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CHANGES IN STUDENTS' LEARNING INTEREST FOLLOWING CANVA-ASSISTED PROJECT-BASED LEARNING IN ISLAMIC CREED AND MORALITY

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Abstrak

Penelitian ini bertujuan menganalisis penerapan Project-Based Learning (PjBL) berbantuan Canva serta perubahan minat belajar siswa dalam mata pelajaran Morality instruction di MAS Al-Ittihadiyah Bromo Medan. Penelitian menggunakan pendekatan kuantitatif dengan metode praeksperimen melalui desain one-group pretest-posttest. Sampel mencakup 43 siswa kelas X dan XI yang menyelesaikan seluruh kegiatan. Perlakuan berlangsung empat pertemuan melalui proyek pembuatan poster dan infografis digital bertema adab terhadap guru dan orang tua. Data dikumpulkan menggunakan angket Likert dengan indikator perasaan senang, ketertarikan, keterlibatan, dan perhatian. Analisis meliputi statistik deskriptif, uji Shapiro-Wilk, Wilcoxon signed-rank, dan N-Gain menggunakan SPSS versi 25. Hasil menunjukkan peningkatan rata-rata skor minat belajar dari 27,47 menjadi 32,65. Uji Wilcoxon menghasilkan $Z = -4{,}779$ dan $p < 0{,}001$, menandakan perbedaan signifikan secara statistik. Rata-rata N-Gain sebesar 0,3351 termasuk kategori sedang. Temuan menunjukkan bahwa PjBL berbantuan Canva berkaitan dengan peningkatan minat belajar siswa. Namun, ketiadaan kelompok kontrol membatasi kesimpulan kausal sehingga perubahan tersebut tidak dapat dipastikan sebagai akibat tunggal perlakuan. Sepuluh siswa yang tidak menyelesaikan kegiatan dikeluarkan dari analisis, sementara alasan ketidaklengkapan datanya belum tersedia. Penelitian lanjutan perlu menggunakan eksperimen terkontrol dan pengamatan jangka panjang untuk menguji efektivitas model pada konteks pendidikan madrasah.

Kata kunci: Project-Based Learning, Minat Belajar Morality instruction, Canva

Abstract

This study examines the implementation of Project-Based Learning (PjBL) supported by Canva and changes in students' learning interest in Aqidah Akhlaq at MAS Al-Ittihadiyah Bromo Medan. A quantitative pre-experimental approach employed a one-group pretest-posttest design. The sample comprised 43 students from grades X and XI who completed all activities. The intervention involved four sessions of digital poster and infographic projects addressing respectful conduct toward teachers and parents. Data were collected using a Likert questionnaire measuring enjoyment, interest, engagement, and attention. Analyses included descriptive statistics, Shapiro-Wilk, Wilcoxon signed-rank, and N-Gain using SPSS version 25. The mean learning interest score increased from 27.47 to 32.65. The Wilcoxon test yielded $Z = -4.779$ and $p < 0.001$, indicating a statistically significant difference. The mean N-Gain was 0.3351, categorized as moderate. These findings associate Canva-supported PjBL with increased learning interest. However, the absence of a control group limits causal inference; changes cannot be attributed solely to the intervention. Ten students with incomplete participation were excluded, and their reasons for noncompletion were unavailable. Further research should employ controlled experiments and longitudinal observations to assess the model's effectiveness in Islamic secondary education settings.

Keywords: Project-Based Learning, Islamic Creed and Morality Learning Interest, Canva

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INTRODUCTION

Learning interest is a fundamental psychological factor influencing students' engagement, participation, and achievement in educational settings. Students who demonstrate strong learning interest tend to exhibit greater enthusiasm, sustained attention, active participation, and willingness to explore learning materials independently. Conversely, insufficient learning interest may contribute to passive classroom behavior, limited academic engagement, and reduced motivation to complete learning activities. Educational research emphasizes that interest develops through interactions between individual characteristics, instructional experiences, and learning environments (Hidi & Renninger, 2006). Furthermore, students' interest is closely associated with meaningful learning experiences, perceived relevance, and opportunities for active participation (Schiefele, 1991; Harackiewicz et al., 2016). Consequently, developing instructional approaches that stimulate students' learning interest constitutes an essential priority for improving educational quality.

