



ANALYSIS OF THE DESIGN OF @RUANGGURU'S INSTAGRAM EDUCATIONAL CONTENT FROM THE PERSPECTIVES OF MULTIMEDIA LEARNING AND COGNITIVE LOAD THEORY

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Article Info	Abstract
Article history: Received 17-02-2026 Revised 24-02-2026 Accepted 13-02-2026 Published 28-03-2026 How to cite: Ramadhany, R. T., Setyosari, P., & Kurniawan, C. (2026). Analysis Of the Design Of @Ruangguru's Instagram Educational Content from the Perspectives of Multimedia Learning and Cognitive Load Theory. <i>Journal of Facilitating Learning and Improving Performance</i>, 1(1), 77–90. © The Author(s)  This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License	The development of social media has encouraged the emergence of digital learning through Instagram-based microlearning content. This study aims to analyze the message design of Ruangguru's educational Instagram content from the perspectives of Multimedia Learning and Cognitive Load Theory. This study employed a qualitative approach using content analysis methods on five selected educational Instagram contents from Ruangguru through purposive sampling. Data were collected through documentation and observation of visual and verbal elements, including layout, color, typography, illustrations, and message structure. Data analysis used qualitative content analysis based on the principles of Multimedia Learning and Cognitive Load Theory. The findings revealed that Ruangguru's educational content integrates verbal and visual elements to support digital learning communication. The use of illustrations, contrasting colors, typography, and communicative language enhances the attractiveness and readability of information. Most contents also applied multimedia, signaling, and spatial contiguity principles. However, several contents still showed dense text and visual elements that potentially increased users' extraneous cognitive load. This study provides practical implications for developing effective, visually engaging, and cognitively supportive educational social media content in digital learning.
	Keywords: <i>Message Design; Instagram; Multimedia Learning; Cognitive Load Theory.</i>

INTRODUCTION

The development of digital technology has brought significant changes to the ways people access information and learn. Learning processes that were previously dominated by face-to-face interaction have gradually evolved into digital learning environments that are more flexible, interactive, and easily accessible through various technological platforms. This transformation has encouraged the utilization of digital media as learning resources capable of delivering information quickly, communicatively, and accessibly to users from diverse backgrounds. In this context, the integration of digital technology and social media into learning reflects a shift in society's information consumption patterns toward visually and digitally based information delivery (Denojean-Mairet, 2024).

Social media, which initially functioned primarily as a medium for communication and entertainment, has now evolved into a digital learning space that supports the dissemination of educational information on a broad scale. One form of digital learning that has developed through social media is microlearning, which refers to the delivery of learning materials in short, focused, and easily understandable formats (Kathuria, 2024). This approach is considered suitable for the characteristics of Generation Z, who tend to prefer concise, fast, visual, and easily accessible information through digital devices. Furthermore, the use of social media in learning is considered capable of increasing users' engagement and learning motivation when educational content is presented in an engaging and communicative manner (Nandawan & Yuningsih, 2025).

Among various social media platforms, Instagram has become one of the most widely utilized educational media because of its ability to integrate text, images, illustrations, colors, videos, and user interaction within a single digital communication platform. The visual characteristics of Instagram enable learning information to be delivered in a more engaging and comprehensible way for users. Consequently, educational institutions, learning communities, and educational technology companies increasingly utilize Instagram as a medium for digital learning communication. One digital education platform that actively uses Instagram as an educational medium is Ruangguru. Through educational carousel posts, infographics, and short videos, Ruangguru delivers various forms of learning content, study tips, educational motivation, and career information for students. Such content is designed using combinations of verbal and visual elements, including colors, icons, illustrations, typography, and layouts intended to enhance users' attention and comprehension. This phenomenon demonstrates that social media is no longer used solely for entertainment purposes, but also functions as a medium for delivering educational information within digital learning environments (Anjarwati & Dewi, 2025).

