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THE FUNCTIONS OF INFOGRAPHICS IN A NATIONAL PUBLISHED TEXTBOOK

[FUNGSI INFOGRAFIS DALAM BUKU TEKS YANG DITERBITKAN SECARA NASIONAL]

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Abstract

The presence of diagrams or infographics in English textbooks is believed to support Indonesia's curriculum goal of communication using multimodal resources. However, the functions of infographics in language learning have not been well understood. This study examines how infographics accompanied by verbal texts can convey visual metalanguage. The images from an English textbook designed for X grades were used as the basis for this study. Drawing on the theories of Visual Design Grammar (Kress & Leeuwen, 2006) and Systemic Functional Linguistics (Halliday & Matthiessen, 2004, 2013), this study explores the images and instructions in infographics. The systemic functional approach to multimodal discourse analysis (SF-MDA) was employed. The results of this study reveal the functions of the images in the textbook and how metalanguage competencies can support the teaching of multimodal texts in a representative and compositional manner. The study also provides several pedagogical implications for teachers in teaching diagrammatic images.

Keywords: Grammar of visual design; infographic; systemic functional linguistics

Abstrak

Kehadiran diagram atau infografis dalam buku teks bahasa Inggris diyakini mendukung tujuan kurikulum Indonesia, komunikasi menggunakan sumber daya multimodal. Namun, fungsi infografis dalam pembelajaran bahasa belum banyak diketahui. Studi ini mengkaji bagaimana infografik yang disertai dengan teks verbal dapat menyampaikan metabahasa visual. Gambar-gambar dari buku teks bahasa Inggris, yang dirancang untuk kelas X, dijadikan sumber penelitian ini. Dibangun di atas Grammatika Desain Visual (Kress & Leeuwen, 2006) dan Linguistik Fungsional Sistematik (Halliday & Matthiessen, 2004), penelitian ini mengeksplorasi gambar dan instruksi dalam diagram dan infografis. Pendekatan yang digunakan adalah pendekatan fungsional sistemik dengan analisis wacana multimodal (SF-MDA). Hasil penelitian ini mengungkapkan fungsi gambar dalam buku teks dan bagaimana kompetensi metabahasa dapat membantu untuk mendukung pengajaran teks multimodal secara representatif dan komposisional. Studi ini juga memberikan beberapa implikasi pedagogis bagi guru untuk mengajar gambar diagram.

Kata Kunci: Gramatika desain visual; infografis; linguistik fungsional sistematik

Introduction

The latest Indonesia's *Kurikulum Merdeka* explicitly declares that one of the goals of English at school is to develop students' communicative competence with the various use of multimodal texts (Badan Standar, Kurikulum, Dan Asesmen Pendidikan, 2022). Consequently, English teaching materials are designed with multimodal resources, such as textbooks. Through these resources, teachers are hoped to communicate the meanings constructed in multimodal texts in their teachings. The teachings with multimodal resources are also expected to improve students' multimodal competence, which will lead to improving students' literacy skills. This is in line with Yi and Angay-

Crowder's (2016) argument that it has become a usual phenomenon that multimodal practices have influenced people to do their daily activities. Responding to this situation, when teaching is supported with technology and digitalized tools, teachers become are considered to be familiar to use multimodal resources in their teaching, such as PowerPoint presentations, digital books, and video websites.

The increasing representation of images is now found in students' textbooks (Bezemer & Kress, 2008). These images are believed to carry meanings. One of the image representations in the English textbook is diagrams. Diagrams refer to graphs, tables, charts, drawings, illustrations, and even pictures (Leeuwen et al., 2015). There are several reasons why diagrams are pedagogically important. First, diagrams are considered effective learning means (Leeuwen et al., 2015; Winn et al., 1991). This effectiveness of diagrams is due to diagram's multiple formats of the information presented to trigger verbal and visual processing (Mayer, 2003). In addition, diagrams can help students to establish abstract ideas to be more concrete (Ainsworth & Loizou, 2003). Also, Larkin and Simon (1987) and Leeuwen, Manalo, and Meij (2015) argued that processing in diagrams, such as the placement and lay-outing of the components of diagrams, makes them easier for readers to find relevant information compared with verbal processes. It is said that diagrams compact students' problem-solving (Ainsworth & Loizou, 2003; Hembree, 1992; Pedone et al., 2001). To this problem-solving, Hembree (1992) highlighted that diagrams could be the most effective strategies for problem-solving, in which diagrams became the problem representation. Regarding the importance of diagrams, several studies revealed some problems with diagrams. First, teachers do not explicitly teach how to interpret diagrams (Kragten et al., 2013). In addition to interpreting diagrams, students must be situated to be consciously aware of the diagram representations and the limitations of diagrams (Gilbert, 2005; Winn et al., 1991). Another problem is that students have difficulties interpreting diagrams (Bowen, G & Roth, 2002; Chittleborough & Treagust, 2008; Mathai & Ramadas, 2009; Scho et al., 2002).

In terms of visual images, in general, studies mainly focus on visual elements, such as visuals in science textbooks (Hermawan & Rahyono,

2019; Koutsiko et al., 2021; Nur'graha & Hermawan, 2020; Sugianto, 2021). The studies of visuals in general are concerned with visual ideational meanings (Nur'graha & Hermawan, 2020) and verbal interpersonal meanings (Hermawan & Rahyono, 2019; Koutsikou et al., 2021). In addition, some studies also investigated the multimodal aspects of verbal and visual modes in terms of verbal and visual ideational intersemiotic complementarity (Sugianto, 2021), and interpersonal intersemiotic complementarity (Koutsikou et al., 2021). In language teaching materials, visual textbook analysis was concerned with the investigation of social justice deconstruction (Smith, 2021), multicultural values, and cultural representation (Derakhshan, 2021; Setyono & Widodo, 2019; Stranger-Johannessen, 2015), representation of native and non-native speakers and culture inclusion issues (Motschenbacher, 2019), gender representation (Elmiana, 2019; Keles et al., 2021; Setyono, 2018), internationalization of English (Stranger-Johannessen, 2015), and the use of textbook as the bridge to others' culture (Joo, Chik & Djonov, 2020). In the Indonesian context, studies on visual and verbal elements of English textbooks were conducted and aimed at exploring interpersonal and ideational meanings of visual images and verbal language (Damayanti, 2014; Sugianto, Prasetyo & Asti, 2022). In their studies, Damayanti (2014) argued that an imbalance between males' and females' roles existed in textbooks, and Sugianto, Prasetyo, and Asti (2022) argued that there is a cohesion structure between visual images and verbal text. However, by considering the studies aforementioned, studies of diagrammatic images in language textbooks were never done. Therefore, this research was an attempt to fill in the gaps by investigating the visual and verbal metalanguage of diagrams in a selected textbook, designed for Indonesia's *Kurikulum Merdeka*. Thus, this research is led by the question "What are functions of the infographics in a national textbook?".

