



CONTEXTUAL AUTHENTICITY AND MULTIMODAL MEANING CONSTRUCTION IN WORKPLACE CARBON-NEUTRAL CAMPAIGNS: A PSYCHOLINGUISTIC STUDY OF GENERATION Z EMPLOYEES

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ABSTRACT

Corporate sustainability campaigns increasingly employ multimodal communication to promote Carbon Neutral (CN) initiatives, yet limited research has examined how Generation Z employees construct meaning from these messages in workplace settings. This study investigates Generation Z employees' perceptions of a Carbon Neutral campaign video from a psycholinguistic perspective. A qualitative descriptive approach was employed in a Japanese multinational manufacturing company in Indonesia. Data were collected through multimodal discourse analysis, pre- and post-campaign surveys involving 89 employees, and semi-structured interviews with Generation Z employees. The findings indicate that authentic workplace representations, including real employees and production settings, generate stronger cognitive engagement than animated or AI-generated content. Educational background also influences meaning construction, with university graduates demonstrating conceptual reasoning, while high school graduates tend to adopt procedural reasoning. Although the campaign significantly improved participants' understanding of Carbon Neutral concepts, it produced only limited behavioral change, functioning primarily as an awareness reinforcement mechanism. This study highlights contextual authenticity as a key psycholinguistic factor in multimodal meaning construction and suggests that workplace sustainability campaigns should integrate authentic contexts with participatory communication strategies to enhance Generation Z engagement.

Keywords: contextual authenticity; multimodal psycholinguistics; Generation Z; workplace sustainability communication; Carbon Neutral campaign

INTRODUCTION

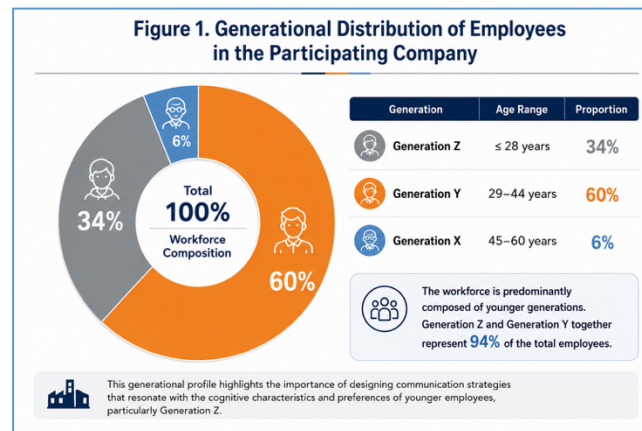
Climate change has become one of the most pressing global challenges, prompting governments, industries, and international organizations to implement strategies for achieving carbon neutrality. Carbon neutrality refers to balancing greenhouse gas emissions through emission reduction, energy efficiency, renewable energy adoption, and carbon offsetting, thereby supporting the broader objective of sustainable development (IPCC, 2023; United Nations., 2015). In manufacturing industries, Carbon Neutral (CN) initiatives typically encompass energy-saving practices, low-carbon technologies, renewable energy utilization, and continuous improvement activities aimed at reducing CO₂ emissions throughout production processes (International Energy Agency., 2023). While these

initiatives are increasingly embedded in corporate sustainability policies, their successful implementation depends not only on technological innovation but also on employees' understanding and engagement.

To foster employee participation, organizations increasingly employ sustainability communication through multimodal media, particularly digital videos that integrate verbal language, visual images, audio, animation, and workplace representations. Multimodal communication enables organizations to communicate complex environmental concepts in more accessible and persuasive ways by simultaneously activating multiple semiotic resources (Kress, G., & van Leeuwen, 2006). From a psycholinguistic perspective, meaning construction is not solely derived from linguistic input but emerges through the interaction between language, visual information, prior knowledge, memory, and contextual experience (Mayer, 2021; Paivio, 1986). Consequently, the effectiveness of sustainability campaigns depends not only on message content but also on how audiences cognitively process multimodal information.

