

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the research methodology employed to investigate how cognitive representations related to language learning are constructed in the Rise and Shine grade 1 English textbook through verbal and visual resources. The study adopts a qualitative descriptive design with document analysis as the primary method of data collection. The corpus consists of the scope and sequence section of the book and one purposively selected unit opener, which together represent the macro- and micro-level organization of cognitive demands in the material. Data were analyzed using a Systemic Functional–Multimodal Discourse Analysis (SF–MDA) framework, drawing on the transitivity system and visual grammar to examine how meaning is realized across modes. Learners’ cognitive characteristics based on Jean Piaget’s theory, knowledge types and Revised Bloom’s Taxonomy were used as interpretive lenses to classify language-related cognitive processes represented in the textbook. This chapter further elaborates the research design, data sources, selection criteria, data collection procedures, analytical framework, and trustworthiness strategies adopted in the study.

A. Research Design

This study uses a qualitative descriptive design with qualitative content analysis as the main approach. This design was chosen because the purpose of the research was to identify and describe the forms of cognitive representation that appear in the verbal and visual texts in the Rise and Shine grade 1 textbook. Qualitative content analysis provides a systematic procedure for examining the patterns, categories, and meanings that emerge in multimodal data (Ary et al., 2019). The data were analyzed in their original form without being transformed into numerical form, so that researcher can understand how linguistic and visual elements are arranged to form a particular representation. Thus, this design is in line with the research objectives which are descriptive and focus on mapping representation patterns, not evaluation.

In the analytical framework, this study uses Systemic Functional–Multimodal Discourse Analysis (SF–MDA) as the analysis lens. SF–MDA

combines Halliday's Systemic Functional Linguistics (specifically the transitivity system) with the visual grammar of Kress and van Leeuwen (Halliday & Matthiessen, 2004; Kress & Van Leeuwen, 2006). This combination allows the researcher to describe how processes, participants, and circumstances in verbal texts interact with visual elements such as vectors, salience, composition, and relationships between elements. The use of SF-MDA is relevant because early childhood textbooks are multimodal and convey information through text, illustrations, and layouts. Findings from linguistic and visual analyses are then interpreted descriptively based on Piaget's theory of cognitive development, Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001), and the categories of knowledge types. This interpretation aims to explain how the pattern of representation in book is related to the learning characteristics of grade I students, without assessing the suitability or effectiveness of the material. Thus, the design of this research is descriptive, interpretive, and theory-oriented to describe the way in which language and images form cognitive representations in the discourse of beginner English textbooks.

B. Research Setting and Research Object

1. Research Setting

This research was conducted in the context of English education for elementary school students in Indonesia by using the Rise and Shine grade 1 textbook as the main object of analysis. The book is published by Pearson Education and is used in a number of private schools and schools with bilingual programs in Indonesia, including several schools in Jakarta that have adopted it as a learning resource for English for Young Learners (EYL). The selection of the Rise and Shine book was based on several contextual considerations. Pearson is one of the international publishers that is widely referenced by schools that implement bilingual curricula, so this book reflects the practice of presenting global material adapted to the local context. In addition, the Rise and Shine series is designed specifically for early age readers, so its presentation relies heavily on a combination of verbal and visual text. This multimodal character makes the book in line with the use of

the SF–MDA framework in research that focuses on the construction of meaning through language and illustration.

The selection of grade 1 level is also an important aspect in the research setting of this research. Children aged six to seven years are at a stage of cognitive development characterized by a transition from pre-operational to concrete operational, when understanding relies heavily on visual representations and direct experience. At this stage, the first-grade textbook provides a rich context to describe how the verbal and visual elements are utilized in building cognitive representations. By placing the analysis in grade 1, the research can link linguistic and visual findings to the learning characteristics of students at the beginning of elementary school. The setting of this research also describes the use of international textbooks in the Indonesian educational environment and provides a space to explain how the representation of meaning is constructed for novice readers without drawing evaluative conclusions about the practice that takes place.

2. Research Object

The main source of data in this study is the Rise and Shine grade 1 textbook published by Pearson Education Limited. The book consists of six main units that introduce basic vocabulary, simple language structure, and communication skills through stories, dialogues, songs, thematic activities, and illustrations designed for early readers. In addition, there are three review units that function to consolidate the material in the previous units. All units are presented in a multimodal format through a combination of verbal text, illustrations, icons, colors, and visual layouts. This combination produces rich data to analyze from a linguistic and visual perspective. Thus, the Rise and Shine grade 1 book provides a corpus of discourse to map patterns of cognitive representation in the context of learning English for children.