Within Islamic education, the Islamic Creed and Morality subject plays a significant role in developing students' religious understanding, moral awareness, and ethical behavior. This subject emphasizes not only conceptual knowledge of Islamic beliefs but also the internalization of commendable character traits and their application in everyday life. Learning materials concerning respect for teachers and parents are particularly important because they connect religious principles with students' interpersonal relationships. However, achieving these educational objectives requires instructional strategies that encourage students to understand, reflect upon, and practice moral values. Research on moral education suggests that meaningful engagement, reflective learning, and opportunities to apply ethical principles can support students' moral development (Berkowitz & Bier, 2005; Narvaez & Lapsley, 2009).

Despite its educational significance, Islamic Creed and Morality instruction continues to face challenges associated with conventional teacher-centered learning practices. Preliminary observations conducted during a teaching practicum at MAS Al-Ittihadiyah Bromo, Medan, Indonesia, indicated that students' learning interest remained relatively limited. Several students demonstrated insufficient attention during instructional explanations, minimal participation in classroom discussions, and limited enthusiasm when completing assignments. These observations suggest a need for more interactive and engaging instructional approaches. Previous studies indicate that instructional environments emphasizing autonomy, meaningful participation, and collaborative learning can positively influence students' motivation and engagement (Deci & Ryan, 2000; Fredricks et al., 2004). Accordingly, integrating innovative instructional models may provide opportunities to address the challenges identified in Islamic education classrooms. The preliminary observations are qualitative classroom indications rather than a quantified baseline; their dates, observation criteria, and number of observed students are not documented in the report. This limitation should be considered when describing the initial classroom problem. The observations were reported from a teaching practicum, but the source does not identify the specific observation dates, total classes observed, or a structured observation instrument. Therefore, they are treated as contextual indications rather than a measured prevalence of low interest.

Project-Based Learning (PjBL) represents a student-centered instructional approach that organizes learning around authentic problems, collaborative activities, inquiry processes, and the development of meaningful products. Through project implementation, students actively investigate learning materials, exchange ideas, solve problems, and demonstrate their understanding through tangible outcomes. The theoretical foundations of PjBL emphasize experiential learning, knowledge construction, and authentic learning experiences (Blumenfeld et al., 1991; Thomas, 2000). Empirical investigations have demonstrated that project-based instructional environments can support students' motivation, collaborative competencies, and academic engagement (Bell et al., 2010; Kokotsaki et al., 2016). Moreover, research suggests that PjBL can improve students' learning experiences when instructional activities are carefully structured and aligned with educational objectives (Chen & Yang, 2019).

Technological developments provide additional opportunities to strengthen project-based instructional practices through digital learning media. Canva, a digital graphic design platform, enables students to develop visually engaging presentations, posters, infographics, and other creative educational products. Integrating Canva into PjBL may facilitate students' expression of ideas, collaborative creativity, and active involvement in learning activities. Multimedia learning theory suggests that appropriately designed combinations of visual and verbal information can support cognitive processing and meaningful understanding (Mayer & Moreno, 2003). Furthermore, technology-enhanced learning environments can encourage engagement when digital tools facilitate active knowledge construction rather than passive information consumption (Tamim et al., 2011; Sung et al., 2016). Studies concerning digital creativity and educational technology also highlight the potential of technology-supported activities to promote student participation and innovative learning experiences (Henriksen et al., 2016; Schindler et al., 2017).