In digital learning environments, message design becomes an important aspect because the effectiveness of information delivery is influenced not only by the quality of the learning material, but also by how the information is packaged and presented to users. The arrangement of verbal and visual elements such as typography, colors, illustrations, layouts, and visual hierarchy can influence users' attention, focus, and comprehension of learning information. Therefore, effective message design is necessary to ensure that information delivery is not only visually appealing, but also

capable of optimally supporting information processing and communication in digital learning environments.

However, visually attractive designs do not always guarantee effective learning. The excessive use of visual elements, dense text, irrelevant decorations, and poorly structured information may disrupt users' information-processing processes and increase cognitive load, thereby hindering comprehension of learning materials (Kalyuga, 2011). In digital learning environments, users are required to process visual and verbal information simultaneously within the limited capacity of working memory. Therefore, message design in digital learning media must consider multimedia learning principles and cognitive load management to ensure that information can be effectively received and processed (Bali et al., 2026).

The Multimedia Learning Theory developed by Clark & Mayer (2023) explains that learning becomes more effective when information is presented through the integration of words and images rather than through a single form of representation alone. This theory is based on the assumption that humans possess two information-processing channels, namely visual and verbal channels, as well as limited working memory capacity (Schneider et al., 2022). Multimedia Learning Theory includes several important principles such as the coherence principle, signaling principle, redundancy principle, and spatial contiguity principle, all of which aim to help users process information more effectively. On the other hand, Cognitive Load Theory emphasizes that instructional design should minimize extraneous cognitive load so that users' cognitive capacity can be focused on processing essential information. Research on cognitive load in multimedia environments indicates that dense visual elements and complex information presentation may lead to cognitive overload and reduce learning quality.

Several previous studies have demonstrated that multimedia learning and cognitive load play important roles in the effectiveness of digital learning. Research conducted by Praseyto and Irwansyah (2021) found that multimedia design is closely related to users' perceptions of cognitive load in digital learning processes. Other studies on multimedia learning have also shown that inappropriate integration of visual and verbal elements may increase users' cognitive load and disrupt the learning process (Bechtold, 2023). In addition, research on the management of educational digital content on Instagram indicates that the application of Cognitive Load Theory can help optimize the delivery of educational information on social media (Putra et al., 2025).

Although numerous studies concerning multimedia learning and cognitive load have been conducted, research specifically analyzing message design in Instagram educational content from the perspectives of Multimedia Learning and Cognitive Load Theory remains relatively limited, particularly in relation to Ruangguru's Instagram educational content. Most previous studies have focused on formal e-learning multimedia, instructional videos, or educational applications, whereas analyses of microlearning message design on educational social media platforms remain underexplored. In fact, social media has become one of the major digital learning resources widely used by younger generations (Greenhow & Chapman, 2020).

If message design in digital learning media is not appropriately developed, the information delivery process may become less effective, increase visual distractions, and create cognitive overload among users (Mutlu-Bayraktar et al., 2019). These conditions

may reduce learning focus, lower comprehension of learning materials, and hinder the effectiveness of digital learning communication. Therefore, analyzing message design in educational social media content is important in order to understand how verbal and visual elements can support the effectiveness of digital learning communication.

Based on the explanation above, this study aims to analyze the message design of Ruangguru's Instagram educational content from the perspectives of Multimedia Learning and Cognitive Load Theory. This research focuses on analyzing the verbal and visual elements in Ruangguru's educational content, the implementation of multimedia learning principles, and the potential cognitive load arising from the delivery of digital learning information. Specifically, this study seeks to answer the following research questions: (1) how message design is implemented in Ruangguru's Instagram educational content, (2) how Multimedia Learning principles are applied in Ruangguru's Instagram educational content, and (3) how Ruangguru's educational content design can be reviewed from the perspective of Cognitive Load Theory in supporting digital learning.

METHODS

This study employed a descriptive qualitative approach using the content analysis method. The qualitative approach was chosen because the research focuses on analyzing verbal and visual elements within digital educational content on Instagram social media. The content analysis method was utilized to identify and describe how message design is structured and how visual and verbal elements are used in the delivery of digital learning information.