Generation Z represents a particularly important audience for workplace sustainability communication. Having grown up in digitally mediated environments, Generation Z is generally characterized by high visual literacy, rapid information processing, and strong awareness of environmental and social issues (Deloitte., 2024; Francis & Hoefel, 2018). Nevertheless, previous studies consistently report an attitude–behavior gap, indicating that positive environmental attitudes do not necessarily translate into sustainable behaviors (D'Acunto, 2025). This discrepancy suggests that effective sustainability communication should move beyond information delivery and consider how multimodal messages are interpreted, internalized, and transformed into behavioral intentions.

The organizational context further strengthens the relevance of this study. As illustrated in *Figure 1*, the participating company is predominantly composed of younger employees, with *Generation Y* accounting for approximately 60% and *Generation Z* representing 34% of the workforce, while *Generation X* comprises only 6%. Consequently, nearly 94% of employees belong to younger generations. This demographic profile highlights the strategic importance of understanding how Generation Z constructs meaning from workplace sustainability communication, particularly in the implementation of Carbon Neutral initiatives.





Recent studies on multimodal sustainability communication have primarily focused on public campaigns, tourism promotion, social media platforms, and environmental advertising (Du, H., & Cheong, 2025; Shamim, 2023). Although these studies demonstrate the persuasive potential of multimodal communication, relatively little attention has been paid to workplace sustainability communication, particularly within manufacturing organizations where Carbon Neutral policies must be translated into everyday operational practices. Likewise, psycholinguistic research has extensively examined multimodal meaning processing in educational and media contexts but has rarely investigated how employees cognitively construct meaning from corporate sustainability messages in authentic workplace environments. Consequently, empirical evidence explaining why certain multimodal sustainability campaigns succeed in enhancing employee engagement while others remain merely informational is still limited.

This study addresses these gaps by investigating Generation Z employees' perceptions of a workplace Carbon Neutral campaign video in a Japanese multinational manufacturing company operating in Indonesia. Unlike previous studies that primarily evaluate message effectiveness, this research examines how authentic workplace representations—including real employees, production facilities, and actual work practices—influence multimodal meaning construction from a psycholinguistic perspective. The study further explores how educational background shapes cognitive interpretation and whether improved understanding of Carbon Neutral concepts is associated with behavioral engagement.

This study contributes to multimodal psycholinguistics and workplace sustainability communication by introducing *contextual authenticity* as a key factor influencing multimodal meaning construction in organizational environmental campaigns. The findings are expected to provide both theoretical insights into multimodal cognitive processing and practical recommendations for designing more effective sustainability communication strategies targeting Generation Z employees.

METHOD

This study employed a qualitative descriptive design within a psycholinguistic perspective to explore how Generation Z employees construct meaning from a multimodal Carbon Neutral (CN) campaign video in a workplace setting. The study was conducted at a Japanese multinational automotive manufacturing company in Bekasi, Indonesia, where Carbon Neutral has been implemented as part of the company's sustainability strategy. The primary research object was a 2-minute 40-second internal Carbon Neutral campaign video integrating verbal narration, visual images, background music, and authentic workplace scenes.

Data were collected from three complementary sources. First, the campaign video was analyzed using Multimodal Discourse Analysis (MDA) based on the framework proposed by Kress and van Leeuwen (2006), focusing on representational, interactive, and compositional meanings. Second, a pre- and post-campaign perception survey was administered to 89 employees selected through random sampling across multiple departments and generations to assess changes in employees' understanding of Carbon

Neutral concepts. Third, semi-structured interviews were conducted with Generation Z employees (18–30 years old) who had participated in the campaign to explore their cognitive interpretation, emotional responses, and perceived behavioral impact. Non-participant observation during campaign activities was also used to support data triangulation.

Although approximately 90% of Generation Z employees in the company have a high school or vocational education background, the interview participants were intentionally selected to include a larger proportion of diploma and bachelor's degree holders. This purposive sampling strategy was adopted to obtain richer reflections on cognitive meaning construction while retaining several participants with vocational education to enable comparison between conceptual and procedural reasoning. Although approximately 90% of Generation Z employees in the company have a high school or vocational education background, the interview participants were intentionally selected to include a larger proportion of diploma and bachelor's degree holders. This purposive sampling strategy was adopted to obtain richer reflections on cognitive meaning construction while retaining several participants with vocational education to enable comparison between conceptual and procedural reasoning. Participants represented different departments, including production, maintenance, engineering, information systems, and utilities, enabling the study to capture diverse workplace experiences related to Carbon Neutral initiatives.

