum, minimum, mean, and others. The results from the pre- and posttests for the control and experimental groups include the following aspects.[40]

Table 6. Descriptive Analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Experiment	19	40	90	68.05	13.389
Post-Experiment	19	72	98	84.95	8.442
Pre-Control	19	40	90	67.21	14.234
Post-Control	19	40	92	74.84	14.037
Valid N (listwise)	19				

According to Table 2, the Pre-Experiment test scores got the mean (68.05) and the Pre- Con test mean (67.21) with the standard deviation of the

[39] Yuniar Elmanura Mahrufi and Tutut Nurita, "Meningkatkan Hasil Belajar Siswa Dan Keaktifan Belajar Siswa Melalui Contextual Teaching And Learning" 12, no. 1 (2024): 11–19, https://ejournal.unesa.ac.id/index.php/pensa.

[40] Alfi, "Assessing Student Engagement in Qurdis Subject Using Wordwall."

experimental group (13.38) and the control group (14.23), which shows that the control group scores are more diverse than the experimental group scores.

While there is an apparent increase in the mean Post-Experiment (84.95) and for Post-Control (74.84), where the experimental group's mean is higher, this indicates that the treatment or intervention given to the experimental group succeeded in significantly improving student learning outcomes.[41]

The following bar graph illustrates the comparison of learning outcomes based on the mean pretest and posttest.

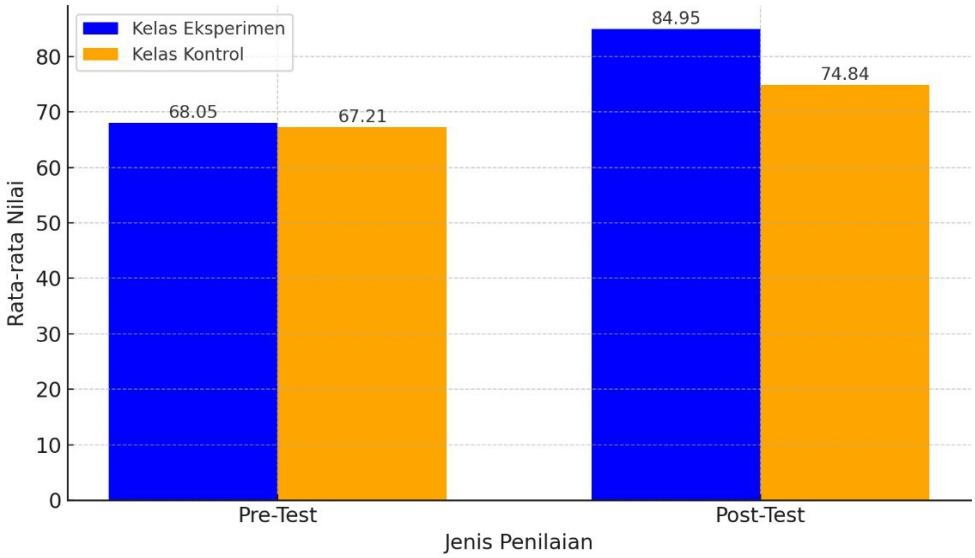

Figure 1. Average Value

This graph shows that the experimental group that received special treatment showed a greater improvement when compared to the control group. This increase in the experimental group shows the effectiveness of the learning model applied. This indicates that the CTL model is, in fact, more effective in improving student learning outcomes than the conventional model.

In addition to looking at the average difference in pretest and posttest scores, the effect size was also calculated to understand the strength of the treatment effect in this study. By using Cohen's formula as follows:

$$d = \frac{M_{\text{experiment}} - M_{\text{control}}}{SD_{\text{pooled}}}$$

[41] Widyaiswara, Parmiti, and Suarjana, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar IPA."