Framework

This study was inspired by the metalanguage theory of Halliday's systemic functional linguistics and grammar of visual design (Kress & Leeuwen, 2006). A metalanguage can be defined as a language to describe and represent the language itself (Jaworski et al., 2012; Schleppegrell, 2017). In systemic functional linguistics (SFL),

metalanguage refers to language about the language itself based on the SFL social semiotic theory theorizing that language is one of the meaning-making resources in which the language realizes the experience, the constructed message, and social interaction enactment (Halliday & Matthiessen, 2004, 2013; Halliday, 1985). *Grammar*, in SFL, is viewed as not a set of rules to be learned to produce correct sentences, yet it is a resource for meaning-making with language. Through language *grammar* as a resource for meaning-making*,* SFL proposed that the language is to satisfy the needs of humans, later said a *social function*. This means when a language user wants to make meaning through language, she will choose the meaning that is suitable to her social context at the time, and the language she chooses is different from another language in a different context (Emilia & Hamied, 2015). In other words, SFL, through *functional grammar,* aims at developing people's language awareness and features to achieve their purpose in academic life and everyday activities (Bezemer & Jewitt, 2009; Halliday & Matthiessen, 2004, 2013; Jewitt et al., 2016; Schleppegrell, 2013, 2017). SFL underlies the function of language meta functionally. They are: (1) the ideational function of language to represent the human experience by the choice of lexicogrammar, known as the *field* of experience, (2) the interpersonal function to enact the personal relationship with other people, known as the *tenor* of social relationships, and 3) the textual function to build up sequence message or text, known as the *mode* of communication (Christie & Derewianka, 2008; Eggins, 2004; Emilia & Hamied, 2015; Halliday & Matthiessen, 2013; Matthiessen et al., 2010).

Grammar of Visual Design (Kress & Leeuwen, 2006, 2020) was inspired by Halliday's social semiotic theory of representation theorizing that signs are never isolated by the social context of the sign makers. In their work, Kress and Leeuwen (2006, 2020) provided the metalanguage of visual grammar design as systematic tools for analyzing the structural elements and intersemiotic semantic relations between modes for constructing meaning in specific social and cultural contexts. Their work attempted to criticize Barthe's proposition that the meaning of images is always dependent on verbal text (Bartes 1977, as cited in Kress & Leeuwen, 2006). Kress and Leeuwen adopted three metafunctional principles and believed that Halliday's metafunction works well with

other representations too, including images (Kress & Leeuwen, 2006, 2020; Liu & Qu, 2014; Papademetriou & Makri, 2015; Unsworth, 2006; Yang & Zhang, 2014). First, representational/ideational metafunction answers the question of how participants, circumstances, and activity are depicted. Second, the interactive/interpersonal metafunction answers how the visual images are related to the viewer/reader/audience. Third, textual/compositional metafunction is defined as the way of organization of representational and interactive elements into a meaningful whole.

The representational metafunction of images constitutes the nature of events, the objects and participants (animate or inanimate), the activities represented by participants, and the circumstances or the settings within which the representation is developed (Elmiana, 2019; Liu & Qu, 2014). Representationally, 'participants' are the 'represented people, places and things, and other abstract things. The 'processes' are the 'represented action' of the participants. Finally, the 'circumstances' are the setting of the action (Kress & Leeuwen, 2006, 2020). However, due to the scope of the study, this part will elaborate on the representational and compositional metafunctions

Based on representational metafunction, there are two structures of representational meaning; 'narrative' and 'conceptual' (Kress & Leeuwen, 2006, 2020). The 'narrative structure' refers to the representation in which the represented participants are doing something to or for each other, marked by the presence of vectors, created by visual elements in the form of an oblique line or strong diagonal line connecting the participants (Kress & Leeuwen, 2006, 2020). Based on the vectors, there are some 'processes' in the narrative structure. First, the 'action process' is the structure in which one participant, the 'actor', starts to create a vector (Kress & Leeuwen, 2006, 2020; Yang & Zhang, 2014). The action process is non-transactional when there is no goal of the action and transactional when the actor (represented participant) creates the vector to the goal/participant (Kress & Leeuwen, 2006, 2020; Yang & Zhang, 2014). Following, the 'reactional process' is the process where an 'eyeline' forms a vector by the glance direction of the represented participants (Kress & Leeuwen, 2006, 2020). In this process, two participants are involved, the

'phenomenon', the participant to be looked at by the reactor, and the 'reactor,' the participant doing the looking behavior (Kress & Leeuwen, 2006, 2020). The example of the reactional process is well illustrated by Yang and Zhang (2014), who depicted a man standing and standing higher than another man who was holding a ladder, but they looked at each other. In this example, the structure can be considered either a transactional action process where the man in the lower position becomes the *action* or the reactional process where the man in a higher position, the reactor, was observing the man, the phenomenon. In narrative structure, when the vector in the form of thought balloons and dialogue balloons is connected to the participant's speech or thought, then, the processes of 'mental' or 'verbal' are represented (Kress & Leeuwen, 2006). For these processes, the vectors might be formed in comic strips, quotes, screens, etc., (Yang & Zhang, 2014). The participant in the mental processes is the 'senser' and the participant in the verbal is the 'sayer.' In the narrative, 'circumstances' refers to the setting, backgrounded, painted in less detail, more muted or saturated, and sometimes either darker or lighter to expose the participants (Kress & Leeuwen, 2006). The first circumstance is the 'means' or 'tools.' Kress and Leeuwen (2006) illustrated the means/tools in an example where the depicted old man is holding a gun and addressing the invisible participant *with* his hands. The 'accompaniment' circumstance example is illustrated by Yang & Zhang (2014) by a depiction of two women and two men standing in a line and gazing at the *viewers* with smiles. Since there are no vectors formed in the four participants, it is then called an accompaniment (Yang & Zhang, 2014).