In Islamic Creed and Morality instruction, Canva-assisted PjBL can be implemented through projects requiring students to create digital posters, presentations, or infographics illustrating respectful behavior toward teachers and parents. Such activities connect religious concepts with practical situations while encouraging students to interpret moral values creatively. Learning interest can subsequently be examined through four indicators: enjoyment, attraction, attention, and active involvement. These indicators reflect the multidimensional characteristics of interest and engagement identified in educational psychology (Renninger & Hidi, 2011; Ainley et al., 2002). Nevertheless, the effectiveness of combining PjBL and Canva should be investigated empirically rather than assumed from their individual educational advantages. More specifically, the project topic—respect for teachers and parents—requires students to select examples of everyday conduct, justify their choices using moral concepts, and communicate those choices through digital posters. These tasks make the integration relevant to Morality instruction; however, the present questionnaire measures learning interest, not demonstrated changes in moral behavior. Conceptually, the essential-question stage may invite initial attraction; planning and visual design may support enjoyment; group development and presentation may elicit involvement; and monitoring or revision may demand attention. These proposed connections explain the instructional rationale but were not tested as separate causal

pathways. Four meetings can capture short-term, situation-specific interest; they cannot establish sustained personal interest or character change.

Prior research has examined project-based instruction, technology-assisted teaching, and learner engagement, yet the evidence cited here does not isolate the combined use of Canva and PjBL in Morality instruction classrooms or specifically compare their effects on the four interest indicators. This study consequently addresses a limited, context-specific question: how the combined sequence was conducted and how questionnaire scores changed within the same madrasah group. Its three objectives are to describe implementation, compare pretest and posttest learning interest, and evaluate the statistical significance of the paired difference. Because neither a control group nor separate Canva and PjBL conditions were included, the study does not establish superiority over other teaching models or determine the independent contribution of either component.

The significance of this research lies in its potential theoretical and practical contributions. Theoretically, it extends discussions concerning student-centered learning, digital instructional media, and interest development within Islamic education. Practically, its findings may provide teachers with evidence-based considerations for designing interactive, creative, and contextually relevant learning activities. By examining Canva-assisted PjBL at MAS Al-Ittihadiyah Bromo, this study seeks to contribute to instructional innovation while supporting students' engagement with Islamic moral values and meaningful religious learning experiences.

METHOD

This study employed a quantitative approach using a pre-experimental research method with a one-group pretest–posttest design. This design was selected to examine changes in students' learning interest before and after implementing the Canva-assisted Project-Based Learning (PjBL) model in Islamic Creed and Morality instruction. The research design involved one experimental group without a control group, represented as O_1–X–O_2, where O_1 indicates the pretest, X represents the instructional intervention, and O_2 denotes the posttest.

The research was conducted at MAS Al-Ittihadiyah Bromo, Medan, North Sumatra, Indonesia, during the 2025/2026 academic year, with data collection reported from June 13 to June 25, 2026. The recorded school population was 66 students across grades X–XII. Grade XII had graduated, leaving 53 eligible students in grades X and XI. All eligible students were initially targeted; the analysis, however, includes only the 43 students who completed both measurements and the activities (30 from grade X and 13 from grade XI), equivalent to 81.13% of the accessible population. Ten students were excluded from the paired analysis. The available source does not state whether these students missed a questionnaire, a project meeting, or another component, nor whether the exclusions were associated with initial learning interest. Their reasons and pretest characteristics should be verified from attendance and response records before publication. Accordingly, the sampling description is more precisely a complete-case analysis of an attempted census than a completed total-population sample.

The independent variable was the Canva-assisted PjBL model, while the dependent variable was students' learning interest. The intervention consisted of four instructional meetings, each lasting

90 minutes. Students worked collaboratively in groups of four or five to develop digital posters and infographics concerning respect for teachers and parents. Instruction followed six stages: formulating essential questions, planning projects, scheduling activities, monitoring progress, presenting project outcomes, and evaluating learning experiences. The intervention was a combined teaching package, with the same participants experiencing both PjBL activities and the Canva design platform. The study cannot distinguish which component, or which aspect of ordinary classroom interaction, was responsible for the observed score differences.