Research Setting and Research Object

This study was conducted at a Japanese multinational automotive manufacturing company in Bekasi, Indonesia, where Carbon Neutral has been implemented as part of the company's corporate sustainability strategy. The primary research object was an internal Carbon Neutral campaign video produced by the company's Health, Safety, and Environment (HSE) Division. The video has a duration of 2 minutes and 40 seconds and was designed as an educational medium to communicate Carbon Neutral concepts to employees through the integration of verbal narration, visual animation, written text, and background music. Prior to data collection, all participants watched the same video to ensure a common multimodal stimulus for subsequent surveys and interviews.

Figure 2. Research Object: Internal Carbon Neutral Campaign Video Used as the Multimodal Stimulus



The internal Carbon Neutral campaign video (2 min 40 s), produced by the HSE Division, served as the multimodal stimulus in this study. The video integrates verbal narration, visual representations, written text, animation, and background music to communicate workplace sustainability messages to communicate workplace sustainability messages to employees.

Data were analyzed through four stages: (1) multimodal analysis of verbal, visual, audio, and compositional elements of the campaign video; (2) descriptive analysis of survey findings; (3) thematic analysis of interview transcripts to identify recurring patterns in participants' meaning construction; and (4) integration of findings through a psycholinguistic interpretation emphasizing multimodal cognitive processing. Credibility was enhanced through methodological triangulation across video analysis, survey data, interviews, and observations to ensure consistency and trustworthiness of the findings.

RESULTS AND DISCUSSION

RESULTS

Multimodal Analysis of the Carbon Neutral Campaign Video

The multimodal analysis shows that the Carbon Neutral campaign video communicates sustainability through the integration of verbal, visual, and auditory modes within an authentic workplace context. Rather than presenting Carbon Neutral as an abstract environmental issue, the video consistently relates sustainability to employees' daily work activities, including production processes, energy-saving practices, waste management, and continuous improvement initiatives. The use of familiar workplace settings enables viewers to associate environmental responsibility with routine operational practices rather than external environmental campaigns.

Visually, the campaign combines authentic workplace scenes with graphic illustrations, icons, and animated elements to explain complex environmental concepts. Real production facilities, employees, and operational activities are presented alongside visual representations of renewable energy, carbon emissions, and environmental conservation, creating a coherent relationship between organizational practices and global sustainability goals. The visual sequence follows a logical progression from environmental problems to organizational actions and individual responsibilities, facilitating message continuity throughout the video.

The linguistic mode is characterized by concise, informative, and action-oriented expressions. Rather than employing technical environmental terminology, the narration uses simple workplace language that emphasizes collective responsibility, energy conservation, and practical actions that employees can implement in their daily work. Key messages are reinforced through synchronized on-screen text, allowing verbal and visual information to complement one another and reducing ambiguity in message interpretation.

The auditory mode further supports the communication process through background music and narration that maintain a positive and motivational atmosphere. The moderate narration pace and synchronized audio-visual transitions contribute to the coherence of the

message, while avoiding excessive cognitive load for viewers. Instead of creating emotional pressure, the soundtrack reinforces a collaborative organizational climate in which Carbon Neutral is presented as a shared responsibility among employees.

Overall, the multimodal analysis indicates that the campaign video demonstrates a high degree of coherence among its verbal, visual, and auditory resources. These modes work together to communicate Carbon Neutral as a practical workplace activity rather than merely an environmental slogan. The campaign therefore provides a consistent multimodal stimulus for examining how Generation Z employees construct meaning from workplace sustainability communication before their perceptions are explored through the survey and interview findings.

The multimodal analysis demonstrates that the Carbon Neutral campaign possesses a coherent communication design integrating authentic workplace representations with synchronized verbal and auditory messages. The following section examines how employees responded to this multimodal stimulus through the pre- and post-campaign survey, followed by in-depth interviews exploring Generation Z employees' meaning construction.