Representationally, the 'conceptual structure' is the representation in which participants are represented in terms of "their more generalized and more or less stable and timeless essence" and in terms "of class, or structure or meaning" (Kress & Leeuwen, 2006, 2020). In this conceptual structure, there are no vectors created by the participants (Kress & Leeuwen, 2006, 2020; Yang & Zhang, 2014). There are three types of conceptual structures: (1) classification, (2) analytical, and (3) symbolic. In 'classificational' participants are related in terms of 'kind of' relation and 'taxonomy' (Kress & Leeuwen, 2006, 2020). The classificational has two sub-structures; (1) 'covert', the readers are supposed to infer

similarities between the subordinates, and (2) 'overt', the superordinate becomes the upper level of the other elements in the form of a tree structure taxonomies (Kress & Leeuwen, 2006, 2020).

'Analytical structure' is the process where the participants are connected as parts of a whole (Kress & Leeuwen, 2006). Here, the participants are the 'carrier' (the whole) and the 'possessive attributes' (the parts). There are several parts of analytical structures; (1) 'exhaustive/spatial' analytical structures, several possessive attributes are assembled for the carrier, (2) 'inclusive' analytical structure, the carrier constituted by one or more possessive attributes but not covering all of the space of the carrier, (3) 'temporal' structure, possessive attributes of the carrier are organized on a timeline vertically or horizontally to represent a chronological process, (4) 'quantitative temporal', to represent the development of a phenomenon in a timeline, (5) 'centralized' structures, having the carrier in the central node connecting to its possessive attributes with radiating lines, (6)'decentralized' the structure, represented by *centralized* analytical structures connected with lines, (7) 'distributed', the *possessive attributes* of the *carrier* are linked but originate from one or more *centers*, (8) 'exploded', the *possessive attribute* of the *carrier* is separated but organized in a clear arrangement, (9) 'disarranged', having the *possessive attributes* of the *carrier* separated in a disorganized way, (10) 'topographical', having the *carrier* and the *possessive attributes* that function as scale representations, and (11) 'topological', having the *carrier* and the *possessive attributes* interconnected accurately but do not represent scale.

'Symbolic structure' is concerned with what a participant means/is (Kress & Leeuwen, 2006, 2020; Yang & Zhang, 2014). There are two kinds of symbolic structures; (1) 'symbolic attributive', and (2) 'symbolic suggestive'. The symbolic attributive structure has two participants; (1) the 'carrier', and (2) 'the symbolic attributes'. Symbolic attributes can be identified by; 1) extra salient design, such as being exaggerated in terms of foreground size and being more lighted compared to other elements, 2) gesture that cannot be interpreted as an action, 3) symbolic values with traditional identification, 4) the look out of place in the whole or

unnatural, and 5) association with symbolic values (Kress & Leeuwen, 2006, 2020). The 'symbolic suggestive' has only the participant, the *carrier*; but cannot be categorized as analytical (Kress & Leeuwen, 2006). Some clues to identify the *symbolic suggestive* structures are provided, such as extreme lighting, blurring of details, and participants as silhouettes (Kress & Leeuwen, 2006, 2020).

In terms of compositional metafunction, the compositional meaning of images refers to the organization of representational and interactive elements into a meaningful whole (Kress & Leeuwen, 2006, 2020). In other words, it is related to the placement of the participants that have ordered. There are three systems in compositional meaning: 1) the *Information Value*, placement of the participants and their relation to each other and viewers; 2) The *Framing*, tools that can disconnect elements of images; and, 3) the *Salience*, used to attract the viewer's attention by the placement factors in background or foreground, relative size, color contrast, and sharpness (Kress & Leeuwen, 2006, 2020).

In *Information Value,* images are presented on a page with an assumption that '*information'* is delivered as though 'it' had value or status for the viewers (Kress & Leeuwen, 2006). The first structure of *Information Value* is the *New* and *Given* structure. The *Given* information is something that viewers already know (historically, socially, and semiotically), while the *New* information, fixed, is something not yet known or agreed upon by the viewers. In other words, the *New* is replaceable and the *Given* is fixed. Culturally, the left side of images is already *given* while the right side is therefore to the 'important message' or the *New.* The second structure is the *top-bottom* structure (Kress & Leeuwen, 2006, 2020). In this structure, the upper part is usually presented as the *Ideal*, while the lower part is for the *Real*. Concerning this, Kress and Leeuwen (2006) explained that the *Ideal* contains the writing and the *Real* contains the images, such as maps, charts, or diagrams. In other words, the *Ideal* functions as the lead role informationally and ideologically while the *Real* has a role to provide specification, evidence, practical consequence, etc., (Kress & Leeuwen, 2006, 2020). The third structure is the *Center-Margin* structure. In this structure, the *center* is in the center of the message and the *margins* (the

other elements) are placed symmetrically around the center to form a unity. The principle of *framing* is the connection or disconnection of the element to others and abstaining from framing emphasizes group identity, framing individuality, and differentiation (Kress & Leeuwen, 2006, 2020). Concerning this, there are some visual compositions of elements, such as *segregation, separation, visual contrast, overlap, integration, and visual rhyme* (Kress & Leeuwen, 2006, 2020). In *segregation* composition, the elements are separated by the presence of the frame lines, and this is understood as the different units of meaning. In *separation*, the elements are separated by space. In *visual contrast*, two or more elements are different in typographic and visual quality, such as the boldness of the color. In the *overlap* composition, part of an image overlaps the frame, or the words are placed partially in an image and partly outside of the image. In *integration*, two or more elements fill in the same space, such as when a 'written text' is put over on an image or when images are integrated into a collage without being separated by frame lines. Finally, the two or more elements in the *visual rhyme* composition have similarities in terms of visual or typographic qualities but they are segregated or separated. The visual principle of *salience* is that one element is different from others in terms of size, place in the foreground, color, tonal values, sharpness, etc., (Kress & Leeuwen, 2006, 2020).