Where:

- $M_{\text{experiment}} = 84.95$ (mean post-test of the experimental group)
- $M_{\text{control}} = 74.84$ (mean post-test of the control group)
- $SD_{\text{pooled}} = \sqrt{\frac{SD^2_{\text{experiment}} + SD^2_{\text{control}}}{2}}$
- $SD_{\text{experiment}} = 8.442$
- $SD_{\text{control}} = 14.037$

Then:

$$SD_{pooled} = \sqrt{\frac{(8.442^2 + 14.037^2)}{2}}$$
$$SD_{pooled} = \sqrt{\frac{(71.3 + 197.04)}{2}}$$
$$SD_{pooled} = \sqrt{134.17}$$
$$SD_{pooled} = 11.58$$
$$d = \frac{84.95 - 74.84}{11.58}$$
$$d = \frac{10.11}{11.58}$$
$$d = 1.23$$

An effect size value of d = 1.23 was obtained, which indicates a significant effect according to Cohen's (1988) interpretation.[42] This means that using the Quizwhizzer-based CTL model substantially improves student learning outcomes compared to conventional learning methods. This result is also in line with the research of Widyaiswara et al. (2019), which found that the CTL model significantly influenced science learning outcomes at the elementary school level.[43]

This study's results indicate that applying the Contextual Teaching and Learning (CTL) model based on Quizwhizzer significantly increases student learning outcomes in Islamic Religious Education (PAI) subjects. This can be seen from the increase in the experimental group's average posttest score, which is higher than that of the control group.

This finding strengthens the results of Irwan and Hasnawi's (2021) research, which found that the CTL model can improve student learning

[42] Riski Tri Widyastuti and Gamaliel Septian Airlanda, "Efektivitas Model Problem Based Learning Terhadap Kemampuan Pemecahan Masalah Matematika Siswa Sekolah Dasar," *Jurnal Basicedu* 5, no. 5 (2021): 1120–29, https://journal.uii.ac.id/ajie/article/view/971.

[43] Widyaiswara, Parmiti, and Suarjana, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar IPA."

outcomes by encouraging active involvement in learning. Their research applied the CTL model to Civics subjects in elementary schools and showed similar results, namely increased student understanding and participation. This similarity indicates that the CTL model can be effectively applied in various subjects, including PAI, with consistent results.[44] However, Irwan and Hasnawi's study did not integrate technology in the application of CTL, which in this study proved to further increase the effectiveness of learning.

In addition, this study also confirmed the findings of Zahra Aulia Rahmah (2022), who examined the effect of CTL models on elementary school students' mathematics learning outcomes. Rahmah found that applying the CTL model helped students understand math concepts better because of the connection to real life.[45] However, Rahmah's study used a research design with one group without a control group for comparison. Therefore, this study makes a new contribution by comparing learning outcomes between experimental and control groups and integrating the Quizwhizzer application to increase the effectiveness of CTL-based learning.

This study reveals that using a contextual learning model (CTL) supported by the Quizwhizzer application can improve students' learning achievement in PAI subjects. While implementing CTL, students showed activeness, especially when connecting learning materials with real (daily) situations. This is according to Johnson's (2002) theory, which emphasizes that CTL can make students participate actively during learning.[46] Furthermore, research conducted by Mahrufi and Nurita showed that the CTL approach improves students' understanding by involving them in activities such as inquiry, community-based learning, and reflection.[47] In learning, students are encouraged to explore information, examine new things, and make decisions independently.

This research is in line with Ausubel's learning theory regarding meaningful learning, according to David Ausubel, meaningful learning is a process in which new insights are associated with pre-existing experiences in the individual's cognitive domain, thus creating a deeper and more relevant

---

[44] Irwan and Hasnawi, "Analisis Model Pembelajaran Contextual Teaching and Learning Dalam Meningkatkan Hasil Belajar PPKn Di Sekolah Dasar."

[45] Rahmah and Ermawati, "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar."

[46] Damayanti Nababan and Christofel Agner Sipayung, "Pemahaman Model Pembelajaran Kontekstual Model Pembelajaran (CTL)," *Jurnal Pendidikan Sosial Dan Humaniora* 2, no. 2 (2023): 825–37, https://publisherqu.com/index.php/pediaqu.

