



THE IMPLEMENTATION OF MAYER'S MULTIMEDIA PRINCIPLES IN DIGITAL STORYTELLING: A MESSAGE DESIGN ANALYSIS OF FERRY IRWANDI'S VIDEO ESSAYS

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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: Kurniawan, A. D., Setyosari, P., & Kurniawan, C. (2026). The Implementation of Mayer's Multimedia Principles in Digital Storytelling: A Message Design Analysis of Ferry Irwandi's Video Essays. <i>Journal of Facilitating Learning and Improving Performance</i>, 1(1), 166–178. © The Author(s)  This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License	In the digital education ecosystem, digital storytelling formats such as video essays can trigger cognitive overload if not systematically designed. This qualitative study utilizing descriptive content analysis critically analyzes the implementation of Richard E. Mayer's twelve multimedia learning principles on Ferry Irwandi's YouTube channel to manage audience attention in informal environments. Purposive sampling selected three high-density video essays focusing on chronological history and macroeconomics published between 2024 and 2026, each exceeding a fifteen-minute duration. Data analysis involved iterative unitizing, coding, frequency tabulation, and cognitive-based interpretation. The findings reveal a consistent pattern dominated by three core message design pillars: (1) reducing extraneous processing via Coherence and Signaling through high-contrast neon text and chalk markings; (2) managing essential processing via Segmenting and Modality using micro-chapters and voice-overs as visual offloads; and (3) fostering generative processing via Personalization and Voice through a humanized conversational tone. The implications recommend that instructional designers adopt these creative editing techniques to package complex academic materials adaptively without sacrificing conceptual depth. Keywords: <i>Message Design; Instructional Design; Ferry Irwandi; Multimedia Principle; Video Essay.</i>

INTRODUCTION

In the modern digital education ecosystem, social media platforms such as YouTube have organically transformed into massive repositories for informal learning (Mayer, 2021). The proliferation of digital storytelling formats, one of which is in the form of video essays, has progressively changed the way global audiences interact with information, while shifting learners' preferences away from traditional instructional designs that tend to be rigid (Reiser et al., 2025). This media transformation requires strengthening learners' digital literacy through the development of various formats of adaptive electronic-based teaching materials (Kurniawan & Kuswandi, 2021). However, this rapid paradigm shift brings a critical challenge in the discipline of learning message design: how complex and high-density information can be communicated systematically without triggering cognitive overload on learners (Sweller et al., 2011). Theoretically, effective message design must be able to strategically balance the visual and auditory processing channels of humans to optimize working memory capacity (Mayer, 2021). But in reality, a lot of educational content on social media is still messy due to information redundancy and poor visual hierarchy, which ultimately hinders knowledge retention.

The main foundation for mitigating such information processing barriers is the Cognitive Theory of Multimedia Learning (CTML). This theory operates on three core assumptions of cognitive science: dual channels, limited capacity, and active processing (Mayer, 2021). Previous research confirms that the efficiency of technology-based instructional media design is highly dependent on the designer's ability to reduce non-essential decorative elements in order to minimize learners' cognitive workload (Lailli et al., 2026). Based on these assumptions, the principles of multimedia design are formulated to reduce extrinsic processes, manage essential processes, and encourage generative cognitive processes (Clark & Mayer, 2016). In the structural mechanics of instructional message design, operational variables such as visual signaling, spatial-temporal contiguity, and structural coherence are not just visual aesthetic choices; These elements serve as a crucial cognitive scaffolding that determines the success of transient information transfer into the learner's long-term memory (Setyosari, 2020).

In the midst of the shallow saturation of digital entertainment content in Indonesia, Ferry Irwandi's YouTube channel emerged as a significant structural anomaly through the adoption of a long-form video essay format. Despite presenting highly complex socio-economic critiques, complex historical chronology, and dense financial literacy topics with an average duration exceeding 15 minutes, the content has consistently been able to maintain very high audience retention and engagement. This empirical success indicates the implementation of instructional message design principles that are systematic and in line with human cognitive capacity (Clark & Mayer, 2016). The digital narrative built does not only rely on verbal storytelling skills, but also orchestrates precise visual cues, functional typographic hierarchies, and deliberate video editing rhythms (editing pace) to direct and maintain learners' focused attention.