Methods and Materials

To answer the question, this study employed qualitative design with the Systemic Functional Approach to Multimodal Discourse Analysis (SF-MDA). The SF-MDA is part of social semiotics that concerns with the 'Grammar' of semiotic resources (O'Halloran & Fei, 2014a). Further, the SF-MDA attempts to understand the meanings of different resources and the meanings which potentially exist when they are combined multimodally (O'Halloran & Fei, 2014a). The SF-MDA is inspired by Halliday's social theory claiming that the organization of the semiotic resources can indicate their social function (O'Halloran, 2008; O'Halloran & Fei, 2014b). The rationale for employing this approach is due to its suitability to analyze phenomena in multimodal text, such as 2D text (printed or electronic text), 2D texts, such as museum text, etc.,

(O'Halloran & Fei, 2014a) and its foundation to analyze how the semiotic choices (verbally and visually) interact to achieve the social function of a text (Jewitt et al., 2016). The SF MDA is also suggested by several researchers due to its appropriateness to analyze multimodal texts (Damayanti, 2014; Hermawan & Rahyono, 2019; Hermawan & Sukyadi, 2017; Jauhara et al., 2021; Liu & Qu, 2014; Nur'graha & Hermawan, 2020; Sugianto, 2021; Sugianto et al., 2021, 2022). The interaction of verbal text and visual image is going to be investigated within the framework of Systemic Functional Grammar (SFL) (Eggins, 2004; Gerot & Wignell, 1995; Halliday & Matthiessen, 2004, 2013; Thompson, 2014) and Grammar of Visual Design (Kress & Leeuwen, 2006).

The materials of the analysis were taken from 'English in Progress' (Hermawan & Hayanti, Dwi Suyaningsih, 2022). This textbook, designed for grade X, was selected because it was officially endorsed textbook by Indonesia's ministry of cultures and education by Indonesia's ministry of cultures and education to promote Indonesia's latest *Kurikulum Merdeka*. In this new curriculum, one of the goals of learning English is the ability to multimodal communicate (Badan Standar, Kurikulum, Dan Asesmen Pendidikan, 2022). Considering the focus of the analysis, only infographic images were taken as data sources and analyzed. There were four infographics found in the English textbook. Another reason to analyze four images is inspired by Jewitt, Bezemer, and O'Halloran's method and analysis (2016) arguing that, in SF MDA, the microanalysis of selected fragments of the texts is possible. In addition, there are several studies analyzing selected images, using SF MDA, such as (1) Jauhara, Emilia, and Lukmana (2021) investigated the selected page with the topic greeting, (2) Sugianto (2021) investigated a page with the topic *deforestation* (3) Liu and Qu (2014) studied several pages of 2 textbooks under the same topic, (4) Sugianto, Prasetyo, and Asti (2022) studied a page of EFL textbook under the topic of *communication*, and (5) Royce (2007) analyzed a page of a magazine.

Procedures and data analysis

To do the analysis, the diagrams and verbal text were separately analyzed. First, the verbal text accompanying the diagram was analyzed based on the SFL *transitivity* analysis (Eggins, 2004; Gerot & Wignell, 1995; Halliday & Matthiessen, 2004, 2013). The analysis was aimed at

identifying the types of *Participants*, *Processes*, and *Circumstances* of the verbal elements.

Visually, the diagrams of the texts were investigated based on the framework of Grammar of Visual Design (Kress & Leeuwen, 2006, 2020). The visual analysis was based on their representational and compositional metafunction. Representationally, the analysis was done to identify the structure of the diagrams, such as *narrative* or *conceptual*. Then, the analysis will go through the types of *participants,* the *activity*, qualities, and *characteristics* attributed to the *participants*. Compositionally, the images were analyzed based on the systems of 1) the *Information Value*, placement of the participants and their relation to each other and viewers; 2) The *Framing*, tools that can disconnect elements of images; and, 3) the *Salience*, used to attract the viewer's attention by the placement factors in background or foreground, relative size, color contrast, and sharpness (Kress & Leeuwen, 2006, 2020).

Findings and discussion

What is the visual and verbal metalanguage in the diagrams found in a nationally published textbook?

Figure 1 is a diagram in an infographic in the form of a *mindmap.* Representationally, it can be categorized as a conceptually analytical structure. The *analytical* refers to the process in which the represented participants are connected as parts of a whole (Kress & Leeuwen, 2006). Analytical structures are often found in fashion shots, maps, school social studies textbooks, diagrams, and abstract arts which serve to identify a Carrier and to let the readers scrutinize the Carrier's Possessive Attributes. It can be implied that the analytical structures, especially in a textbook, are purposively designed to let the readers (students) scrutinize the Carrier's parts.

In figure 1, the Carrier participant is the *great Athlete* and has the five *parts participants* or the *possessive attributes*; (1) *Good Deeds,* (2)*Achievement,* (3)*Belief/Values,* (4) *Family Support,* and (5) *Habits*. Further, the diagram has a *centralized* analytical structure in which the *carrier* participant is illustrated as the central node in a diagram/graph with the radiating lines connecting it to its components, the possessive

attributes. However, each *possessive attribute*, or the *part*, embeds a *classification* structure, with *overt taxonomies*, in which a superordinate becomes the upper level of the other elements in the form of a tree structure (Kress & Leeuwen, 2006). There are several classifications with *overt taxonomies* in the diagram, for instance (1) the three kinds of *achievement* are *regional*, *national*, and *international*; (2) the three kinds of *habits* are *routines, responsibilities,* and *practices,* (3) the two kinds of *Good Deeds* are *For Society* and *Fors Self,* (4) three kinds of *Family Support* are *History, Genetics/Physicality,* and *Social*, (5) three kinds of *Beliefs/Values* are *Personal, Family,* and *Social*. Representationally, the diagram is a conceptual structure that combines the *analytical* and *classificational*.