[47] Mahrufi and Nurita, "Meningkatkan Hasil Belajar Siswa Dan Keaktifan Belajar Siswa Melalui Contextual Teaching And Learning."

understanding, so that the knowledge learned can be stored in the student's memory longer.[48]

This study's results show that applying CTL models reinforces learning theories, including the theory of constructivism. Constructivism theory in the 1980s, developed by figures such as J. Piaget and Vygotsky, emphasizes the importance of student-focused learning, conducted in a real context, and encourages cooperation and deeper understanding.[49] This approach is closely related to the CTL model, which aims to create learning experiences that are meaningful and relevant to students' real lives. CTL learning enhances students' active engagement and understanding by incorporating real-world contexts into the learning process.[50]

In this research, the components of contextual learning are correlated with the use of the Quizwhizzer application, such as the constructivism component, which is visible when students actively answer questions and build their understanding of PAI material through interactive activities in the Quizwhizzer application. The Quizwhizzer application also supports the principle of a learning community where students work together and compete fairly, creating a collaborative and fun learning atmosphere.[51] In this research, Quizwhizzer serves as a crucial supporting tool for the success of the CTL model.

Based on the observations made, the use of Quizwhizzer is seen to support the implementation of the CTL model, especially to create a more mutually active, fun, and related learning experience with students' lives through the questions presented, so that it helps the application of the main principles of CTL. Valentino Reykliv Mokalu et al.'s research revealed that technology can support learning by presenting information interactively and maximizing student engagement.[52] Through its interactive features, Quizwhizzer is used as an

---

[48] Hidayatul Muamanah and Suyadi, "Pelaksanaan Teori Belajar Bermakna David Ausubel Dalam Pembelajaran Pendidikan Agama Islam," *Belajea: Jurnal Pendidikan Islam* 5, no. 01 (2020): 162–80, https://doi.org/10.29240/belajea.v5.

[49] Xiaoxia Li, "Constructivism Foreign Language Listening Teaching," *ATLANTIS PRESS* Proceeding, no. Icemss (2013): 130–32, https://doi.org/10.2991/icemss.2013.35.

[50] Robert G Berns and Patricia M Erickson, "Contextual Teaching and Learning: Preparing Students for the New Economy.," *The Highlight Zone Research @ Work*, no. 5 (2001): 1–9, http://www.nccte.com/publications/infosynthesis/index.

[51] M. Imamuddin, "Merancang Model Pembelajaran Matematika Kontekstual Islami Berbasis Literasi," *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi* 6, no. 1 (2022): 75–89, https://doi.org/10.32505/qalasadi.v6i1.4132.

[52] Valentino Reykliv Mokalu et al., "Hubungan Teori Belajar Dan Teknologi Pendidikan," *Edukatif : Jurnal Ilmu Pendidikan* 4, no. 1 (2022): 1475–86, https://doi.org/10.31004/edukatif.v4i1.2192.

innovative learning measurement tool to assess how far students understand the material learned after being given special treatment, namely the provision of CTL models in the learning process.[53]

However, the observation also noted the challenges faced when using Quizwhizzer learning media, such as a stable internet connection and adequate devices. If the device does not have sufficient capacity or is not compatible, the application cannot be activated. Nevertheless, with the support of the proper technological infrastructure, Quizwhizzer is one of several learning media that are very effective in supporting the success of the CTL model.

The practical implications of this research show that the technology-based CTL model can increase students' engagement in learning, making it more interactive and relevant. Teachers can adapt this method to accommodate students' learning styles and connect the material with real situations. For policymakers, the results of this study emphasize the importance of supporting technology infrastructure and teacher training to optimize the use of technology in learning.

However, this study has some limitations. The limited sample size involved only 38 students from one school, which may affect the generalizability of the results. In addition, the implementation of this model depends on the availability of technological devices and stable internet access. Therefore, further research could explore alternative solutions, such as combining blended learning methods to reduce dependence on technology.

CONCLUSION

The results showed that the Contextual Teaching and Learning (CTL) learning model, assisted by the QuizWhizzer application, significantly improved student learning outcomes in PAI subjects. This was proven through the Paired Sample T-Test test with an average difference in scores of 16.895 and a significance value of 0.000 ($p < 0.05$), as well as the Independent Sample T-Test with a significance value of 0.012 ($p < 0.05$). The effectiveness of this model is reinforced by Cohen's d of 1.23, which shows a powerful influence, with an increase in the average value of the experimental group by 19.53 points, higher than that of the control group by 10.47 points. Thus, it can be concluded that the hypothesis (Ha), which states that there is a significant effect of using the CTL learning model assisted by QuizWhizzer on student learning outcomes, is

[53] Rohmatin Alfianistiawati et al., "Implementasi Quizwhizzer Sebagai Media Belajar Digital Dalam Pembelajaran Sosiologi Kelas X Dan XI SMAN 8 Malang," *Jurnal Integrasi Dan Harmoni Inovatif Ilmu-Ilmu Sosial (JIHI3S)* 2, no. 7 (2022): 698–706, https://doi.org/10.17977/um063v2i7p698-706.

accepted. These results also show that applying the CTL model can improve learning outcomes more effectively than traditional learning methods.