Although the popularity of digital video essays is growing exponentially, formal academic empirical investigations dissecting popular creator content using the glasses of graduate-level instructional message design are still very rare. A persistent gap still exists between the conventions of creative production applied by social media practitioners and the formal instructional theories taught in academic institutions. Although a systematic review of instructional video design confirms the importance of integrating structured pedagogical principles (Fyfield et al., 2022), specific explorations of the typology of independent essay

videos on social media have not yet been explored in depth. Bridging this gap is crucial to provide a practical modern benchmark for educational technology. Analyzing Ferry Irwandi's message design framework offers valuable empirical insights for instructional designers and educators on how to package "heavy" academic material into a "lightweight" and highly consumable digital format without sacrificing its conceptual depth (Alfiriani et al., 2022; Reiser et al., 2025).

Consequently, this study aims to critically analyze the implementation of 12 Mayer multimedia learning principles in selected videos on Ferry Irwandi's YouTube channel. The focus of the analysis is directed at examining how visual and auditory elements are structurally organized to facilitate the construction of schemas in informal digital learning environments. The empirical conclusions of this analysis are expected to serve as an adaptive tactical reference for contemporary educational technologists and instructional designers in navigating the attention span dynamics of today's digital learners.

METHODS

This methodology was selected to systematically identify, analyze, and interpret the manifestations of instructional message design principles within digital multimedia environments (Krippendorff, 2018). The core analytical focus was directed toward evaluating the synchronous integration between verbal and visual elements constructed within the digital narratives on Ferry Irwandi's YouTube channel, aimed at understanding how these message structures facilitate cognitive processing among audiences (Mayer, 2021).

Research Object and Sampling Technique

The research object consisted of digital video assets published on Ferry Irwandi's YouTube channel. A purposive sampling technique was executed by deliberately establishing specific selection criteria to align with the primary research objectives (Setyosari, 2016). The researcher selected three distinct video essays published between the 2024–2026 period characterized by high informational density, complex narratives, and a total duration exceeding 15 minutes. This strict duration and complexity threshold were crucial to ensure that the visual and auditory stimuli provided sufficient cognitive load to rigorously test the parameters of working memory and cognitive load management (Sweller et al., 2011).

Research Instrument

The primary instrument utilized in this investigation was a taxonomic observation sheet adapted directly from Mayer's twelve multimedia learning principles (Mayer, 2021; Clark & Mayer, 2016). The structural indicators observed were categorized into three main cognitive processing domains:

1. Principles for Reducing Extraneous Processing: Consisting of Coherence, Signaling, Redundancy, Spatial Contiguity, and Temporal Contiguity.
2. Principles for Managing Essential Processing: Consisting of Segmenting, Pre-training, and Modality.
3. Principles for Fostering Generative Processing: Consisting of Multimedia, Personalization, Voice, and Image.

Data Collection and Analysis Procedure

Data were gathered through structured, iterative frame-by-frame observation of the designated sample videos. The qualitative data analysis followed a systematic procedure adapted from the architectural framework of Miles et al. (2014):

1. Unitizing: Fragmenting the long-form video essay into smaller, manageable analytical units based on explicit timestamp durations, spoken verbal transcripts, or significant visual scene transitions.
2. Coding: Evaluating and indexing each unitized video segment based on the empirical emergence of the twelve multimedia design indicators using Computer-Assisted Qualitative Data Analysis Software (CAQDAS). The use of CAQDAS software in this coding stage is crucial to mitigate the subjectivity of researchers, manage the complexity of visual-auditory data mechanically, and ensure a high level of qualitative coding reliability (Lucas, 2017).
3. Data Tabulation: Condensing the coded qualitative strings into structural matrices and frequency distribution tables to explicitly map out the consistency and overarching patterns of the message design (Setyosari, 2016).
4. Interpreting: Synthesizing and critically evaluating the tabulated behavioral patterns by contextualizing the findings within the Cognitive Theory of Multimedia Learning (CTML) to formulate robust, evidence-based instructional implications.