The object of this study consisted of Ruangguru's Instagram educational content published in the form of educational carousel posts. The sampling technique used was purposive sampling with the following criteria: (1) the content is educational in nature, (2) it utilizes a combination of verbal and visual elements, (3) it is published in carousel format, and (4) it contains learning information relevant to the context of digital education. Based on these criteria, several educational contents from Ruangguru were selected as the primary data sources of the study.

Data collection was conducted through documentation by collecting and taking screenshots of Ruangguru's Instagram content that met the research criteria. The collected data were then classified according to message design elements such as typography, color, illustration, layout, visual hierarchy, information density, and the integration of verbal and visual elements.

Data analysis was conducted using the directed content analysis model, which refers to theory as the basis for data analysis (Hsieh & Shannon, 2005). In this study, the analysis was based on the principles of Multimedia Learning developed by Mayer (2005), including the coherence principle, signaling principle, redundancy principle, and spatial contiguity principle, as well as Cognitive Load Theory to identify the potential for extraneous cognitive load in the presentation of digital learning information.

The stages of data analysis were carried out through several steps: (1) identifying Ruangguru's Instagram educational content to be analyzed, (2) classifying the verbal and visual design elements within each content, (3) describing the findings based on the principles of Multimedia Learning and Cognitive Load Theory, (4) presenting the analysis

results descriptively, and (5) drawing conclusions based on the interpretation of the data. This study used publicly accessible Instagram educational content and did not involve human participants, interviews, or personal data collection. Therefore, ethical approval was not required for this study.

RESULTS

Analysis of Message Design in Learning Activity Content



Figure 1. Educational Content on Learning Activities on Ruangguru's Instagram

Figure 1 illustrates educational content comparing two models of learning activities, namely conventional learning and varied learning. The content is designed using a visual comparison format in which information is divided into two main sections labeled "A" and "B." The first section presents an illustration of a conventional learning environment, showing students with passive and less enthusiastic expressions, while the second section illustrates a varied learning environment in which students appear more active and interactive.

Visually, the content employs dominant blue, white, yellow, and green color schemes with sufficient contrast, allowing the text elements to remain easily readable. The main heading, "THIS OR THAT?", uses large typography and is positioned at the top of the content, making it the focal point of users' attention. The use of cartoon-style illustrations in both sections helps clarify the differences between the learning environments being conveyed. In addition, the layout is organized separately between sections A and B, enabling users to understand the flow of information gradually and systematically.

From the verbal aspect, the content uses short and communicative phrases such as "Pembelajaran Konvensional" and "Yang variatif, dong!". Supporting information in each section is also presented concisely, allowing users to quickly grasp the core

message. The use of informal and simple language reflects the characteristics of social media communication, which tends to be more relatable to users, particularly students.

Furthermore, the use of visual symbols such as the letters “A” and “B,” character illustrations, and arrow icons at the bottom of the content helps strengthen the structure of visual information. The placement of text close to the related illustrations also facilitates users in connecting verbal information with the visual elements presented in the educational content.

Analysis of Message Design in Professional Information Content

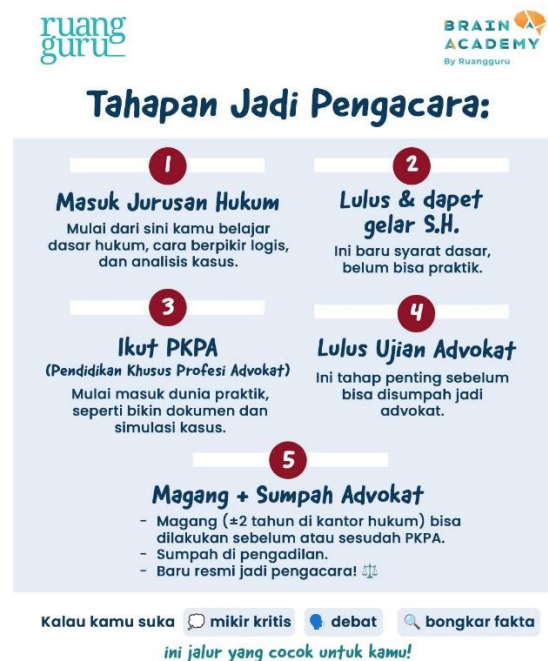


Figure 2. Educational Content on Professional Information on Ruangguru’s Instagram