Although this study shows positive results, limitations include a limited sample size and dependence on technological infrastructure. Therefore, further research can be conducted with a broader scope and exploration of variations in the use of CTL models with other learning media for more optimal results.

REFERENCES

Adrillian, Hendrisa, and Detalia Noriza. "Pengaruh Model Pembelajaran Problem Based Learning Dengan Pendekatan Kontruktivisme Terhadap Kemampuan Berpikir Kritis Matematis Peserta Didik." *PRISMA, Prosiding Seminar Nasional Matematika* 7 (2024): 57–65. https://proceeding.unnes.ac.id/prisma.

Alafnan, Mohammad Awad. "Taxonomy of Educational Objectives: Teaching, Learning, and Assessing in the Information and Artificial Intelligence Era." *Journal of Curriculum and Teaching* 13, no. 4 (2024): 173–91. https://doi.org/10.5430/jct.v13n4p173.

Alfi, B. "Assessing Student Engagement in Qurdis Subject Using Wordwall." *Halaqa: Islamic Education Journal* 8, no. 1 (2024): 8–25. https://doi.org/10.21070/halaqa.v8i1.1672.

Alfianistiawati, Rohmatin, Nurmalita Istifayza, Maria Apolonia Prakris, Fresty Kartika Fitri, and Deny Wahyu Apriyadi. "Implementasi Quizwhizzer Sebagai Media Belajar Digital Dalam Pembelajaran Sosiologi Kelas X Dan XI SMAN 8 Malang." *Jurnal Integrasi Dan Harmoni Inovatif Ilmu-Ilmu Sosial (JIHI3S)* 2, no. 7 (2022): 698–706. https://doi.org/10.17977/um063v2i7p698-706.

Aprillia, Maulidia Putri, and Shobah Shofariyani Iryanti. "Revitalisasi Pendidikan Islam Di Era Digital: Membangun Keseimbangan Antara Tradisi Dan Inovasi." *AL-MUADDIB: Jurnal Kajian Ilmu Kependidikan* 6, no. 1 (2024): 25–39. https://doi.org/10.46773/muaddib.v6i1.1111.

Berns, Robert G, and Patricia M Erickson. "Contextual Teaching and Learning: Preparing Students for the New Economy." *The Highlight Zone Research @ Work*, no. 5 (2001): 1–9. http://www.nccte.com/publications/infosynthesis/index.

Cindyana, Eksa Aqila, Jesi Alexander Alim, and Eddy Noviana. "Pengaruh Pembelajaran Berdiferensiasi Berbantuan Materi Ajar Geometri Berbasis Rme Terhadap Kemampuan Penalaran Matematis Siswa Kelas 3 Sekolah

Dasar." *JURNAL PAJAR (Pendidikan Dan Pengajaran)* 6, no. 4 (2022): 1179. https://doi.org/10.33578/pjr.v6i4.8837.

Fadilla, Dhenisha Agustine, and Sarah Nurfadhilah. "Penerapan Gamification Untuk Meningkatkan Motivasi Belajar Siswa Dalam Pembelajaran Jarak Jauh." *Inovasi Kurikulum* 19, no. 1 (2022): 34–43. https://doi.org/10.17509/jik.v19i1.42778.

Glynn, Shawn M., and Linda K. Winter. "Contextual Teaching and Learning of Science in Elementary Schools." *Journal of Elementary Science Education* 16, no. 2 (2004): 51–63. https://doi.org/10.1007/bf03173645.

Hajri, Muhammad Fatkhul. "Pendidikan Islam Di Era Digital: Tantangan Dan Peluang Pada Abad 21." *Al-Mikraj: Jurnal Studi Islam Dan Humaniora* 4, no. 1 (2023): h. 36. https://ejournal.insuriponorogo.ac.id/index.php/almikrajDOI:https://doi.org/10.37680/almikraj.v4i1.3006.