RESULTS

Implementation of Multimedia Principles to Ferry Irwandi's Content

Based on the content analysis conducted on three sample videos on Ferry Irwandi's YouTube channel, a consistent pattern of application of the Cognitive Theory of Multimedia Learning (Mayer, 2021) was found. The results of the analysis show that creative editing conventions in social media can be integrated with modern instructional architectures to manage the audience's focus attention (Reiser et al., 2025). The results of the tabulation of the observation data are summarized into a visualization of the percentage of occurrence of message design principles which can be seen in the graph below:

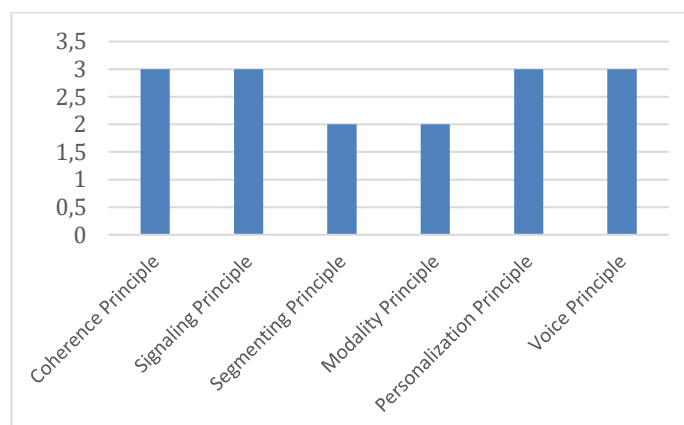


Figure 1. The Distribution of Mayer's Multimedia Learning Principles in the Observed Content.

In general, the 12 multimedia principles formulated by Mayer (2021), there are three main pillars that dominate the message design structure in Ferry Irwandi's video essay in order to build an effective engagement architecture (Reiser et al., 2025), namely:

Reduction of Extrinsic Cognitive Processes through Coherence and Signaling

Ferry Irwandi consistently applies the Coherence Principle by eliminating visual elements or background music that are distracting and irrelevant to the essence of the material being discussed (Mayer, 2021). When presenting topics that require high conceptual depth, the visual background is often changed to solid or dark colors with a single static focus object to prevent the digital learner's attention from breaking.

Meanwhile, the Signaling Principle is applied through the use of dynamic motion graphics, bolding the text on the screen, or providing high-contrast colors to the visualization of important statistical data. This aesthetic convention of social media serves as cognitive cues that directly direct the audience's eye-tracking to core information without burdening the learner's working memory (Mayer, 2021; Sweller et al., 2011).

Essential Process Management through Segmenting and Modality

Heavy topics that have a high information density and a long duration (above 15 minutes) are systematically managed using the Segmenting Principle. The use of the chapters feature or micro-segmentation in YouTube videos (e.g.: Problem Background, Chronology of Events, Impact Analysis) provides independent pacing control to the audience, which is a crucial aspect in modern e-learning design (Clark & Mayer, 2016; Reiser et al., 2025).

In addition, through the Modality Principle, Ferry avoids channel overloading by not displaying the exact same long text as what he says (Mayer, 2021). The text on the screen only functions as visual anchors in the form of key points or supporting graphics, while the detailed explanation is transferred entirely through the auditory channel using voice-over narration.

Generative Process Driving through Personalization and Voice

As an informal learning platform, this YouTube channel relies heavily on the Personalization Principle to encourage active processing (Reiser et al., 2025). In contrast to formal instructional videos that tend to be rigid, Ferry Irwandi's verbal message design uses casual language styles, conversational tone, and first-person pronouns ("I", "we") (Mayer, 2021).

Coupled with the natural quality of voice intonation (Voice Principle), this combination succeeds in building social presence and psychological closeness that stimulates the audience to carry out generative processing of even complex learning materials (Alfiriani et al., 2022; Mayer, 2021).

The macro findings of the three samples above were further confirmed through descriptive-specific analysis of the following two variations of the main essay video typology, in order to map the technical implementation of multimedia principles at the operational production level.