Contextual Authenticity Enhances Multimodal Meaning Construction

Multimodal discourse analysis revealed that the Carbon Neutral campaign video constructed meaning through the integration of verbal narration, authentic workplace visuals, background music, and real production activities. The video employed eye-level camera angles, medium social distance, concise verbal expressions, and synchronized visual-text composition, producing a coherent multimodal representation of workplace sustainability. These elements facilitated immediate comprehension of Carbon Neutral concepts and positioned sustainability as part of employees' everyday work practices rather than as an abstract environmental issue.

Interview data further demonstrated that participants responded more positively to authentic workplace representations than to animated or AI-generated visual content. Real employees, actual production equipment, and familiar work environments increased message credibility and cognitive engagement. Participants consistently perceived authentic visual representations as more trustworthy and easier to relate to than symbolic illustrations.

From a psycholinguistic perspective, these findings indicate that contextual authenticity supports multimodal meaning construction by activating prior knowledge and workplace experience during message processing. Rather than relying solely on linguistic information, participants interpreted Carbon Neutral messages by integrating verbal input with familiar visual and contextual cues. This finding extends multimodal discourse theory (Kress, G., & van Leeuwen, 2006) by demonstrating that authenticity functions as an important cognitive resource in organizational sustainability communication.

Educational Background Influences Cognitive Meaning Construction

Interview findings revealed two distinct patterns of cognitive interpretation. Employees with university education tended to interpret Carbon Neutral conceptually by associating it with innovation, energy-saving technologies, *Kaizen* activities, and production

improvement. They proposed technological solutions such as *Karakuri Kaizen*, IoT-based energy monitoring, automatic sensors, and energy-efficient production systems.

In contrast, employees with high school education primarily interpreted Carbon Neutral procedurally. Their responses focused on following organizational rules, including switching off lights and air conditioners, sorting waste, and complying with workplace regulations.

These differences suggest two different psycholinguistic processing mechanisms. University graduates demonstrated conceptual reasoning, whereas high school graduates predominantly relied on procedural reasoning. This distinction is consistent with schema theory and cognitive load theory, which suggest that individuals with richer prior knowledge construct more elaborate mental representations when processing new information.

The findings imply that a single communication strategy may not effectively address employees with diverse educational backgrounds. Sustainability communication should therefore accommodate different levels of cognitive complexity.

Awareness Reinforcement Does Not Necessarily Lead to Behavioural Change

The survey indicated that employees' understanding of Carbon Neutral increased substantially following the campaign, rising from 40.5% before the campaign to 84.3% afterward, suggesting that the campaign successfully improved conceptual understanding. However, interview data revealed limited behavioural impact. Most Generation Z participants stated that the campaign primarily served as a reminder of environmental knowledge they had already acquired during secondary education. Rather than changing behaviour, the campaign reinforced existing environmental awareness.

This finding reflects the widely reported attitude–behavior gap in environmental communication. Knowledge acquisition alone is insufficient to stimulate behavioural transformation. Effective sustainability communication requires emotional engagement, personal relevance, and opportunities for behavioural enactment.

From a psycholinguistic perspective, comprehension and behavioural intention represent different cognitive processes. Successful meaning construction does not automatically produce behavioural commitment unless individuals perceive the message as personally meaningful and actionable.

Generation Z Prefers Participatory Sustainability Communication

A final theme emerging from the interviews concerns Generation Z's preference for active participation rather than passive information reception. Participants expressed interest in contributing to Carbon Neutral initiatives through Kaizen activities, technological innovation, energy patrols, and improvement teams rather than merely watching informational videos.

