

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research employed a quantitative pre-experimental design, specifically a One-Group Pretest-Posttest design. This design was selected for its practicality within the constraints of a single, intact classroom setting, where the establishment of a separate control group was not feasible given the school's organizational structure and time constraints. In this design, a single group of participants is measured before (pre-test) and after (post-test) the administration of a treatment, with the difference between the two measurements interpreted as the effect of the treatment (Creswell & Creswell, 2023).

A quasi-experimental design incorporating a separate control class, such as the two-group designs employed in several of the previous studies reviewed in Chapter II, was considered during the planning stage of this research. However, SDN Rancatungku 01 has only a single fifth-grade class, meaning that the formation of a comparable control group would have required either splitting the existing class, which risked disrupting the school's regular academic schedule and instructional continuity, or recruiting a fifth-grade class from a different school, which would have introduced additional confounding variables related to differences in school environment, teacher characteristics, and student population that could not be adequately controlled given the scope and resources of an undergraduate thesis. The one-group pretest-posttest design was therefore judged the most methodologically defensible option available within these practical constraints, notwithstanding the limitations regarding causal inference that this design entails and that are discussed further in Chapter IV.

The overall research procedure can be represented schematically as $O_1 \times O_2$, where O_1 denotes the pre-test measurement of students' learning interest, X denotes the treatment involving the implementation of Articulate Storyline 3 media, and O_2 denotes the post-test measurement of students' learning interest following the treatment.

It is important to acknowledge that, as a pre-experimental design, the absence of a control group means that external influences, such as maturation, practice effects from repeated testing, or incidental classroom conditions, cannot be entirely ruled out as alternative explanations for observed changes. This limitation is discussed further in Chapter IV. Nevertheless, this design remains a widely accepted and practical approach for investigating instructional effects within real classroom settings where randomization or the formation of a control group is administratively or ethically constrained.

This research was conducted at SDN Rancatungku 01, a public elementary school that implements Kurikulum Merdeka and provides English as part of its local-content curriculum. The school was purposively selected as the research site based on preliminary observations conducted by the researcher, which revealed a pronounced pattern of low student interest during English lessons, as described in Chapter I. The fifth-grade classroom involved in this study was equipped with a single classroom projector, which was leveraged to deliver the Articulate Storyline 3 media without requiring individual student devices, making the intervention feasible within the school's existing digital infrastructure.

B. Location and Time of Research

This research was conducted at SDN Rancatungku 01, located in Bandung Regency, West Java. The study was carried out during the 2025/2026 academic year and was conducted offline, in the form of two face-to-face classroom meetings involving the fifth-grade students as described in Section D of this chapter.

C. Research Participants

The population of this research comprised the entire fifth-grade student cohort at SDN Rancatungku 01, totalling 32 students, consisting of 10 male students and 22 female students. Given the relatively limited size of this population, the researcher employed a total sampling technique, in which the entire population was included as the research sample. This approach ensured that every fifth-grade student at the school participated actively in the research, thereby eliminating

sampling bias that might otherwise arise from selecting only a subset of the population (Adeoye, 2023).

The decision to use total sampling was also motivated by the practical consideration that fifth-grade students at this school were organized into a single intact class, making it both feasible and appropriate to involve the entire cohort in the pre-test, treatment, and post-test procedures without disrupting the school's regular class scheduling.

Because the sample consisted of a single, intact classroom at one school, the 32 participants share a relatively homogeneous educational background, including exposure to the same teacher, curriculum, and school facilities prior to the study. While this homogeneity is advantageous for internal consistency, in that variation in learning interest scores is less likely to be confounded by differences in prior instructional quality across classrooms or schools, it simultaneously limits the extent to which findings from this sample can be generalized to fifth-grade students in other schools, particularly those with different socioeconomic backgrounds, teacher qualifications, or levels of prior exposure to digital learning tools. This trade-off between internal consistency and external generalizability is revisited in the limitations discussed in Chapter IV.

D. Research Instruments

The primary data collection instrument was an English learning interest questionnaire consisting of 10 items evaluated on a four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). The questionnaire was developed based on the framework proposed by Renninger & Hidi (2022), encompassing both affective and cognitive components of interest, including focused attention, increased curiosity, positive feelings, and willingness to engage. The questionnaire comprises 8 positive items and 2 negative items, distributed across four learning interest indicators, as detailed in Table 3.1.

Table 3. 1 Learning Interest Questionnaire Blueprint

Variable	Indicator	(+)	(-)	Total
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English Learning Interest	Attention	1, 9	5	3
	Participation	2, 6	10	3
	Enthusiasm	3, 7	-	2
	Curiosity	4, 8	-	2
Total		8	2	10

Source: Adapted from Renninger and Hidi (2022)

Validity

Since the questionnaire used in this study was developed independently rather than through formal expert-judgment validation, an empirical item validity analysis was conducted using corrected item-total correlation on the pre-test data ($n = 32$). Nine of the ten items yielded correlation coefficients above the commonly accepted threshold of $r = 0.30$, ranging from $r = 0.308$ to $r = 0.545$, indicating that these items adequately measured the same underlying construct as the overall scale. One item (P4, representing the curiosity indicator) yielded a slightly lower coefficient of $r = 0.258$; although below the conventional threshold, it was retained due to its direct theoretical relevance to the curiosity dimension, and this limitation is acknowledged as a consideration for refining the instrument in future studies.