Specific Analysis of Video 1: Exploration of Chronological Historical Narrative ("The Genius Is Named Al-Khwarizmi")

In the first sample video dissecting Al-Khwarizmi's biography and scientific contributions, the main instructional challenges faced were the density of the 9th-century historical plot, mathematical terminology, and causal variables of the development of science

across civilizations. The results of the analysis show the implementation of the main principles to unravel the complexity of the narrative:

Reduction of Extrinsic Cognitive Processes through Coherence and Signaling

In presenting abstract scientific history material that is prone to triggering mental fatigue, Ferry Irwandi applies *the Coherence Principle* strictly by eliminating irrelevant digital decorative elements around the main text.

Meanwhile, *the Signaling Principle* is radically realized through the integration of large digital graphic text in the center of the screen. When verbal narratives begin to introduce the main axis of discussion of modern social media systems, the text "ALGORITHM" is presented with a very striking white-blue fluorescent light effect on top of the visual background of computer hardware (see Figure 2). This firm *cognitive cue* at 00:01:06 serves as *attention steering* that forces the audience's working memory to lock down one of the most fundamental key terms instantly before entering the 9th century chronological narrative.



Figure 2. Emphasis on Visual Signals of Graphic Text "ALGORITHM" as Signaling Principle at 00:01:06 Minutes.

Essential Process Management through Segmenting and Modality

Considering that this scientific history material has a very high density of information, the application of *the Segmenting Principle* is the backbone of the success of message delivery. Ferry utilizes the micro-chapters feature to cut the video into several structured sub-topics, separating the phase of intellectual development in Baghdad from the phase of the discovery of Algebra procedurally. The division of the video into discrete units gives the audience the freedom to independently control the pace of learning (pacing control) to consolidate their knowledge scheme before moving on to the next segment. The provision of independent rate control through this separate segment structure is a major technical prerequisite for deciphering the density of linear material that is prone to trigger sensory overload in the audience (Mayer, 2014).

Furthermore, scientific evidence from large-scale meta-analysis studies confirms that the segmenting effect consistently has a significant positive impact on learning outcomes and memory retention by providing a cognitive pause for working memory to process units of information completely (Rey et al., 2019). In addition, the integration of segmentation design in video media has been shown to be effective in lowering the total cognitive burden and facilitating the self-explanation process of digital learners when digesting complex material conceptualizations (Zheng et al., 2022).

Meanwhile, the application of the Modality Principle also seems very dominant when the video narrative begins to discuss the evolution of ancient counting methods. Instead of presenting long, dense explanatory paragraphs about the history of past computing systems on screen, Ferry limits the visual cognitive load of the audience by displaying only manuscript visualizations or ancient calculation symbols on a background of obsolete paper (see Figure 3). This historical document is presented purely to function as visual anchors at 00:03:05.

At the same time, an in-depth explanation of the way early humans thought and restructured problems was transferred entirely to the auditory channel through voice-over narration. This conditioning pattern effectively prevents the phenomenon of channel overloading due to the saturation of overlapping visual information in the audience's working memory. By separating static graphic information in the visual space and descriptive explanations in the auditory space, this message design architecture manages to maintain the balance of information processing according to the capacity of human dual channels.

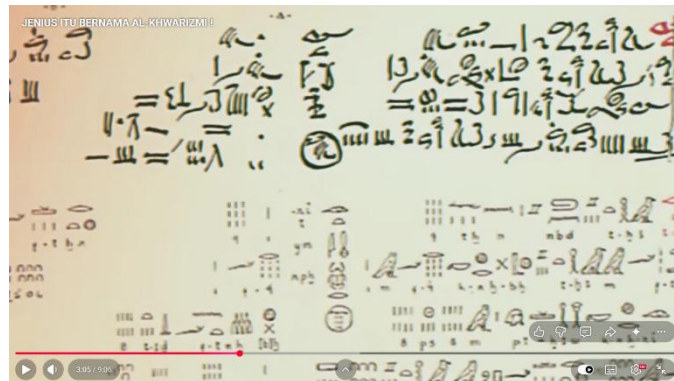


Figure 3. Visualization of Ancient Calculation Manuscripts as Visual Anchors at 00:03:05 Minutes.