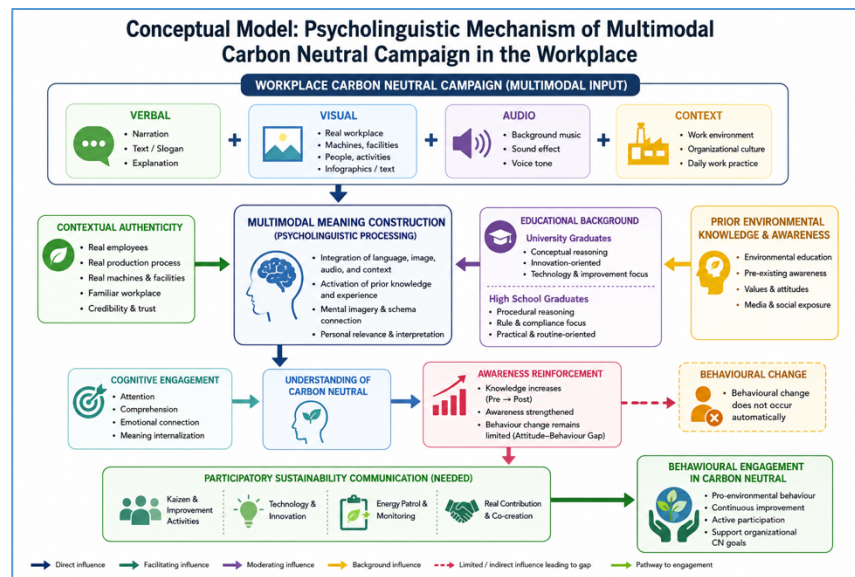
Interestingly, participants rarely suggested improving the campaign's verbal content. Instead, they emphasized the importance of authentic human presence and requested greater involvement in organizational sustainability programs. These responses suggest that

Generation Z values opportunities to contribute meaningfully rather than simply receiving environmental information.

This finding aligns with Self-Determination Theory, which proposes that autonomy, competence, and relatedness enhance intrinsic motivation. Participatory sustainability communication therefore appears more likely to stimulate long-term engagement than one-way persuasive messaging.

Taken together, the four themes indicate that the effectiveness of workplace sustainability communication depends not only on message clarity but also on contextual authenticity, employees' cognitive backgrounds, and opportunities for meaningful participation. The study proposes *contextual authenticity* as a psycholinguistic mechanism that facilitates multimodal meaning construction by connecting organizational sustainability messages with employees' lived workplace experiences.

Conceptual Model



DISCUSSION

The present study demonstrates that the effectiveness of workplace Carbon Neutral communication is determined not merely by the clarity of information but by the way employees cognitively construct meaning through multimodal interaction. Across the four themes, the findings consistently indicate that contextual authenticity, educational background, and prior environmental knowledge shape how Generation Z employees interpret and internalize sustainability messages. These findings extend previous studies on multimodal communication by emphasizing that meaning construction is an active cognitive process grounded in authentic workplace experiences rather than passive reception of information.

The first finding highlights the importance of *contextual authenticity* in facilitating multimodal meaning construction. Participants consistently reported that the use of real employees, actual production processes, and familiar workplace settings enhanced message credibility and comprehension. This finding supports multimodal discourse theory, which argues that meaning emerges through the integration of multiple semiotic resources rather than verbal language alone (Kress, G., & van Leeuwen, 2006). From a psycholinguistic perspective, authentic workplace representations activate prior knowledge and episodic memory, allowing individuals to integrate linguistic and visual information more efficiently (Mayer, 2021; Paivio, 1986). Unlike studies focusing primarily on visual attractiveness, this study suggests that *authenticity itself functions as a cognitive cue*, enabling employees to connect organizational sustainability messages with their lived workplace experiences. This constitutes the study's primary theoretical contribution by positioning contextual authenticity as a psycholinguistic mechanism in multimodal workplace communication.

The second finding demonstrates that educational background influences employees' cognitive processing of Carbon Neutral messages. University graduates tended to employ conceptual reasoning by associating Carbon Neutral with technological innovation, continuous improvement, and long-term organizational sustainability. In contrast, high school graduates predominantly interpreted the campaign procedurally, emphasizing compliance with workplace rules and routine environmental practices. These findings are consistent with schema theory, which proposes that individuals interpret new information through existing cognitive structures developed from prior knowledge and educational experiences (Rumelhart, 1980). They also support Cognitive Theory of Multimedia Learning, which argues that learners actively organize verbal and visual information into coherent mental representations according to their existing cognitive schemas (Mayer, 2021). Consequently, workplace sustainability communication should not assume homogeneous cognitive processing among employees but instead accommodate varying levels of conceptual understanding.