Imamuddin, M. "Merancang Model Pembelajaran Matematika Kontekstual Islami Berbasis Literasi." *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi* 6, no. 1 (2022): 75–89. https://doi.org/10.32505/qalasadi.v6i1.4132.

Irwan and Hasnawi. "Analisis Model Pembelajaran Contextual Teaching and Learning Dalam Meningkatkan Hasil Belajar PPKn Di Sekolah Dasar." *Edukatif : Jurnal Ilmu Pendidikan* 3, no. 1 (2021): 235–45. https://doi.org/10.31004/edukatif.v3i1.343.

Irwanto, Irwanto, and Marliah Marliah. "Penggunaan Pendekatan Contextual Teaching Learning Berbasis Multimedia Interaktif Untuk Meningkatkan Motivasi Dan Hasil Belajar Siswa Pada Mata Pelajaran Ipa." *Taman Cendekia: Jurnal Pendidikan Ke-SD-An* 3, no. 2 (2019): 342–49. https://doi.org/10.30738/tc.v3i2.4804.

Ismail, Sri Dinda Lestari, Abdul Haris Odja, and Linda Suronoto. "Penerapan Model Problem Based Learning Berbantuan Aplikasi Quizwhizzer Untuk Meningkatkan Hasil Belajar Konsep Alat Optik." *Jurnal Tadris IPA Indonesia* 3, no. 2 (2023): 140–46. https://doi.org/10.21154/jtii.v3i2.2246.

Istiqomah, and Naswa Alifia Azzahra. "Strategi Pembelajaran Aktif Untuk Meningkatkan Keterlibatan Siswa Dalam Pembelajaran Di Kelas" 01, no. 01 (2024): 19–26. https://doi.org/10.11791/bestari.v99i1.paperID.

Lestari, Wiji Putri, Eka Fitria Ningsih, Choirudin C, Rahmad Sugianto, and Andika Setyo Budi Lestari. "Efektivitas Model Pembelajaran Kooperatif Dengan Pendekatan Contextual Teaching and Learning (CTL) Terhadap Hasil Belajar Matematika." *Jurnal Penelitian Tindakan Kelas* 1, no. 1 (2023):

28–33. https://doi.org/10.61650/jptk.v1i1.155.

Li, Xiaoxia. "Constructivism Foreign Language Listening Teaching." *ATLANTIS PRESS* Proceeding, no. Icemss (2013): 130–32. https://doi.org/10.2991/icemss.2013.35.

Lismawati, Anita Puji Astutik, Alif Rizky Ramadhan, Muhammad Arifin Rahmanto, and Shobah Shofariyani Iryanti. "Deconstruction of AKM Literacy in PAI Lessons on the Learning Performance of MBKM Students." *Halaqa: Islamic Education Journal* 7, no. 1 (2023): 1–9. https://doi.org/10.21070/halaqa.v7i1.1634.

Lokat, Yanti Taba, Vidriana Oktoviana Bano, and Riwa Rambu Hada Enda. "Pengaruh Model Pembelajaran Kooperatif Tipe Picture and Picture Terhadap Hasil Belajar Siswa." *Binomial* 5, no. 2 (2022): 126–35. https://doi.org/10.46918/bn.v5i2.1450.

Mahrufi, Yuniar Elmanura, and Tutut Nurita. "Meningkatkan Hasil Belajar Siswa Dan Keaktifan Belajar Siswa Melalui Contextual Teaching And Learning" 12, no. 1 (2024): 11–19. https://ejournal.unesa.ac.id/index.php/pensa.

Mashudi and Fatimah Azzahro. *Contextual Teaching & Learning*. Edited by Mukni'ah. LP3DI Press Dilarang, 2020.

Mokalu, Valentino Reykliv, Johanes Kornelius Panjaitan, Noh Ibrahim Boiliu, and Djoys Anneke Rantung. "Hubungan Teori Belajar Dan Teknologi Pendidikan." *Edukatif : Jurnal Ilmu Pendidikan* 4, no. 1 (2022): 1475–86. https://doi.org/10.31004/edukatif.v4i1.2192.