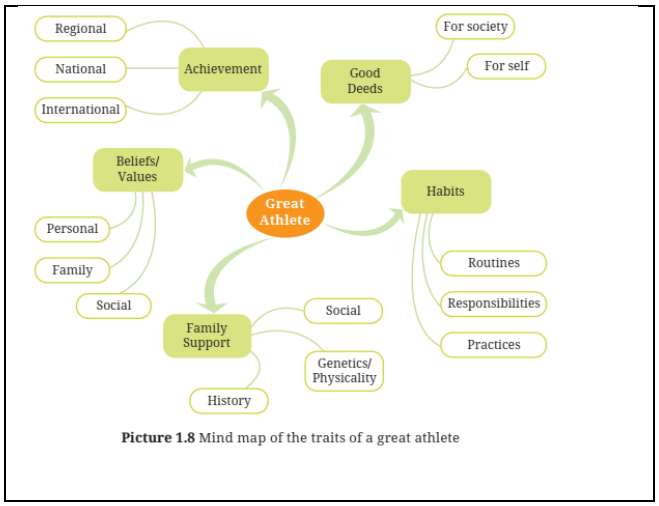
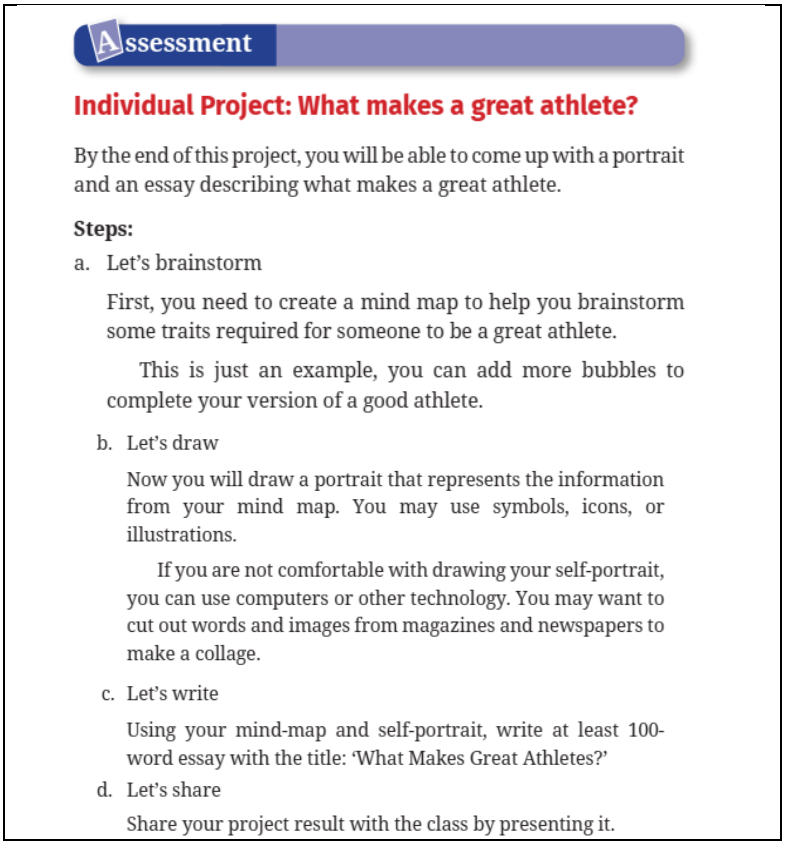


Figure 1. Mind map of the traits of a great athlete (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

Compositionally, significant represented participants are foregrounded and depicted more salient, the *Great Athlete* is the most salient among the *Good Deeds, Achievements, Beliefs/Values, Family Support,* and *Habits*. The *Great Athlete* is depicted with different font colors and is more saturated than its *parts.* In addition, the *Good Deeds, Achievements, Beliefs/Values, Family Support,* and *Habits* are more salient and more saturated than each classification. To summarize the compositional meaning of the diagram, the *carrier* participant (the *whole*)

is intentionally organized more saturated, and more salient to emphasize its function as the *whole* of the *parts*. Interestingly, the five parts of the carrier are depicted with the same color to represent the equal position of each and so are the *classification parts*. This can be understood that the diagram designer does not have the intention to rank the *parts*, yet the readers are given the freedom to highlight any *parts*.



Assessment

Individual Project: What makes a great athlete?

By the end of this project, you will be able to come up with a portrait and an essay describing what makes a great athlete.

Steps:

a. Let's brainstorm

First, you need to create a mind map to help you brainstorm some traits required for someone to be a great athlete.

This is just an example, you can add more bubbles to complete your version of a good athlete.

b. Let's draw

Now you will draw a portrait that represents the information from your mind map. You may use symbols, icons, or illustrations.

If you are not comfortable with drawing your self-portrait, you can use computers or other technology. You may want to cut out words and images from magazines and newspapers to make a collage.

c. Let's write

Using your mind-map and self-portrait, write at least 100-word essay with the title: 'What Makes Great Athletes?'

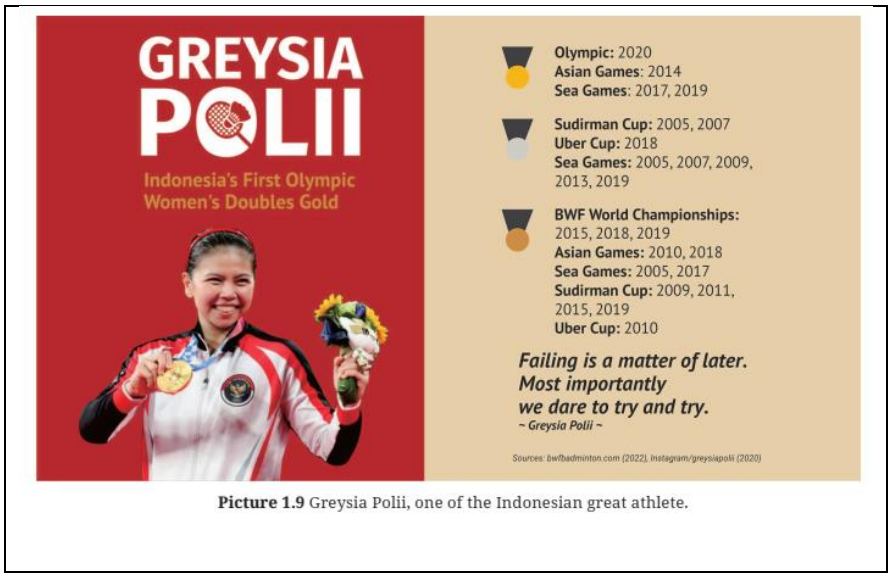
d. Let's share

Share your project result with the class by presenting it.