Learning interest was measured using a five-point Likert questionnaire covering enjoyment, attraction, involvement, and attention. The source reports an initial screening of 12 candidate items using 30 respondents, with eight items retained against the stated Pearson critical value of $r = 0.361$ (5% significance, $n = 30$). It separately reports eight item correlations ranging from 0.386 to 0.752 against $r = 0.301$ for $n = 43$, together with Cronbach's alpha = 0.775. The two different sample sizes should be treated as distinct reported stages until the item-analysis output and participant overlap are confirmed. The final eight-item score ranges from 8 to 40. The manuscript does not supply the wording of the retained items or their allocation across the four indicators; therefore, content coverage and the indicator percentage denominators cannot be independently checked. Before resubmission, the authors should provide the retained-item list and the source of the item-validity and reliability calculations.

Descriptive statistics summarize the 43 complete pretest–posttest pairs. The report includes Shapiro–Wilk results for the pretest scores ($p = 0.110$) and posttest scores ($p = 0.010$). For choosing a paired-samples t test, however, the relevant distribution is that of each student's posttest-minus-pretest difference, whose normality has not been reported. The existing Wilcoxon signed-rank result ($Z = -4.779$, $p < .001$) is therefore retained as a reported within-group comparison; its selection should be checked against the paired-difference distribution and the signed-rank assumptions. The N-gain value of 0.3351 is presented as the reported mean of individual normalized gains, not recalculated from aggregate means. Such gain indices are commonly used for achievement scores and should be interpreted cautiously for an attitudinal scale with a fixed upper bound of 40. No causal comparison between teaching approaches was undertaken.

Methodological limitation the study involved four meetings without a comparison group and analyzed 43 of 53 eligible students. Consequently, selection through complete-case inclusion, testing effects, maturation, and contextual influences cannot be ruled out. These limitations restrict causal interpretation and generalization beyond the participating students.

RESULTS AND DISCUSSIONS

Implementation of Canva-Assisted Project-Based Learning in Islamic Creed and Morality Instruction

The implementation of Canva-assisted Project-Based Learning (PjBL) at MAS Al-Ittihadiyah Bromo, Medan, involved 43 students from grades X and XI during the 2025/2026 academic year. The instructional intervention was conducted across four meetings, each lasting 90 minutes, focusing on the topic of respect for teachers and parents. This topic was selected because it represents an essential

component of Islamic moral education and provides opportunities for students to connect religious principles with everyday behavior.

The instructional process followed six stages: formulating essential questions, planning projects, scheduling activities, monitoring project development, presenting completed products, and evaluating learning experiences. Students were organized into collaborative groups of four or five members and assigned to create digital posters and infographics using Canva. Their projects required them to identify relevant Islamic moral values, organize information, develop visual representations, and communicate their understanding through presentations.

Classroom observations indicated that students participated in project planning, collaborative discussions, digital content development, and presentations. Canva provided a platform for combining written explanations, illustrations, and visual design elements into educational products. However, the available observation records did not provide numerical implementation scores; therefore, the degree of instructional fidelity cannot be expressed as a percentage. Observation records in the available manuscript do not present a standardized fidelity rubric or quantified implementation score. Accordingly, the description establishes that activities were reported as conducted, not that each of the six project stages was implemented to a verified level of fidelity. The reported observations establish participation in planning, discussion, design, and presentation, but the available records do not enumerate completed group products, document role sharing for all pupils, or evaluate each of the six PjBL phases against a uniform checklist. These aspects should not be presented as verified implementation percentages. Moreover, a completed poster illustrates participation in a learning task; it is not direct evidence of internalized moral conduct.

In the 43 complete paired observations, the reported pretest mean was 27.4651 and the posttest mean was 32.6512, conventionally rounded to 27.47 and 32.65. The mean difference was 5.1861 points. The reported mean of individually calculated normalized gains was 0.3351; this need not equal the normalized gain computed only from the two group means. The individual-level calculation cannot be independently checked without the original paired scores.