Muamanah, Hidayatul, and Suyadi. "Pelaksanaan Teori Belajar Bermakna David Ausubel Dalam Pembelajaran Pendidikan Agama Islam." *Belajea: Jurnal Pendidikan Islam* 5, no. 01 (2020): 162–80. https://doi.org/10.29240/belajea.v5.

Nababan, Damayanti, and Christofel Agner Sipayung. "Pemahaman Model Pembelajaran Kontekstual Model Pembelajaran (CTL)." *Jurnal Pendidikan Sosial Dan Humaniora* 2, no. 2 (2023): 825–37. https://publisherqu.com/index.php/pediaqu.

Nurfadillah, Septy, Cantika Rofiqoh Azhar, Dewi Nur Aini, Fiqih Apriansyah, Reni Setiani, and Universitas Muhammadiyah Tangerang. "Pengembangan Media Pembelajaran Berbasis Teknologi Untuk Meningkatkan Hasil Belajar Siswa Sd Negeri Pinang 1." *BINTANG : Jurnal Pendidikan Dan Sains* 3, no. 1 (2021): 153–63. https://ejournal.stitpn.ac.id/index.php/bintang.

Nurusiah, Idawati, and Jamaluddin Arifin. "Pengaruh Model Contextual Teaching and Learning Menggunakan Media Pop Up Book Terhadap Aktivitas Belajar Siswa Kelas V SD Islam Athirah 2 Bukit Baruga Kota Makassar." *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)* 4, no. 2 (2024): 806–19. https://doi.org/10.53299/jppi.v4i2.592.

Panjaitan, Nur Qomariah, Elindra Yetti, and Yuliani Nurani. "Pengaruh Media Pembelajaran Digital Animasi Dan Kepercayaan Diri Terhadap Hasil Belajar Pendidikan Agama Islam Anak." *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini* 4, no. 2 (2020): 588. https://doi.org/10.31004/obsesi.v4i2.404.

Permana, Rifqi Arief, and Diana Ikasari. "Uji Normalitas Data Menggunakan Metode Empirical Distribution Function Dengan Memanfaatkan Matlab Dan Minitab 19." *Semnas Ristek (Seminar Nasional Riset Dan Inovasi Teknologi)* 7, no. 1 (2023): 7–12. https://doi.org/10.30998/semnasristek.v7i1.6238.

Prasetyo, Fajar, and Firosalia Kristin. "Pengaruh Model Pembelajaran Problem Based Learning Dan Model Pembelajaran Discovery Learning Terhadap Kemampuan Berpikir Kritis Siswa Kelas 5 SD." *DIDAKTIKA TAUHIDI: Jurnal Pendidikan Guru Sekolah Dasar* 7, no. 1 (2020): 13–27. https://doi.org/10.30997/dt.v7i1.2645.

Prasittichok, Pitchada, Suradet Jitprapaikulsarn, Khawanying Sriprasertpap, and Gwo Jen Hwang. "Technological Solutions to Fostering Students' Moral Courage: An Augmented Reality-Based Contextual Gaming Approach." *Cogent Education* 11, no. 1 (2024). https://doi.org/10.1080/2331186X.2024.2378276.

Prensky, Marc. *The Digital Game-Based Learning Revolution*. Edited by New York : McGraw-Hill. *Learning*. Vol. 1, 2001. https://doi.org/10.1016/j.iheduc.2004.12.001.

Putri, Azka Dhianti, Ahman Ahman, Rahma Sayyida Hilmia, Salwa Almaliyah, and Sidik Permana. "Pengaplikasian Uji T Dalam Penelitian Eksperimen." *Jurnal Lebesgue : Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika* 4, no. 3 (2023): 1978–87. https://doi.org/10.46306/lb.v4i3.527.

Rahmah, Zahra Aulia, and Imas Ratna Ermawati. "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar." *Jurnal Basicedu* 6, no. 1 (2022): 364–71. https://doi.org/10.31004/basicedu.v6i1.1916.

Rifa'i, Moh, Iradatul Hasanah, Zubair, and Mukhlisin Sa'ad. "Implementasi

Contextual Teaching And Learning (CTL) Dalam Meningkatkan Prestasi Belajar Siswa Pada Materi Bahasa Arab (Studi Kasus Di MTs Nurul Jadid Paiton Probolinggo).” *Jurnal Pendidikan Agama Islam Dan Madrasah Ibtidaiyah* 01, no. 02 (2022): 68–82.