Figure 2 illustrates educational content presenting information regarding the stages of becoming a lawyer. The content is organized using a vertical infographic format that presents the process sequentially through numbering from the first to the fifth stage. Each stage contains brief information regarding legal education and professional processes, starting from entering a law major to internship stages and the advocate oath process.

Visually, the content employs dominant light blue, white, red, and dark blue color schemes with a sufficiently clear contrast, allowing the text elements to remain readable. The use of red numbering in each stage helps emphasize the sequence of information and enables users to follow the content flow more easily. In addition, the information layout is arranged hierarchically from top to bottom, creating a systematic and sequential information structure.

From the verbal aspect, the content uses concise and communicative sentences to explain each stage of the legal profession. The use of simple language helps users understand the information more quickly. Nevertheless, several sections of the text appear relatively dense because they contain additional explanations in comparatively

small font sizes, particularly in the final section regarding the internship process and advocate oath stage.

In addition to the use of text, the content also utilizes visual elements such as dividing lines, icons, and typographic combinations to differentiate each section of information. The placement of the main title, “*Tahapan Jadi Pengacara*” at the top of the content helps users immediately understand the topic being discussed. The sequential visual structure also assists users in following the flow of information more systematically in understanding the professional stages explained within the educational content.

Analysis of Message Design in Educational Content on Major Selection



Figure 3. Educational Content on Major Selection on Ruangguru’s Instagram

Figure 3 illustrates educational content discussing myths and facts regarding university majors. The content is organized in a carousel format with the main title “*MITOS VS FAKTA JURUSAN*” positioned at the top of the content. The first slide presents an illustration of two student characters engaged in a conversation about stereotypes related to psychology majors.

Visually, the content utilizes a combination of cream, red, blue, and yellow colors, creating a casual and light impression. The main title is designed using large typography with contrasting colors, making it effective in attracting users’ attention when viewed on social media. In addition, the use of chat bubbles within the illustration helps emphasize the context of the conversation being discussed.

The content layout appears relatively simple, with the primary focus placed on character illustrations and conversational text. The placement of text close to the characters helps users immediately understand the context without requiring additional interpretation. The use of white space in several parts of the content also makes the display appear lighter and less visually dense.

From the verbal aspect, the content uses informal and communicative language that aligns with the characteristics of teenage audiences and Instagram users. Sentences such as “Can you predict my soulmate?” are used to represent stereotypes commonly associated with psychology majors. The use of a humorous approach helps increase emotional closeness with the audience, making the content feel more relatable.

In addition to the use of text and character illustrations, the content also incorporates visual elements such as a book labeled “Pengantar Psikologi” as a visual marker clarifying the academic major being discussed. The integration of illustrations, conversations, and visual objects helps strengthen the delivery of the educational message within the content.

Analysis of Message Design in Learning Exercise Content



Figure 4. Learning Exercise Content on Ruangguru’s Instagram

Figure 4 illustrates educational content in the form of mathematics practice questions for the 2026 Elementary School Academic Competency Test (*TKA SD 2026*). The content presents questions related to fractions and point-value comparisons, which are visualized through colored pie charts. The information is organized in a multiple-choice format consisting of three circle diagrams labeled A, B, and C.

Visually, the content employs dominant white, red, blue, and orange color schemes. The main title, “*LATIHAN SOAL TKA SD 2026*” is designed using large typography and contrasting colors, making it the focal point of users’ attention. The use of orange color in certain sections of the circle diagrams helps users distinguish the parts that need to be calculated in the mathematics problem.