These findings suggest that the instructional intervention was associated with increased learning interest, although the research design does not permit the observed improvement to be attributed exclusively to the intervention.

The implementation findings can be interpreted through the theoretical characteristics of project-based instruction. Blumenfeld et al. (1991) emphasized that project-based learning promotes motivation by connecting academic knowledge with meaningful tasks and sustained inquiry. Similarly, Bell (2010) described PjBL as an instructional approach that supports collaboration, creativity, communication, and independent learning.

In the present study, students were required to transform Islamic moral concepts into digital products. This process potentially encouraged them to move beyond memorizing religious principles toward interpreting and communicating their practical significance. Such activities correspond to the constructivist orientation of PjBL, in which students actively develop understanding through investigation and meaningful experiences.

Kokotsaki et al. (2016) identified student autonomy, collaboration, appropriate instructional support, and authentic learning activities as important characteristics of successful PjBL implementation. These characteristics were reflected in the intervention structure, particularly through collaborative project development and teacher guidance.

The integration of Canva also introduced a technological dimension into the learning process. Mayer and Moreno (2003) explained that multimedia environments can support learning when visual and verbal information are organized according to cognitive principles. Therefore, Canva's educational contribution should be understood not merely as visual attractiveness but as its capacity to facilitate the organization and communication of meaningful information.

The intervention also encountered practical challenges. Unstable internet connectivity occasionally disrupted digital design activities, while differences in students' technological familiarity required additional instructional assistance. These challenges illustrate the importance of technological accessibility and teacher support in digital learning environments. Schindler et al. (2017) similarly emphasized that technology contributes to student engagement when its implementation supports meaningful instructional interaction.

The research findings therefore indicate that Canva-assisted PjBL was feasible within the investigated madrasah context and was accompanied by positive changes in students' learning interest. Nevertheless, the moderate normalized gain suggests that instructional improvement remained possible. Longer implementation periods, differentiated technological assistance, and improved internet infrastructure may strengthen future applications.

Overall, the implementation demonstrates how project-based activities supported by digital media can provide an alternative instructional approach for Islamic Creed and Morality education while maintaining the subject's emphasis on religious understanding and character development.

Students' Learning Interest Before and After the Implementation of Canva-Assisted Project-Based Learning

The second research objective examined changes in students' learning interest before and after the implementation of Canva-assisted PjBL. Learning interest was measured using eight valid questionnaire items representing four indicators: enjoyment, attraction, involvement, and attention. The instrument employed a five-point Likert scale, producing possible total scores ranging from 8 to 40.

The descriptive analysis involved 43 students who completed both measurements. The findings demonstrated an increase in learning interest across all four indicators.

Table 1. Students' Learning Interest by Indicator

Indicator	Pretest (%)	Posttest (%)	Change (pp)
Enjoyment	68.84	87.91	+19.07
Attraction	72.33	81.63	+9.30
Involvement	66.74	77.67	+10.93
Attention	77.21	84.42	+7.21
Reported overall average	71.28	82.91	+11.63

Source: Reported research data, 2026. pp = percentage points. The row labeled "reported overall average" is the unweighted average of the four indicator percentages, not necessarily the percentage corresponding to the eight-item summed mean score; the two summaries should not be conflated. Raw item scores are required to verify the aggregation. The simple average of the four displayed pretest indicator percentages is 71.28% after rounding, while their posttest average is 82.91% after rounding. These values describe equal weighting of the four displayed indicators. They are not identical to expressing the summed-score means (27.4651 and 32.6512) as a percentage of the maximum possible 40 points, which would yield approximately 68.66% and 81.63%. The original item-level scoring and any reverse-coded items must be checked before one measure is used as the definitive overall percentage.