Specific Analysis of Video 2: "Why Does the Rupiah Continue to Weaken?"

In the second sample video that discusses economic exchange rate fluctuations, Ferry Irwandi faces challenges in the form of density of statistical data and financial terms that have the potential to trigger cognitive overload. The results of the analysis show that there is a use of highly tactical instructional principles to manage the cognitive load:

Essential Process Management through Segmenting and Modality

Ferry explicitly manages complex information by applying *the Segmenting Principle*. Instead of describing all economic factors at random, he divides the root of the problem into three clear structural layers on the board, namely: (1) External/Global Factors, (2) Domestic/Fiscal Factors, and (3) Market Confidence Factors. These micro-segments provide enough cognitive pause for the audience to digest one segment before moving on to the next.

The application of *the Modality Principle* was also seen to be very dominant when the video dissected the posture of the first quarter (Q1) State Budget. When explaining the surge in state spending of 31.4% (Rp815 trillion) and the fiscal deficit of Rp240.1 trillion which is equivalent to 0.95% of GDP, Ferry did not flood the screen with rigid digital numerical figures. He chose an analog whiteboard medium to write down the core data in stages (see Figure 4). These key percentage numbers serve as *visual anchors*, while

explanations of causality and economic mechanisms are transferred entirely to the auditory channel through a collapsed *voice-over*. This effectively prevents *channel overloading* (saturation of the visual cognitive channels).

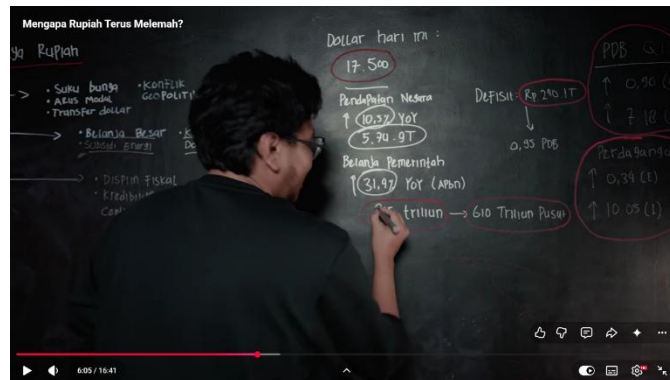


Figure 4. Visualization of State Budget and Fiscal Deficit Posture Data as *Visual Anchors* at 00:06:05 Minutes.

Reduction of Extrinsic Cognitive Processes through Coherence and Signaling

To maintain the focus of digital learners' attention on abstract and highly complex socio-economic material, this video strategically and strictly applies the Coherence Principle. Background music is intentionally set at a very low, non-intrusive, and constant volume without dynamic or distracting beats, ensuring it does not interfere with the processing of verbal information in the auditory channel. This pattern of acoustic governance is deeply in line with classical experimental evidence demonstrating that minimizing irrelevant sounds or background music is crucial to prevent cognitive interference in the learner's auditory tract (coherence effect) (Moreno & Mayer, 2000).

Going beyond basic noise reduction, this low-volume instrumental arrangement serves as a vital cognitive shield. By deliberately avoiding background tracks with lyrics or unpredictable rhythmic shifts, the design successfully prevents the acoustic elements from competing for limited processing slots within the listener's phonological loop (Lehmann & Seufert, 2017). Consequently, this preventive acoustic structuring optimizes the audience's total Working Memory Capacity (WMC), ensuring that the complex auditory narrative regarding currency fluctuations can be fully decoded without triggering unnecessary cognitive friction.

Meanwhile, the Signaling Principle is functionally realized through direct visual emphasis orchestrated on analog whiteboard media, creating a distinct hybrid instructional environment. When Ferry reviews the three main clusters of the causes of national economic weakness, he dynamically draws a prominent marker in the form of a thick red chalk circle around each of the main keywords, namely "External", "Domestic", and "Trust" (see Figure 5). From the perspective of contemporary visual communication, these stylized typographic enclosures and geometric emphasis are not merely aesthetic stylistic choices; they serve as critical functional instruments designed to build an immediate hierarchy of information and steer audience perception in real time (Günay, 2021).