Rizqi, Muhammad, and Dwiana Asih. “Efektivitas Model Role Playing Berbantu Media Topeng Karakter Untuk Meningkatkan Keterampilan Berbicara Krama Alus Pada Siswa Kelas IV SDN 03 Menganti” 6, no. 1 (2025): 27–36.

Rosidin, Mochamad Fadlani Salam, Wiwi Dwi Daniyarti, Lailatul Fitriyah, and Trimansyah. *Strategi Pembelajaran Pendidikan Agama Islam*. *Sustainability (Switzerland)*. Vol. 11, 2024. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI.

Sayekti, Siskha Putri, Zaeni Dahlan, and Muhammad Fikri Al-Faruqi. “Penerapan Model Pembelajaran Talking Stick Dalam Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran PAI Siswa Kelas V SDN 02 Mampang Kota Depok.” *Jurnal Dirosah Islamiyah* 2, no. 1 (2021): 1–18. https://doi.org/10.17467/jdi.v2i2.365.

Sianturi, Rektor. “Uji Homogenitas Sebagai Syarat Pengujian Analisis.” *Jurnal Pendidikan, Sains Sosial, Dan Agama* 8, no. 1 (2022): 386–97. https://doi.org/10.53565/pssa.v8i1.507.

Siregar, Hasny Delaila, Manna Wassalwa, Khairina Janani, and Irma Sari Harahap. “Analisis Uji Hipotesis Penelitian Perbandingan Menggunakan Statistik Parametrika.” *Al Itihadu Jurnal Pendidikan* 1, no. 1 (2022): 3. https://jurnal.asrypersadaquality.com/index.php/alittihadu/article/view/44%0Ahttps://jurnal.asrypersadaquality.com/index.php/alittihadu/article/download/44/74.

Smiderle, Rodrigo, Sandro José Rigo, Leonardo B. Marques, Jorge Arthur Peçanha de Miranda Coelho, and Patricia A. Jaques. "The Impact of Gamification on Students' Learning, Engagement and Behavior Based on Their Personality Traits." *Smart Learning Environments* 7, no. 1 (2020): 1–11. https://doi.org/10.1186/s40561-019-0098-x.

Usmadi, Usmadi. “Pengujian Persyaratan Analisis (Uji Homogenitas Dan Uji Normalitas).” *Inovasi Pendidikan* 7, no. 1 (2020): 50–62.

https://doi.org/10.31869/ip.v7i1.2281.

Wahyudi, Andi, Berth Penny Pahan, and Ratih Sulistyowati. "Peningkatan Hasil Belajar Siswa Melalui Kooperatif Picture And Picture: Suatu Studi Di SDN 5 Menteng." *Harati: Jurnal Pendidikan Kristen* 3, no. 2 (2023): 109–23. https://doi.org/10.54170/harati.v3i2.228.

Wahyudi, Nanang Gesang, and Jatun. "Integrasi Teknologi Dalam Pendidikan: Tantangan Dan Peluang Pembelajaran Digital Di Sekolah Dasar." *Indonesian Research Journal on Education* 4 (2024): 444–51. https://irje.org/index.php/irje.

Widyaiswara, Gede Putu, Desak Putu Parmiti, and I Made Suarjana. "Pengaruh Model Pembelajaran Contextual Teaching and Learning Terhadap Hasil Belajar IPA." *International Journal of Elementary Education* 3, no. 4 (2019): 306–14. https://doi.org/10.23887/ijee.v3i4.21311.

Widyastuti, Riski Tri, and Gamaliel Septian Airlanda. "Efektivitas Model Problem Based Learning Terhadap Kemampuan Pemecahan Masalah Matematika Siswa Sekolah Dasar." *Jurnal Basicedu* 5, no. 5 (2021): 1120–29. https://journal.uii.ac.id/ajie/article/view/971.

Yolanda, Siska, and Septi Fitri Meilana. "Pengaruh Aplikasi Quizizz Terhadap Minat Belajar IPA Siswa Kelas V Di Sekolah Dasar." *Jurnal Educatio* 7, no. 3 (2021): 915–21. https://doi.org/10.31949/educatio.v7i3.1286.