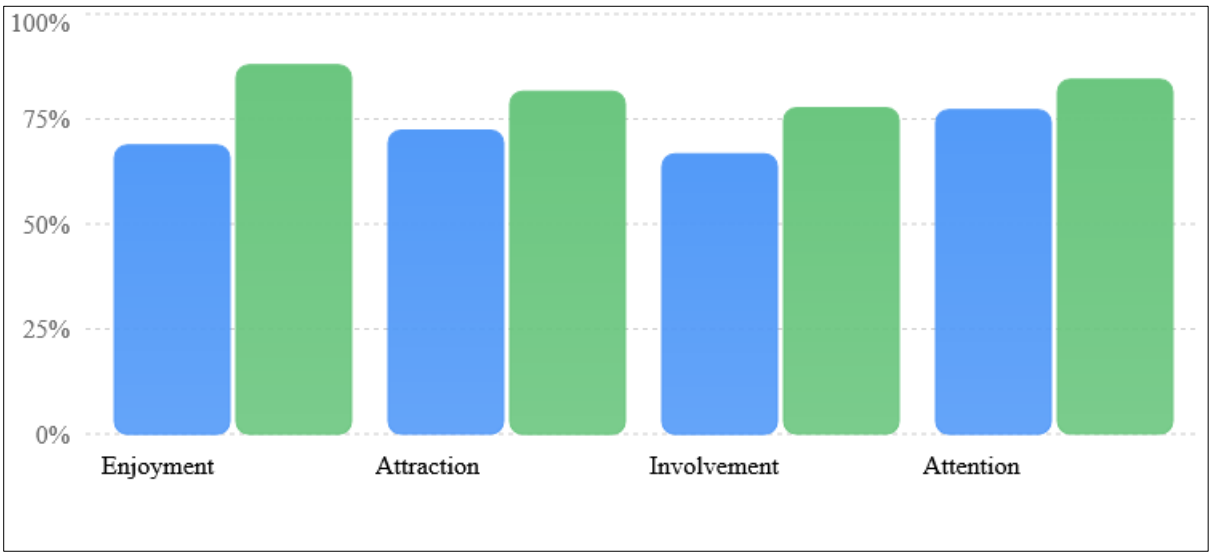


Figure 1. Learning interest before and after the intervention
Percentage by learning-interest indicator

Enjoyment demonstrated the largest improvement, increasing by 19.07 percentage points. Student involvement increased by 10.93 percentage points, while attraction improved by 9.30 percentage points. Attention demonstrated the smallest increase, at 7.21 percentage points, although its posttest percentage remained relatively high. The indicator percentages are descriptive summaries. Before interpreting them as precise changes in underlying interest, the author should confirm how each indicator percentage was calculated, including the item counts and possible-score denominators. The unequal differences, especially the 19.07-point increase in enjoyment compared with the 7.21-point increase in attention, caution against describing a uniform change across all domains. The high posttest percentages may also constrain further measured increases because the response scale has an upper limit. Descriptive statistics provided additional evidence of changes in learning interest.

Table 2. Descriptive Statistics of Learning Interest Scores

Statistic	Pretest	Posttest
Sample size	43	43
Mean	27.4651	32.6512
Minimum	20	26
Maximum	36	38
Standard deviation	4.5374	3.0070
Variance	20.588	9.042

The unrounded summed-score mean increased by 5.1861 points (27.4651 to 32.6512), equivalent to about 18.88% of the initial mean. The standard deviation declined from 4.5374 to 3.0070, indicating less dispersion among the 43 paired respondents. The summary percentage for the eight-item total score should be distinguished from the separately reported average of four indicator percentages in Table 1.

These findings suggest that students demonstrated more favorable learning interest following Canva-assisted PjBL activities. The improvement across all four indicators indicates that the intervention was associated with changes in several dimensions of students' classroom experiences.

The substantial increase in enjoyment is particularly noteworthy. Hidi and Renninger (2006) explained that interest develops through interactions between situational stimulation and sustained personal engagement. Creative digital projects may provide situational experiences that attract students' attention and encourage positive emotional responses.