From the layout perspective, the content is arranged systematically with the question instructions placed at the top, the diagram illustrations positioned in the center, and the answer choices located at the bottom. The placement of these elements

helps create a structured reading flow. However, the presence of three diagrams within a single display requires users to divide their attention across multiple visual objects simultaneously.

From the verbal aspect, the content uses relatively simple language that directly conveys the instructions for solving the problem. The sentences are informative and appropriate for the context of elementary school learning. In addition, the use of labels such as “Total: 100 Points” helps clarify the information presented in each diagram.

The content also directly integrates mathematical visual elements with the learning material. The circle diagrams function not merely as visual decorations, but as essential components in the problem-solving process. The use of colors and visual shapes helps users understand the concept of fractions more concretely within the context of mathematics learning.

Analysis of Message Design in Health Education Content



Figure 5. Health Education Content on Ruangguru’s Instagram

Figure 5 illustrates educational content discussing the causes and prevention of bad breath during fasting, commonly referred to as “Hunger Breath.” The content is organized using a simple visual format featuring a single main character positioned at the center of the illustration.

Visually, the content employs dominant teal, white, and black color schemes. The title, “HUNGER BREATH,” is placed at the top using large typography, making it easily noticeable to users. A green smoke effect emerging from the character’s mouth is used as a visual indicator to represent bad breath.

The layout appears highly focused because it displays only one primary object with minimal additional elements. The placement of the title at the top and the character illustration at the center helps users quickly understand the content. Furthermore, the use of sufficient white space prevents the display from appearing visually crowded.

From the verbal aspect, the content uses concise and informative sentences regarding the causes and prevention of bad breath during fasting. The language employed is relatively casual and aligned with the characteristics of social media communication. The use of the term “Hunger Breath” also helps create a modern and appealing impression for younger audiences.

The content utilizes expressive illustrations and Ramadan-themed visual elements, such as hanging lanterns, to strengthen the contextual relevance of the discussion. The integration of illustrations, colors, and text helps create a more engaging and easily understandable delivery of health-related information for Instagram users.

DISCUSSION

The message design of Ruangguru’s Instagram educational content demonstrates that social media can be utilized as a medium for digital learning communication that integrates verbal and visual elements simultaneously. The use of illustrations, contrasting colors, typography, and simple layouts helps establish more engaging visual communication for social media users, particularly students and adolescents. In the context of digital instructional design, information visualization plays an important role in helping users understand learning materials more quickly and efficiently. These findings are consistent with the research of Mayer (2021), which explains that learning becomes more effective when information is presented through a combination of words and images rather than text alone. Mayer (2014) also emphasized that the integration of verbal and visual elements can support the process of information comprehension in multimedia learning.

In addition to the use of visual elements, the message design in Ruangguru’s educational content also demonstrates language adaptation to the characteristics of social media audiences. The use of short, informal, and communicative sentences reflects a message personalization strategy intended to enhance emotional closeness with users. Research conducted by Moreno & Mayer (2000) showed that the use of a more personal communication style in multimedia learning can increase user engagement and support digital learning processes. Such a communication approach aligns with the characteristics of social media, which prioritize fast, simple, and easily understandable interaction.

From the perspective of visual design, the application of visual hierarchy in Ruangguru’s educational content can be observed through the use of large headings, color indicators, primary illustrations, and structured information placement. These principles help users focus their attention on the main information before processing additional details. Research on digital visual design indicates that visual hierarchy influences users’ attention focus and reading comfort in digital environments. The use of relevant colors and illustrations also helps clarify the message context, making information easier to understand within a short period of time.

From the perspective of Multimedia Learning, the design of Ruangguru’s educational content demonstrates the implementation of several major principles, including the multimedia principle, signaling principle, and spatial contiguity principle. The use of illustrations positioned close to the text helps users directly understand the relationship between verbal and visual information. Mayer (2020) explained that users

learn more effectively when related text and images are placed close together rather than separated within a visual display. The signaling principle is also evident through the use of numbering, visual labels, and contrasting colors that guide users' attention toward important information.