The selection of grade 1 level is based on consideration of early childhood cognitive development. At this stage, children begin to develop representational skills, recognize basic categories, and understand simple relationships that still rely heavily on visuals, colors, actions, and concrete

shapes (McLeod, 2018). The material for grade 1 reflects the phase when cognitive representations are constructed explicitly through the combination of language and images. This makes the book relevant for analysis within a research framework that highlights the relationship between cognitive development and the way knowledge is presented. By focusing on these early levels, research can illustrate how the structure of the material is designed to support the way children build meaning in the early stages of elementary school. The selection of Pearson as a publisher is also relevant because this book is widely used in private schools with bilingual programs in Indonesia. With its reputation as an international publisher that consistently produces English for Young Learners materials, Pearson provides an example of a book that represent a global trend in the design of teaching materials for children. Through the object of this research, the verbal-visual patterns that appear in children's books can be described systematically, including how these patterns are related to the formation of cognitive representations in the discourse of beginner English textbooks.

C. Data Collection

The data in this study were collected through document analysis by examining the Rise and Shine grade 1 textbook published by Pearson Education Limited. Document analysis was chosen because it allows researchers to systematically examine written and visual materials that are already available without disrupting the ongoing learning context (Bowen, 2009). In qualitative research, document analysis is commonly used to identify patterns of meaning, categories of representation, as well as ideological tendencies embedded in teaching materials, including textbooks (Ary et al., 2019).

Unlike previous studies that analysed the entire learning units, this study purposively limits the data corpus to two main types of book sections, namely (1) scope and sequence pages and (2) a single unit opener page selected theoretically. The data selection was done intentionally (purposive sampling) by considering its relevance to the research objectives, namely to describe how

cognitive representations are constructed and organized through verbal and visual texts in English textbooks for early learners (Cohen et al., 2018).

The scope and sequence pages were chosen as the first data source because this section represents the macro-cognitive design of the entire book. The scope and sequence not only display the sequence of topics and linguistic materials but also reflects how knowledge is organized progressively, from the introduction of vocabulary, language structures, to the communicative functions that students are expected to master. By analyzing this section, the study can identify general trends in the distribution of cognitive demands designed by the book's authors before students directly engage with the learning activities in each unit.

The second data source is a single unit opener page selected from Unit 5 (Nature Around Us). This unit was chosen not merely because of its theme or visual completeness, but because it cognitively represents an important transition point in the book. Unlike the earlier units, which focus more on introducing and labelling objects separately, the Unit 5 opener begins to require students to build relationships between concepts, such as linking animals to their habitats and recognizing simple categorization patterns. Thus, Unit 5 is seen as an early representation of the shift in cognitive demands from object-based recognition to relational knowledge organization, which aligns with the characteristics of children's cognitive development at the transition stage toward concrete operational thinking.

Focusing on a single opener unit was chosen to maintain the depth of analysis and consistency of interpretation. In textbook studies, concentrating analysis on meaning-dense segments such as the opener unit is a commonly used strategy to allow for in-depth multimodal reading without having to cover the entire content of the book (McGrath, 2013; Schreier, 2013). With a controlled data scope, this study can examine in detail how verbal and visual texts work together in constructing the cognitive representations offered to early learners.

At the data collection stage, each verbal element—such as titles, key vocabulary, simple expressions, and brief instructions—as well as each visual

element—such as main illustrations, layout composition, colors, dominant objects, and relationships between elements—are identified and recorded in a coding table. The preparation of the coding table is carried out in accordance with the principles of qualitative content analysis, which emphasize the importance of an explicit categorization system before further analysis is conducted (Miles et al., 2014; Schreier, 2013). Each entry includes the data location, the form of the verbal or visual element, and an initial description of its representational function within the learning cognitive context.

This procedure allows multimodal data to be systematically organized so that analysis based on Systemic Functional–Multimodal Discourse Analysis (SF–MDA), which combines the transitivity system with visual grammar, can be conducted in a directed and consistent manner (Halliday & Matthiessen, 2004b; Kress & Van Leeuwen, 2006). With this approach, the research remains aligned with its descriptive purpose, which is to map the patterns of cognitive representation constructed through the combination of text and images in the book *Rise and Shine Grade 1*, without intending to make a normative assessment of the quality or effectiveness of the textbook.