Figure 2. Verbal elements of the Mind map figure 1 'The traits of a great athlete' (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

Linguistically, the diagram in figure 1 has verbal elements (figure 2) to give an explanation and to instruct readers to view the diagram. Using SFL transitivity, the verbal elements (explanation and instructions) are dominated by the *material, relational,* and *mental processes*. The *material processes* are related to instruction with what *readers* are supposed to do regarding the diagram, for instance, *Come up, create, complete, add, and draw (2x)*. The *material processes* are represented

with the actor *you* (4 times) and the five goals: with *a portrait and an essay, more bubbles, a mind map, a portrait,* and *your version of a good athlete.* The *relational processes* are related to identifying the participant of *value* with its *token*, for instance, *makes* (2x), *be* (3x), and *represent.* The relational processes are with the token (*the information from your mind map, what, this*) and value (*a great athlete (2x), what, a mind map, that,* and *just an example*). The *mental processes* are related to the thinking and cognition of the participant, such as *brainstorming* (2x), *describing*, and *helping* with the senser *you*. The diagram also has a verbal caption, "Mind map of the traits of a great athlete" below the diagram. The verbal caption seems to represent the *carrier* and the *attributes* of the analytical structure.



Picture 1.9 Greysia Polii, one of the Indonesian great athlete.

Figure 3. Infographic of "Greysia Polii" (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

Representationally, figure 3 is an infographic of *Greysia* Polii. It can be identified as an analytical structure. This infographic is conceptually a *disconnected* analytical structure, in which the Carrier and its *parts* are disassembled (Kress & Leeuwen, 2006). In this diagram, the Carrier is on the left, in which the participant is represented with the medium shot image of Greysia Polii backgrounded in red and with the verbal text "GREYSIA POLII" and verbal text "Indonesia's First Olympic Women's

Double Gold" which are designed on the top of the represented Carrier participant. The *parts* or Possessive Attributes are on the right with less salient than the Carrier. Three parts participants are depicted with three *medals*: *gold, silver,* and *bronze*. The *gold* medal is put on the top, followed by the *silver*, and *bronze*.

Analytically speaking figure 3 presented the "whole and part" relation, in which the text designer intended to deliver that the Carrier*,* Greysia Polii, has got three kinds of metals*:* gold, silver, and bronze. In addition to figure 3, this infographic could also be identified as a narrative structure. In the left part of the infographic, the participant, *Greysia Polii*, creates a vector through her facial gesture and body gesture. The vector realizes the 'action' or 'process' the participant is doing. With one hand, the participant is depicted *showing* her medal and *holding* a mascot with the other one. The facial gesture also indicates that the *actor* participant is smiling. The presence logo of a *racket* and *shuttlecock* in the verbal "POLII", clearly emphasizes that the participant is a badminton player. However, since the participant is depicted with no background, the narrative structure is less than the conceptual structure. This is relevant to Kress and Leeuwen (2006, 2020) claiming that too much detail and too much lifelikeness could distract the analytical purposes. Therefore, the infographic designer might probably have more intention on the analytical rather than narrative purpose.

Representationally, the right image in figure 3 can also be categorized as a classification that realizes the relation of taxonomy. In classification*,* the 'overt taxonomies' are chained to let 'superordinate' be for some other participants, the 'subordinates' (Kress & Leeuwen, 2006, 2020). In this diagram, despite not being connected with 'lines' to indicate hierarchy the 'superordinate', the *gold medal*, is placed on the top of the *medals*. Here, the overt taxonomy is illustrated by the *superordinate* Gold medals for *Subordinates*' Silver and Bronze medals. Another overt in this image is illustrated in the *Bronze medal* that has the *superordinate,* BWF World Championships, which are respectively followed by its *subordinates;* Asian Games, Sea Games, Sudirman Cup, and Uber Cup. In addition to classification structure, each of the medals also indicates the 'covert taxonomy', in which the readers are allowed to

infer the similarity between the 'subordinates', for example, 'Sea Games' of 2005, 2007, 2009, 2013, and 2019 are similar in the category of silver medals. To conclude, in terms of conceptual structure, the infographic of figure 3 mixes the structures of analytical and classificational.

Compositionally, the infographic of figure 3 depicts the 'carrier' more salient. The visual-verbal "GREYSIA POLII" is depicted as more salient and bigger than the remaining verbal "Indonesia's First Olympic Women's Double Gold". In terms of left-right compositional structure, the 'left' is the 'given information' and the 'right' is the 'new information'. This can be understood that the readers might have known who the carrier participant was. However, the infographic designer might consciously present the new information which is located on the right of the carrier participant.

Linguistically speaking, the *infographic* has several verbal elements. The name of the athlete, GREYSIA POLII, is visually written in a bigger font and with more contrast compared with the other verbal elements. Under the name of the athlete is another verbal element saying "Indonesia's First Olympic Women's Double Gold". Also, there is a verbal caption, written below the infographic saying "Greysia Polii, one of Indonesia's greatest athletes". Using the SFL transitivity system, all the verbal elements function to signify the carrier or actor participant in the diagram. In addition, the verbal on the right "*Failing is a matter of later. Most importantly, we dare to try and try*." contains 'behavioral' processes represented by the verbs, such as *dare*, *try*, and *failing*. According to Eggins (2004) these behavioral processes, falling between the material and mental processes, involve physiological and psychological behavior. Probably, the verbal is to indicate the experience of the 'carrier' to achieve the medals in which she 'fails', 'dares', and 'tries'.