These findings are consistent with the study conducted by Fiorella & Mayer (2015), which demonstrated that multimedia designs incorporating visual cues can improve users' attention focus and the effectiveness of information processing in digital learning. Other studies on digital learning media have also shown that well-organized combinations of text and visuals can improve users' retention and comprehension compared to text-based information presentation alone.

Nevertheless, several contents still indicate the potential occurrence of cognitive overload due to the high density of visual and textual information. Cognitive Load Theory explains that human working memory capacity is limited; therefore, instructional design should minimize extraneous cognitive load originating from irrelevant visual elements or unnecessary information. In several educational contents, the large amount of text presented within a single display potentially increases users' information-processing burden, particularly when accessed through smartphones with limited screen sizes.

These findings support the research conducted by Sweller (2020) regarding Cognitive Load Theory, which explains that overly complex instructional designs may hinder the learning process because users are required to divide their attention among too many elements simultaneously. Recent studies on digital learning also indicate that visual and textual density in educational social media content can affect users' focus and learning comfort in processing educational information.

On the other hand, several contents demonstrate relatively effective cognitive load management through the use of whitespace, single visual focus, and information simplification. The use of whitespace helps create a lighter display, enabling users to focus their attention on the primary information. Research on digital learning interface design suggests that proportional use of whitespace can help reduce visual distractions and improve users' comfort when reading digital information.

In addition to visual aspects, the use of contextual illustrations in educational content also helps enhance germane cognitive load, namely the cognitive load that supports the development of users' understanding and knowledge schema formation. In mathematics practice content, visual diagrams help users understand abstract concepts more concretely. This finding indicates that visual elements in educational social media function not only as decorative components, but also as cognitive aids in digital learning processes.

Theoretically, this study strengthens the discussion regarding the application of Multimedia Learning and Cognitive Load Theory within the context of educational social media, particularly Instagram as a digital microlearning platform. To date, multimedia learning studies have largely focused on formal e-learning, instructional videos, or Learning Management Systems, whereas analyses of message design in educational social media remain relatively limited. Therefore, this study contributes to expanding the application of multimedia learning theory within social media based digital learning environments.

Practically, the findings of this study may serve as a reference for digital educational content developers in designing learning messages that are more effective, engaging, and cognitively user-friendly for social media audiences. The use of relevant illustrations, concise text, clear visual structures, and the reduction of unnecessary visual elements can help improve the effectiveness of digital learning communication. Therefore, message design in educational social media should not only focus on visual aesthetics and user engagement, but should also consider cognitive aspects and the effectiveness of digital learning more comprehensively.

CONCLUSION

This study demonstrates that the message design in Ruangguru's Instagram educational content has utilized the integration of verbal and visual elements to support digital learning communication. The use of illustrations, contrasting colors, typography, visual layouts, and communicative language helps improve the attractiveness and readability of information for social media users, particularly students and adolescents. From the perspective of Multimedia Learning, most of the content has implemented multimedia, signaling, and spatial contiguity principles through the use of mutually supportive text and visuals in information delivery. Furthermore, from the perspective of Cognitive Load Theory, several contents demonstrate relatively effective cognitive load management through simplified visual displays, the use of whitespace, and well-organized information structures. Nevertheless, some contents were also found to contain relatively high densities of text and visual elements, potentially increasing users' extraneous cognitive load in processing digital learning information.

Theoretically, this study strengthens the application of Multimedia Learning and Cognitive Load Theory within the context of educational social media as a form of microlearning-based digital learning. Practically, the findings of this study may serve as a reference for digital educational content developers in designing message structures that are more effective, communicative, and cognitively user-friendly for social media audiences. This study still has limitations because it only analyzed a number of Instagram educational contents from Ruangguru without involving direct user perceptions regarding the effectiveness of the message designs employed. Therefore, future studies are recommended to expand the analysis to other digital educational platforms and to combine message design analysis approaches with measurements of user perceptions or direct learning effectiveness.

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