D. Data Analysis

The data analysis in this study is carried out using the Systemic Functional–Multimodal Discourse Analysis (SF–MDA) framework to examine how verbal and visual texts work together in building cognitive representations on selected pages of the *Rise and Shine grade 1* textbook. This framework integrates Halliday and Matthiessen's (2004) Systemic Functional Linguistics with the Grammar of Visual Design developed by Kress & Van Leeuwen (2006), so that language and images are understood as complementary semiotic resources. In addition, the interpretation of the results of the analysis is associated with Bloom's Revised Taxonomy and its knowledge dimensions (Anderson & Krathwohl, 2001), and later will be interpreted using Piaget's theory of cognitive development. Through this integrated framework, the contributions of language, images, colors, and layout to the meanings gained by early readers can be systematically mapped, as summarized in Figure 6.

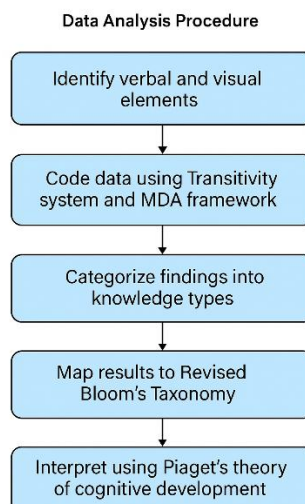


Figure 1. Data Analysis Procedure

The first stage of analysis is carried out on the verbal mode through the transitivity system in Functional Systemic Linguistics (Halliday & Matthiessen, 2004). Each clause in the selected pages is identified and classified according to the type of processes—material, mental, relational, behavioural, verbal, or existential—along with its participants and circumstances. This mapping allows researcher to see how experiences, actions, and relationships are realized linguistically in the form of clauses. From these configurations of processes and participants, patterns of cognitive representation can be described, whether the text primarily builds activities of naming, grouping, or sequencing actions. This analysis remains descriptive so that the results are understood as an illustration of how language is used in books, rather than as a "good" or "not good" benchmark.

The next stage is the analysis of visual modes based within the theory of Multimodal Discourse Analysis (Kress & Van Leeuwen, 2006) which includes representational, interactional, and compositional meanings. At this stage, the main illustrations, character placement, direction of view, social distance, and layout settings are examined to see how images construct actions, relationships, and information emphasis. The analysis also takes into account the use of colour, including basic colours that are perceptually salient and help emphasise information. The researcher also refers to Children's Book Illustration

Guidelines issued by the Ministry of Education and Culture of the Republic of Indonesia as an interpretive reference for aspects of character proportion, colour use, and layout regularity. The guidelines are used as a reference for meaning, not as a basis for assessing book design, so that the analysis remains consistent with the nature of descriptive research.

The findings from verbal and visual analysis are then categorized into the types of knowledge according to Anderson & Krathwohl (2001), namely factual, conceptual, procedural, and metacognitive knowledge. This classification helps identify the structure of knowledge offered on the opening page of the unit and how it is organized through verbal and visual modes. Furthermore, the mapped representation patterns are then related descriptively to the levels of cognitive processes in Bloom's Revised Taxonomy—specifically remembering, understanding, and applying—which are considered most relevant to the cognitive development characteristics of grade 1 students. This approach allows researchers to describe the types of thought processes facilitated by the textbook.

The final stage of analysis involves interpreting the findings in light of Piaget's theory of cognitive development, particularly the characteristics of the transition from the preoperational to the concrete operational stage. This perspective is used to understand how 6–7-year-olds process information presented through text and images. The patterns of representation that have been identified—both in terms of linguistic processes, knowledge structures, and visual support—are read in relation to the children's ability to group, recognize simple relationships, and construct meaning from concrete experiences. This interpretation is maintained in a descriptive frame so that the focus is on matching the representation pattern with the general characteristics of development, not a normative assessment of the book.

Overall, the analysis was carried out by combining linguistic mapping, visual reading, knowledge organization, and the theoretical foundation of cognitive development. This combination provides a comprehensive overview of how cognitive representation is constructed multimodally in the Rise and Shine grade 1 textbook. The approach also allows the relationships between

language, images, and characteristics of child development to be analyzed consistently within a single, unified framework.

E. Research Schedule

The research time in question is the time span for the implementation of the research as outlined in the form of a table, as follows:

Description	September/ 2025	October/ 2025	November /2025	December /2025	February/ 2026	April /2026
Research Proposal writing						
Research Proposal examination						
Data Collection						
Data Analysis						
Report						
Thesis Result Seminar						
Thesis Examination						