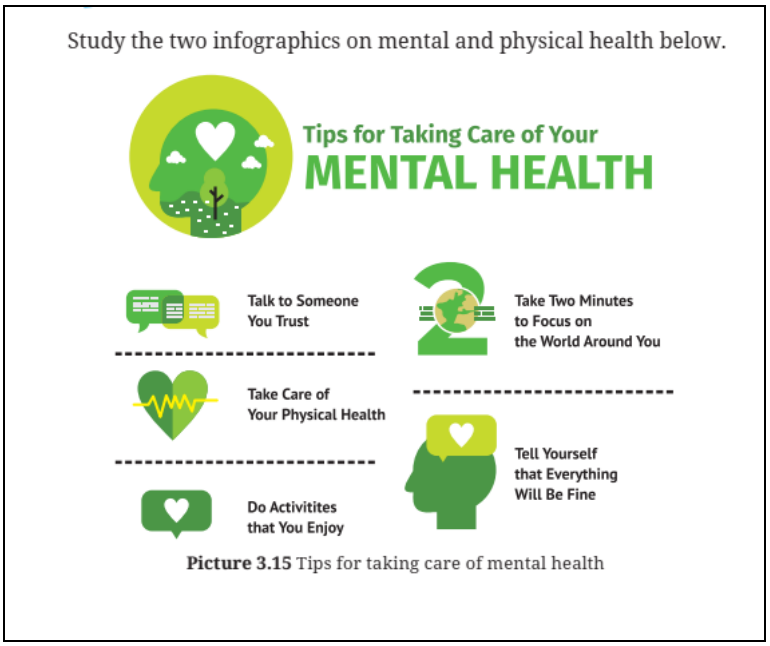


Figure 4. Infographic "Tips for taking care of mental health" (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

Figures 4 and 5 are two images designed for a reading task in chapter 3. In these figures, the students are expected to study the two infographics. Representationally, figure 4 is identified as a conceptually analytical structure with the relation of the 'part of the whole'. The carrier participant here is depicted with a symbol of the *brain* or *head* or *mind.* The visual 'carrier participant' is also re-emphasized by the verbal "MENTAL HEALTH" that is typed in uppercase. The 'carrier participant' is also supported by the verbal element on the top of the diagram and as the caption under the infographic says, "Tips for Taking Care of Your MENTAL HEALTH". The parts or attribute participants are visually illustrated by five symbols; (1) speech bubble filled with letters, (2) number 2, (3) heart, (4) head and speech bubble filled with a love symbol, and (5) speech bubble filled with a love symbol. Each attribute participant is supported with verbal elements that are dominated by various *processes*, such as (1) *talk* (verbal process), (2) *take* (material process), (3) *take care* (material process), (4) *tell* (mental process), and (5) *do* (material process). Interestingly, the analytical structure of the infographic is centralized on the top which is different from Kress and Leeuwen's (2006, 2020) centralized structure where the carrier participant is in the center with radiating lines connecting to its components.

Compositionally, the infographic of figure 4 depicts the *carrier* participant more salient. The visual-verbal "MENTAL HEALTH" is depicted as more salient in terms of color and bigger compared with verbal attribute participants. Figure 4 also applies the 'top-bottom' structure (Kress & Leeuwen, 2006, 2020). In addition, in terms of the top-bottom structure, the upper part is the carrier with a more salient and bigger font. This is in line with Kress and Leeuwen's (2006, 2020) explanation that the *Ideal* functions as the lead role informationally and ideologically while the *Real* has a role to provide specification, evidence, practical consequence, etc., (Kress & Leeuwen, 2006, 2020).

Picture 3.16 Seven healthy habit for weight loss

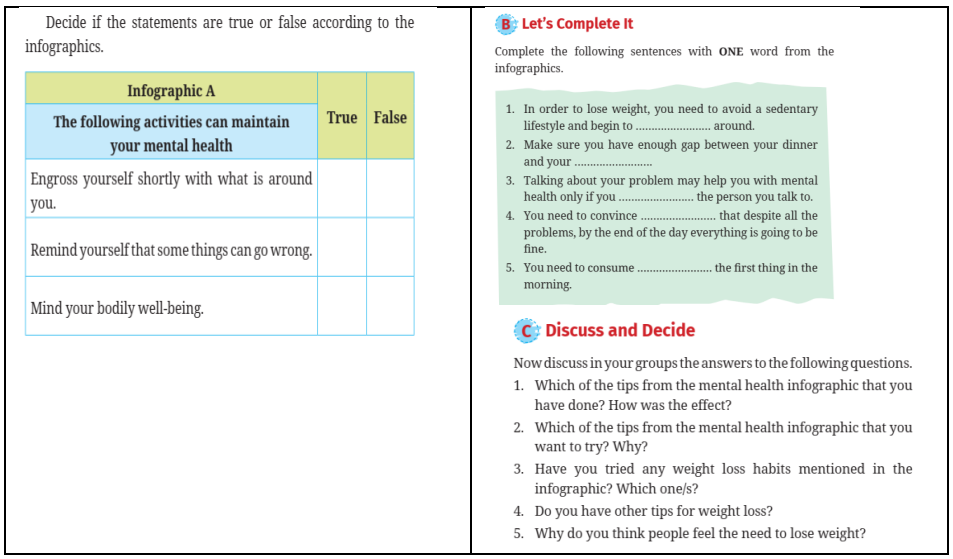
Figure 5. Infographic "Tips for taking care of mental health" (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

Representationally, figure 5 can be categorized as a conceptually analytical structure with the relation of the 'part of the whole'. Different from figure 4, this infographic is analytically centralized in which the carrier participant is in the center and is connected to its *attributes* by dash lines. The carrier participant is depicted with the visually salient number "7" and bigger font of verbal "WEIGHT LOSS" written in uppercase. The carrier participant, depicted with symbol "7" with verbal "Healthy Habits for WEIGHT LOSS" is also re-emphasized by the infographic caption, under the infographic, saying the same as the verbal

in the center of the infographic. Concerning its *possessive attributes*, there are seven *possessive attributes* each of which is represented with visual and verbal elements. First, the visual *sunny-side-up egg* is embedded with the verbal "Don't Skip Breakfast". Second, the visual *drinking bottle and a cup* are attached to the verbal "Drink Water When You Wake Up". The following visual is the *crescent, pillow, and ZZZ sign* embedded with the verbal "Prioritize Good Sleep". Another possessive attribute is the visual of *a foot wearing a shoe* with the verbal "Move every day". The visual sunny-side-up egg with a crescent is accompanied by the visual "Don't Eat Too Close to Bedtime". The visual *Meal box* is also attached to the verbal "Make Lunch Your Biggest Meal". Finally, the visual *bubble speech with symbols of + (plus)* and *a heart* is accompanied by the verbal "Always Think Positively".