These contrasting visual cues function as explicit cognitive signposts on the blackboard, instantly directing the viewer's eye-tracking directly to the core of the problem classification without overloading their working memory with surrounding informational distractions. By providing these real-time graphic annotations, the video

establishes strong "text-picture relations" that guide novice or lay learners who possess low prior knowledge of macroeconomics. This dynamic signaling method accelerates the essential process of selecting relevant information, enabling fluid schema construction before the transient visual data shifts or disappears from the digital screen (Richter et al., 2016; van Gog, 2021).



Figure 5. The Use of Contrasting Color Chalk Circles on the Whiteboard as a Signaling Principle at 00:15:06 Minutes.

DISCUSSION

The discussion of the results of this study empirically proves that the effectiveness of Ferry Irwandi's YouTube channel in conveying heavy topics (scientific history and macroeconomics) does not occur by chance, but through the design of messages that strictly respect the limitations of human cognitive architecture. Macro findings on the percentage of occurrence of multimedia principles (see Figure 1) as well as specific evidence in Video 1 (see Figure 2 and Figure 3) and Video 2 (see Figure 4 and Figure 5) confirm that creative editing conventions in social media can be aligned with formal instructional functions to mitigate the risk of cognitive overload (Sweller et al., 2011). In this context, the effectiveness of information transfer depends largely on how instructional visualizations are designed in such a way that they do not exceed the limitations of the learner's visuospatial processing capacity (Castro-Alonso et al., 2019). By aligning the aesthetics of social media with the function of attention control, Ferry Irwandi succeeded in bridging the need between contemporary digital entertainment and the depth of instructional education. These findings also strengthen the characteristics of effective digital learning media that not only rely on visual-textual integration, but also deliberately organize information structures systematically to prevent cognitive overload (Lailli et al., 2026). This alignment is in line with the future direction of the Cognitive Theory of Multimedia Learning framework which is now starting to shift from just passive cognitive optimization to the integration of affective aspects, motivation, and active attention management strategies in the contemporary digital learning ecosystem (Mayer, 2024).

Operationally, the minimization of extrinsic cognitive load in Ferry Irwandi's video analysis was achieved through the application of very strict Coherence and Signaling Principles. Viewed from the perspective of Engagement Architecture contained in the latest reference book Reiser, Carr-Chellman, and Dempsey (2025), an informal learning platform based on essay videos demands a shift in focus from simply distributing content (content delivery) to managing the active attention (attention management) of digital audiences that have the characteristics of a short attention span. The operational manifestation of this attention management is evidenced by Ferry's consistency in eliminating irrelevant decorative

elements (weed out extraneous material) in order to maintain the purity of the viewer's focus (Mayer, 2021). The elimination of this element of distraction is not only applied to the visual aspect, but also strictly to the auditory canal through the setting of low and constant background music volume without distracting beats. This acoustic conditioning is in line with classic experimental findings that confirm that minimizing irrelevant background sounds or background music is crucial to prevent cognitive interference (coherence effect) on learners' auditory working memory (Moreno & Mayer, 2000). Furthermore, contemporary empirical evidence suggests that complex background music or having dynamic beats is at high risk of depleting the working memory capacity of digital learners, so the use of quiet, low-volume instrumental music acts as a crucial preventive strategy to maintain the availability of cognitive space in the working memory of the audience (Lehmann & Seufert, 2017).

The audience's attention is then instantly guided through precise cueing, such as the appearance of high-contrast digital graphic text on the term "ALGORITHM" (see Figure 2) or the visualization of red chalk strokes on a hybrid blackboard (see Figure 5). This use of contrasting and structured visual elements confirms that in contemporary visual communication, typography arrangements and graphic emphasis are not just aesthetic fulfillments, but rather crucial functional instruments to create a hierarchy of information and direct the perception of the audience instantly (Günay, 2021). This deliberately orchestrated visual cue acts as a crucial attention guide that assists digital learners in selecting information into working memory before the transient information disappears from the screen (van Gog, 2021). Furthermore, scientific evidence from meta-analysis studies confirms that the integration of visual cues—especially those presented dynamically—is significantly able to boost retention performance, direct eye-tracking, and accelerate knowledge transfer for a group of lay learners with low levels of prior knowledge (Richter et al., 2016). Through this message architecture that is clean of redundant information, the remaining available working memory capacity can be fully allocated to processing the main material.