Similarly, Schiefele (1991) identified interest as an important motivational construct associated with meaningful learning and sustained engagement. The opportunity to create digital educational products may have increased students' perceived relevance of Islamic moral concepts.

The improvement in involvement is consistent with the multidimensional framework of student engagement proposed by Fredricks et al. (2004). Project activities required students to participate in discussions, complete assigned responsibilities, and communicate their learning outcomes.

Harackiewicz et al. (2016) further emphasized that educational interest can be strengthened when learning activities establish meaningful connections between academic content and students' experiences. In this investigation, the topic of respect for teachers and parents provided an accessible context for interpreting Islamic moral teachings.

However, the differences between indicators require careful consideration. Although involvement improved, its posttest percentage remained below those of enjoyment, attraction, and attention. This suggests that students' positive emotional responses did not necessarily translate into equally strong behavioral participation.

Additionally, the reduction in score variability suggests greater consistency in students' reported interest, although individual differences remained evident. The results

therefore support the interpretation that the intervention was associated with broader improvements in learning interest rather than uniformly high engagement among all participants.

These findings provide empirical support for further investigating digitally supported PjBL within Islamic education, particularly through instructional activities combining creative expression, collaborative learning, and religious character development.

Statistical Significance and Magnitude of Changes in Students' Learning Interest Following Canva-Assisted Project-Based Learning

The third research objective was to determine whether students' learning interest differed significantly before and after the implementation of Canva-assisted PjBL in Islamic Creed and Morality instruction. Inferential statistical analysis was conducted using data from 43 students who completed both the pretest and posttest measurements. The analysis included instrument validity and reliability testing, normality assessment, the Wilcoxon signed-rank test, and normalized gain analysis.

The source describes an initial item check among 30 respondents, using a critical Pearson r of 0.361, and reports eight retained items. It also reports correlations of 0.386–0.752 for the eight items with r = 0.301 at n = 43, and Cronbach's alpha of 0.775. Because these figures refer to potentially different stages of instrument evaluation, the manuscript requires confirmation of which respondents were included in each calculation and whether the instrument was tested separately from the analytical sample. The reported reliability value supports acceptable internal consistency, but does not by itself demonstrate content validity.

Shapiro–Wilk tests were reported for the pretest distribution (p = 0.110) and posttest distribution (p = 0.010). Because a paired t test concerns the distribution of within-student differences, these separate tests are insufficient to determine whether the paired differences are normally distributed. The normality of the difference scores was not reported and needs to be checked against the original data. A definitive claim that the distribution of paired changes was nonnormal should therefore be deferred until the authors provide the difference-score diagnostics.

The study reports a Wilcoxon signed-rank test for the paired observations. Its reported result can be interpreted as evidence of change in the measured scores, but the methodological justification for preferring this nonparametric test over a paired t test should be verified using the paired differences.

Table 3. Wilcoxon Signed-Rank Test Results

Rank category	N	Mean rank	Sum of ranks
Negative ranks	2	14.75	29.50
Positive ranks	34	18.72	636.50
Ties	7	—	—
Total	43	—	—

Table 4. Hypothesis Testing and Normalized Gain

Statistical measure	Result
Wilcoxon Z	−4.779
Two-tailed significance	$p < .001$
Mean N-gain	0.3351
Minimum N-gain	−1.00
Maximum N-gain	0.85
N-gain standard deviation	0.36628
N-gain classification	Moderate

The Wilcoxon analysis demonstrated that 34 students (79.07%) obtained higher posttest scores, two students (4.65%) obtained lower scores, and seven students (16.28%) demonstrated unchanged scores. The reported test statistic was $Z = -4.779$, with $p < .001$, indicating a statistically significant difference between pretest and posttest learning interest scores. The signed-rank table contains 34 positive ranks, two negative ranks, and seven ties; these sum correctly to 43 observations. No control-group comparison was conducted, so the result should not be described as proof of the intervention's unique causal effect. Reporting the rank categories is useful here: 34 pupils improved, two declined, and seven were unchanged. The fact that nine pupils did not improve should be acknowledged when discussing variation in student responses. A paired effect size could be included only after the calculation method and test output are confirmed.