A third important finding concerns the relationship between understanding and behavioral change. Although survey results indicated a substantial increase in employees' understanding of Carbon Neutral concepts after viewing the campaign, interviews revealed only limited changes in actual workplace behavior. The campaign primarily reinforced existing environmental awareness rather than generating new sustainable practices. This finding reflects the well-documented *attitude-behavior gap* in environmental communication, where increased knowledge and positive attitudes do not necessarily translate into corresponding behavioral change (Kollmuss & Agyeman, 2002). From a psycholinguistic perspective, comprehension and behavioral engagement represent different cognitive stages. Meaning construction may successfully produce understanding, yet behavioral transformation requires additional motivational, social, and organizational factors that extend beyond message comprehension. Thus, effective workplace sustainability communication should be viewed as an ongoing process rather than a single informational intervention.

The fourth finding indicates that Generation Z employees prefer participatory forms of sustainability communication over one-way message delivery. Participants expressed

greater interest in contributing through Kaizen activities, technological innovation, energy-saving initiatives, and collaborative environmental improvement than merely receiving information through campaign videos. This finding aligns with Self-Determination Theory, which suggests that autonomy, competence, and relatedness foster intrinsic motivation and sustained behavioral engagement (Deci & Ryan, 2000). Rather than functioning solely as recipients of organizational messages, Generation Z employees appear to perceive themselves as active contributors to sustainability initiatives. Therefore, organizations should complement multimedia campaigns with participatory programs that enable employees to experience sustainability through direct involvement.

Taken together, these findings contribute to both psycholinguistics and workplace sustainability communication by proposing *Contextual Authenticity* as a conceptual mechanism linking multimodal communication with employees' cognitive meaning construction. The proposed conceptual model suggests that authentic workplace contexts facilitate cognitive engagement through multimodal processing, while educational background and prior environmental knowledge shape individual interpretation. Although this process effectively strengthens environmental awareness, behavioral engagement requires participatory communication that allows employees to transform understanding into concrete workplace practices. This model extends existing multimodal communication research by integrating cognitive processing, organizational context, and employee participation within a single explanatory framework.

Unlike previous studies that primarily emphasize the persuasive effects of multimodal sustainability communication, this study demonstrates that contextual authenticity functions as a psycholinguistic mechanism facilitating multimodal meaning construction in workplace settings. The proposed model explains why authentic organizational contexts enhance cognitive engagement and environmental understanding, while behavioral engagement requires participatory communication beyond information delivery. This conceptual contribution broadens the application of multimodal psycholinguistics within workplace sustainability communication and provides a foundation for future empirical model testing.

CONCLUSION

This study investigated how Generation Z employees construct meaning from a multimodal Carbon Neutral campaign in a Japanese multinational manufacturing company from a psycholinguistic perspective. The findings demonstrate that multimodal workplace communication extends beyond information delivery by engaging employees in an active process of meaning construction. Contextual authenticity, educational background, and prior environmental knowledge collectively shape how Carbon Neutral messages are interpreted, understood, and internalized. Although the campaign significantly strengthened employees' understanding of Carbon Neutral concepts, its influence on behavioral change remained limited, indicating that cognitive understanding alone is insufficient to foster sustainable workplace practices.

The principal contribution of this study is the introduction of *contextual authenticity* as a psycholinguistic mechanism that facilitates multimodal meaning construction in workplace sustainability communication. The proposed conceptual model explains that

authentic workplace representations enhance cognitive engagement by connecting organizational sustainability messages with employees' everyday experiences, while behavioral engagement requires participatory communication that enables employees to actively contribute through continuous improvement and collaborative sustainability initiatives. This finding extends the application of multimodal psycholinguistics from educational and media contexts to organizational sustainability communication.

Practically, the findings suggest that organizations should complement multimedia sustainability campaigns with authentic workplace content and participatory programs that encourage employees' direct involvement in Carbon Neutral initiatives. Future research may validate the proposed conceptual model quantitatively across different industries and cultural contexts and examine additional factors, such as organizational culture, leadership communication, and environmental values, that may influence the relationship between multimodal meaning construction and pro-environmental behavior.

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