Furthermore, the management of essential processes in materials that have high data density is successfully bridged by a combination of Segmenting and Modality Principle. The division of the video into micro-units (chapters) gives the audience the freedom to independently control the pace of learning (pacing control) to consolidate their knowledge scheme before moving on to the next chapter (Clark & Mayer, 2016). The provision of self-paced rate control through this discrete segment structure is a major technical prerequisite for deciphering the density of linear material that is prone to trigger sensory overload (Mayer, 2014). The findings of a large-scale meta-analysis confirm that this segmenting effect consistently has a significant positive impact on learning outcomes and memory retention by providing a cognitive pause for learners' working memory to process units of information completely (Rey et al., 2019). Furthermore, the integration of segmentation design in video media has been shown to be effective in lowering the total cognitive load and facilitating the self-explanation process of digital learners when digesting complex material conceptualizations (Zheng et al., 2022). When faced with complex data such as ancient manuscript text (see Figure 3) or the structure of state budget numbers (see Figure 4), Ferry applies the Modality strategy by limiting rigid lines of visual text on the screen. Text or objects on the screen only function as visual anchors, while the causal content and its explanatory mechanism are transferred purely to the auditory channel through voice-over. This pattern successfully prevents the phenomenon of channel overloading due to the overlap of visual information in human working memory.

In the psychological dimension of informal learners, the encouragement of generative processes is optimally triggered by the application of Personalization and Voice Principle which are dominant throughout the sample video. The use of conversational tone, inclusive first-person pronouns ("we", "friends"), and natural and expressive intonation of the human voice eliminate formal instructional rigidity. This approach has succeeded in building a strong social presence and emotional closeness between creators and viewers (Mayer, 2021). Experimental investigations in multimedia learning show that learners' ability to recognize, interpret, and feel connected to the emotions expressed by the instructor on screen is a crucial element that stimulates affective engagement (Lawson et al., 2021). In the digital learning ecosystem, this humanistic and expressive verbal message design stimulates the internal motivation of the audience to actively invest their cognitive energy (active processing) in mapping, restructuring, and understanding complex conceptual realities (Alfiriani et al., 2022).

CONCLUSION

This study concludes that Ferry Irwandi's YouTube channel successfully integrates the conventions of social media creative editing with a modern instructional architecture based on Cognitive Theory of Multimedia Learning. Through content analysis of a sample of essay video content with a long duration and high information density, it was found that the minimization of extrinsic cognitive load and the optimization of generative processing were consistently achieved through three main message design pillars, namely: (1) extrinsic process reduction via Coherence and Signaling Principle, (2) essential process management via Segmenting and Modality Principle, and (3) encouraging generative processes via Personalization and Voice Principle. The use of a combination of high-contrast neon digital text, hybrid data visualization on analog whiteboard media, strict acoustic control of background music, and humanistic conversational language styles has proven to be effective in acting as cognitive scaffolding in maintaining attention focus and facilitating the independent construction of digital learners' knowledge schemas in informal learning environments.

The main limitation in this study lies in the focus of analysis that is purely directed at the design aspect of multimedia artifact messages (content-centered analysis), without directly testing the impact of objective cognitive retention at the user level (user-centered analysis) using psychometric measurement or eye-tracking instruments. Based on these limitations, this study recommends that instructional designers, educational technologists, and formal learning media developers begin to adopt creative essay video editing techniques—especially the use of hybrid media and pacing control—in producing e-learning content so that complex academic materials can be lightly consumed without losing their depth of substance. For subsequent researchers, it is recommended to conduct advanced empirical testing involving real learning subjects to measure the effectiveness of this message design on learning outcomes and long-term memory retention.

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