Reliability

Following the validity analysis, Cronbach's Alpha was employed to examine the internal consistency reliability of the questionnaire. This analysis yielded a coefficient of $\alpha = 0.746$ for the pre-test data and $\alpha = 0.726$ for the post-test data. Since both coefficients exceed the standard acceptability threshold of $\alpha > 0.70$, the instrument was determined to possess adequate reliability for assessing fifth-grade students' learning interest across both administrations.

E. Data Collection Procedure

The research procedure was conducted systematically over two sequential meetings, each consisting of two 35-minute lesson periods, totalling 70 minutes per meeting. Both meetings addressed the same instructional unit, Unit 10 "I Like Playing Balap Karung," which covers vocabulary related to the months of the year, ordinal numbers, and the question word "when."

In the first meeting, an initial observation was conducted during a regular English lesson delivered by the classroom teacher using conventional lecture-based methods and the Kurikulum Merdeka textbook as the sole instructional medium. During this session, students appeared visibly less engaged and enthusiastic toward the material, consistent with the preliminary observations described in Chapter I. Immediately following this session, the pre-test questionnaire was distributed to measure students' baseline interest in learning English prior to any experimental intervention.

In the second meeting, the technological intervention was implemented by delivering an English lesson utilizing Articulate Storyline 3 media, projected via a single classroom projector rather than requiring individual student devices. The interactive content included an initial student-identity setup page, animated vocabulary presentations with integrated audio pronunciation, short animated sequences contextualizing ordinal numbers and calendar months within familiar visual scenarios, and an interactive quiz feature that provided immediate feedback after each student response. This session visibly increased students' enthusiasm and willingness to participate, in clear contrast to the conventional session observed during the first meeting. Upon completing the multimedia-integrated lesson, the post-test questionnaire, identical in content to the pre-test, was administered to evaluate any shifts in students' learning interest following the treatment.

Throughout both meetings, the researcher maintained consistent classroom conditions, including the same instructional unit, time allocation, and physical classroom setting, in order to minimize the influence of extraneous variables on the comparison between pre-test and post-test results.

Prior to the first meeting, the researcher coordinated with the classroom teacher and school administration to confirm the scheduling of both sessions within the regular weekly English lesson slot, ensuring that the intervention did not displace other subjects or require students to attend additional out-of-schedule sessions. The researcher also briefly introduced herself to the class before the first meeting to establish a degree of familiarity and reduce any novelty-related anxiety associated with an unfamiliar adult being present in the classroom, a step intended

to help ensure that students' questionnaire responses reflected their genuine interest in the lesson content rather than discomfort with the researcher's presence itself.

Both meetings were conducted by the same classroom teacher rather than by different instructors, in order to control for potential confounding effects associated with teacher identity, rapport, or delivery style. The researcher was present as an observer during both sessions to document classroom conditions and to assist with the technical operation of the projector and Articulate Storyline 3 media during the second meeting, but did not directly deliver instructional content, so as to preserve the classroom teacher's customary role in both the conventional and media-based sessions.

F. Data Analysis Techniques

Data analysis in this research proceeded in two main stages, both conducted using jamovi (version 2.7.31), an open-source statistical software widely used in educational and social science research. In the first stage, since the sample size fell below 50 respondents, a Shapiro-Wilk normality test was conducted to examine whether the pre-test and post-test scores followed a normal distribution, as this test is generally considered more appropriate than the Kolmogorov-Smirnov test for samples of this size (Habibzadeh, 2024). This step was necessary to determine the appropriateness of using a parametric or non-parametric statistical test in the subsequent hypothesis-testing stage.

Jamovi was selected over proprietary alternatives such as SPSS primarily because it is freely available under an open-source license, offers a comparable range of parametric and non-parametric statistical procedures relevant to this study, including the Shapiro-Wilk test, Paired Samples T-Test, and Cohen's d effect size calculation, and produces output in a format that is straightforward to interpret and report. This choice also supports the transparency and reproducibility of the present study's analysis, since jamovi's underlying computations are openly documented and any interested reader or future researcher can access the same software without a paid license to verify or replicate the statistical procedures reported in Chapter IV.

Once normality was confirmed, the second stage involved a Paired Samples T-Test to compare students' pre-test and post-test learning interest scores. Statistical significance was judged against a threshold of $\alpha = 0.05$ throughout the analysis; a resulting p-value below this threshold would lead to the rejection of the null hypothesis in favour of the alternative hypothesis. In addition to the T-Test, Cohen's d was calculated to determine the effect size, providing a standardized measure of the practical significance of the observed difference, independent of sample size.

Beyond the aggregate analysis, a supplementary Paired Samples T-Test was conducted separately for each of the four learning interest indicators, namely attention, participation, enthusiasm, and curiosity, in order to provide a more nuanced, indicator-level understanding of where the treatment exerted its strongest and weakest effects.

In addition to inferential testing, students' aggregate learning interest scores, which range from a minimum of 10 to a maximum of 40 given the 10-item four-point Likert scale, were also categorized into interpretive levels to facilitate a more descriptive understanding of the pre-test and post-test results presented in Chapter IV. The categorization used in this study is presented in Table 3.2.

Table 3. 2 Interpretation of Learning Interest Score Range

Score Range	Interpretation Level
10 – 17	Low
18 – 25	Moderately Low
26 – 33	Moderately High
34 – 40	High

The research hypotheses tested in this study are presented as follows:

H_0 : There is no significant effect of Articulate Storyline 3 media on fifth-grade students' interest in learning English at SDN Rancatungku 01.

H_a : There is a significant effect of Articulate Storyline 3 media on fifth-grade students' interest in learning English at SDN Rancatungku 01.