The report gives an average individual N-gain of 0.3351, with a range from −1.00 to 0.85 and a standard deviation of 0.36628. As the 43 individual pretest and posttest scores are not supplied, neither the gain formula nor its handling of negative and zero changes can be checked directly. The common individual formula $g = (\text{posttest} - \text{pretest})/(40 - \text{pretest})$ also assumes that the maximum of 40 is meaningful as a normalized ceiling for this interest questionnaire; it should not be interpreted as a proportion of moral development or learning achievement. The authors should verify each individual gain, the sample average, and the classification against the data sheet before retaining this statistic as a central finding.

The statistically significant Wilcoxon result provides evidence that students' learning interest changed following the instructional intervention. The predominance of positive ranks further indicates that the observed difference was primarily associated with higher posttest scores rather than declining learning interest.

Nevertheless, statistical significance must be distinguished from causal effectiveness. Because the research employed a one-group pretest–posttest design without a comparison group, alternative explanations, including testing effects, maturation, and contextual influences, cannot be excluded. Accordingly, the findings demonstrate a significant improvement associated with the intervention rather than definitive evidence of an isolated causal effect.

The findings are consistent with research demonstrating the educational potential of project-based instruction. Chen and Yang (2019) reported favorable academic outcomes associated with PjBL, while Wurdinger et al. (2007) documented students' experiences with project-based

activities in school environments. Although these studies examined different outcomes and contexts, they provide theoretical support for the instructional value of authentic projects.

The results can also be interpreted through self-determination theory. Deci and Ryan (2000) emphasized that autonomy, competence, and relatedness contribute to motivational development. Collaborative digital projects may support these psychological needs by providing opportunities for decision-making, skill development, and interaction.

Furthermore, Tamim et al. (2011) and Sung et al. (2016) demonstrated that educational technologies can support learning outcomes when integrated appropriately into instructional activities. However, technology alone does not guarantee improvement; its effectiveness depends on instructional design, accessibility, and students' engagement.

The moderate normalized gain indicates that improvements were meaningful but not uniformly substantial. Variations in technological proficiency, limited intervention duration, and internet connectivity may have influenced students' experiences, although the available data do not establish these factors as statistically significant predictors.

Taken together, the source data indicate a statistically significant difference in measured learning-interest scores between the two observations (Wilcoxon $Z = -4.779$, $p < .001$). The reported mean N-gain is 0.3351, pending verification of the underlying individual calculations. These results describe improvement among 43 complete cases following four meetings of Canva-assisted PjBL; without a control group or complete attrition information, the distinct causal contribution of the model and its wider effectiveness remain unestablished.

CONCLUSIONS

The four-session Canva-assisted Project-Based Learning sequence in Islamic Creed and Morality was followed by higher learning-interest questionnaire scores among 43 students with complete paired observations at MAS Al-Ittihadiyah Bromo, Medan. The reported mean increased from 27.47 to 32.65, and the Wilcoxon signed-rank test indicated a statistically significant within-group difference ($Z = -4.779$, $p < .001$). Of the 43 students, 34 showed higher scores, two showed lower scores, and seven had unchanged scores. The reported mean N-gain was 0.3351, but its calculation and indicator percentage denominators require verification from individual responses. The findings concern short-term changes in measured learning interest and cannot establish that the combined intervention caused the change, that Canva contributed independently, or that students' moral behavior improved. The absence of a control group, incomplete data for ten of the 53 eligible students, and unquantified implementation fidelity limit interpretation and transferability. Future studies should document participant flow, item-level scoring, observation records, and the durability of change in a controlled design.

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