Compositionally, figure 5 applies the *center-margin* structure (Kress & Leeuwen, 2006, 2020). In this structure, the *center* is the carrier participant "7 Healthy Habits for WEIGHT LOSS" located in the center of the message. The *margins* or the other elements (attribute participants) are placed symmetrically around the center to form a unity.

Regarding verbal elements of possessive attributes in figure 5, they are all in the form of *imperatives* dominated by material processes (*skip, drink, wake up, move, eat,* and *make lunch*) and mental processes (*prioritize* and *think*).



Decide if the statements are true or false according to the infographics.

Infographic A The following activities can maintain your mental health	True	False
Engross yourself shortly with what is around you.		
Remind yourself that some things can go wrong.		
Mind your bodily well-being.		

B Let's Complete It

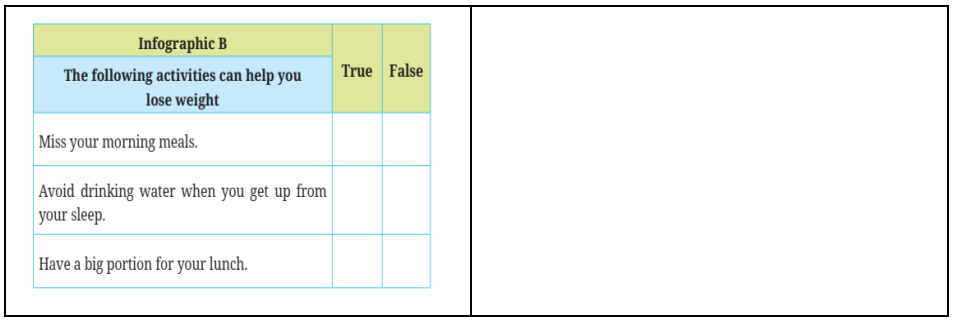
Complete the following sentences with **ONE** word from the infographics.

1. In order to lose weight, you need to avoid a sedentary lifestyle and begin to ..... around.
2. Make sure you have enough gap between your dinner and your .....
3. Talking about your problem may help you with mental health only if you ..... the person you talk to.
4. You need to convince ..... that despite all the problems, by the end of the day everything is going to be fine.
5. You need to consume ..... the first thing in the morning.

C Discuss and Decide

Now discuss in your groups the answers to the following questions.

1. Which of the tips from the mental health infographic that you have done? How was the effect?
2. Which of the tips from the mental health infographic that you want to try? Why?
3. Have you tried any weight loss habits mentioned in the infographic? Which one/s?
4. Do you have other tips for weight loss?
5. Why do you think people feel the need to lose weight?



Infographic B The following activities can help you lose weight	True	False
Miss your morning meals.		
Avoid drinking water when you get up from your sleep.		
Have a big portion for your lunch.		

Figure 6. Instructions of infographic of Figures 4 and 5 (Hermawan & Hayanti, Dwi Suyaningsih, 2022)

In terms of verbal instructions related to infographics in Figures 4 and 5, SFL transitivity analysis was done to their verbal instructions (Eggins, 2004; Gerot & Wignell, 1995; Halliday & Matthiessen, 2004, 2013). The SFL verbal analysis found that verbal instructions (see figure 6) were dominated by processes of *material* (17 times), *mental* (17 times), and *relational* (8 times). The dominance of *material* processes in the verbal text in the two infographics seems to show the *action* activity regarding tips for mental and physical health tips, such as *losing weight, getting up, engrossing, drinking water, moving, consuming, trying,* etc. The presence of *mental* processes is concerned with thinking or perception about the tips presented by the infographics, such as *study, decide, remind, mind, avoid, convince, discuss, want to, think,* and *feel*. The less frequent *relational* processes are concerned with the explanation of the idea by relating the participants (carrier to attribute, or value to token).

Conclusions/ Implications

This study has provided analyses of four images found in a textbook (Hermawan & Hayanti, Dwi Suyaningsih, 2022) by employing SF MDA. The analyses found that the visual metalanguage in diagrams (Kress & Leeuwen, 2006, 2020). Representationally, the images are mainly analytical structures that are combined with classificational and narrative structures. In terms of compositional meanings, the diagrams have applied the *Information value* structure and *salience* composition. Based on the representational and compositional visual metalanguage, the participants are the *carrier* and *attribute* in the analytical structure with the relation of part and whole. In addition, to each attribute participant, they have either *classificational* or *narrative* structures.

Regarding the findings of the visual metalanguage, there are some implications for language teaching and learning. First, a teacher's competence in visual metalanguage can help prepare verbal instruction for teaching diagrams. For example, to introduce the diagram or mind map (figure 1) a teacher can provide some verbal instructions based on the visual representational metalanguage by highlighting the 'carrier' and 'attribute' participants (analytical structure) with relational and mental processes. Here are several potential instructions. "*Here is a diagram or a mind map. A mind map helps you to gather/collect ideas systematically. In this mind map, as you can see, the center is Great Athlete. Therefore, the topic of the mind map is the Great Athlete. In this diagram, a Great Athlete has achievements, good deeds, habits, family support, and beliefs/values. Now, pay attention to the achievement. There are three kinds of achievement. The achievement can be regional, national, international, etc."*

The second implication is that teacher's visual metalanguage competence can contribute to the teacher's questioning, elicitation, and previewing skills regarding representational and compositional meanings of visuals. For 'carrier' and 'attribute' participants in analytical structure, a teacher can formulate questions, such as (1) "*What do you see in the center of the image of figure 5?"; (2) "What must a great athlete have to be successful in figure 1?"; "What kinds of medals has Greycia Polii got in figure 3*?". For eliciting relational processes of the visual, the teacher can provide a sentence to be completed, such as (1) "*Greycia Polii … (has) outstanding achievements in badminton"; (2) "A great athlete … (has) five characteristics."* For metalanguage, the teacher can lead the students to preview the image they are viewing regarding the salience and information value, such as (1) "*Why is "Great Athlete" in figure 1 more contrast than other elements?"; (2) "According to figure 2, why gold medal is put on the top of medals?"*

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