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A multimodal analysis of teaching activities in Romance language textbooks: a case study on environmental themes

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Abstract: This study constitutes a multimodal analysis of selected teaching activities present in Romance language textbooks. Drawing on Kress and van Leeuwen's visual social semiotics framework, the analysis uncovers certain disparities across languages in terms of content allocation and instructional strategies. Results indicate that French and Spanish materials demonstrate the most comprehensive integration of visual elements for pedagogical purposes, whereas Italian textbooks exhibit more aesthetic or contextual tendencies. The dominant denotative functions of visual elements limit the potential for more meaningful student engagement. The findings enhance our comprehension of how multimodal design decisions influence sociocultural education within foreign language teaching contexts and offer practical guidelines for creating more instructionally sound materials that promote environmental consciousness as a fundamental aspect of language education.

Keywords: multimodal analysis, Romance language textbooks, visual semiotics, Italian, French and Spanish, environmental education

Introduction

Textbooks constitute an organised compendium of a target language knowledge, offering a window into culture associated with this language (Risager 2021). They include various teaching materials, such as texts, images, videos, audios, and often interactive activities. Today's language textbooks bear resemblance to glossy magazines, with colours and imagery playing a role nearly equivalent to that of the educational texts (Weninger 2021), therefore their analysis requires multimodal approaches that allow us to observe how different modes interact with each other.

Our study focuses on teaching activities dedicated to sociocultural content with particular regard to environmental themes that fall within the transnational culture pedagogy approach (Risager 2007), which focuses on 'global cultural consciousness' (Kumaravadivelu 2008), 'intercultural citizenship' (Byram 2010) or 'intercultural competence of the world citizen' (Risager 2007). These paradigms serve to underscore new cultural values in language teaching, thereby facilitating language learners' participation in transnational social discourse across different languages.

The integration of environmental content into educational contexts has a long history dating back to the early 1980s, when the United Nations formulated six main objectives for environmental education (UNESCO 1977; Jacobs/ Goatly 2000).

In 2015, all United Nations Member States unanimously adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), which include shared strategies for environmental protection and social well-being. The SDGs have been included into educational curricula at various institutions. In the Polish context specifically, there has been a growing emphasis on new strategies for climate protection and sustainable development, with efforts to introduce sustainability education into various fields in higher education. The University of Warsaw launched a master's program on Sustainable Development that connects different academic disciplines related to transportation, food systems, consumption, resource management, and energy use. This educational framework enhances students' understanding of the natural world and promotes awareness of human-environment relationships (Uniwersytet Warszawski 2021). According to Goffin (1998), environmental education fosters systemic thinking through the examination of environmental components and their interconnections within an 'eco-socio-system' framework, thereby enabling students to understand the intricate relationships between human behaviour and climate consequences.

The objective of the present study is to qualitatively examine a multimodal composition, and didactic functionality of teaching activities dedicated to environmental content in French, Spanish, and Italian language textbooks. The methodology draws on social visual semiotics (Kress/ van Leeuwen 2006). The investigation will focus on educational materials employed at Poland's six top-ranked academic institutions providing philological programs in these three languages. It should be noted that the selected textbooks originate from established and recognised publishing houses with global distribution. Consequently, the findings may prove valuable to educators, material designers, curriculum specialists, and scholars working within these linguistic fields. A multimodal approach employed in this study may serve as an example of analysis that examines didactic functionality of all the printed elements constituting a textbook teaching activity.

1. Transnational paradigm in language textbooks content

Research on cultural content in language textbooks has traditionally developed along two primary trajectories that have shaped our understanding of how cultural elements are integrated into language instruction. The diachronic perspective examines the evolution of cultural content within textbooks, tracing major shifts in pedagogical paradigms that reflect broader changes in language teaching methodology (Kramsch 2013; Weninger/ Kiss 2015). This evolutionary approach has identified three distinct phases in cultural pedagogy: the monocultural approach, the intercultural approach and the transnational one. The first approach, a traditional national perspective with monocultural characteristics, relied heavily on factual information about target language countries; the intercultural paradigm that emerged in response to increased social mobility and the need for effective intercultural communication (Byram 1997); and the contemporary transnational framework. This latest approach has developed in response to complex global phenomena, including the increasing hybridisation of cultures

(Bhabha 1997), multicollectivity (Rathje 2009), and the dominance of screen-mediated communication (Kress 2003), which have fundamentally transformed the cultural landscape. The transnational paradigm attempts to provide innovative teaching solutions that enhance critical thinking (Kumaravadivelu 2008), political consciousness, and global citizenship (Byram et al. 2017) by addressing pressing contemporary issues such as climate change, environmental education, peace, wars, migrations, human rights (Risager 2007), terrorism, pandemics, politics, consumerism, democratic values, digitalization, social mobility, and globalisation.

The methodological research strand has established three primary analytical approaches for examining cultural content in language textbooks. Content analysis, predominantly based on Krippendorff's theoretical framework (2004), focuses on linguistic representations of specific sociocultural concepts, including national references (Yamanaka 2006), cultural themes (Ramirez/ Hall 1990), gender polarisation (Lee 2018), and the proportional relationship between high and popular culture elements (Rodríguez/ Espinar 2015). Critical discourse analysis (CDA), which gained prominence in the 1980s (Fairclough 1995), examines power imbalances and ideological factors in textbook content (Yuen 2011; Curdt-Christiansen 2008), including the representation of immigrant narratives (Gulliver 2010). Multimodal analysis represents the newest methodological approach, addressing the increasingly visual nature of contemporary educational materials.

Despite the growing recognition of environmental themes within transnational cultural education frameworks, research specifically examining climate change and environmental content in language textbooks remains limited, though the existing studies provide crucial insights into current practices and significant gaps. Jacobs and Goatly's (2000) pioneering study examined environmental issue frequency and engagement levels across 17 randomly selected coursebooks used within the SEAMEO (Southeast Asian Ministers of Education Organisation). The results were revealing: of 6,167 total activities analysed, only 134 (2%) contained environmental content, averaging merely eight environmental activities per textbook. Al-Jamal and Al-Omari's (2014) subsequent study employed conceptual content analysis to examine global ecological themes in 10th-grade EFL textbooks, utilising a four-level framework of ecological education encompassing ecological sensitivity, knowledge, skills, and contribution. Their analysis revealed modest environmental theme inclusion, with only 17.86% of textbook content dedicated to environmental issues. Risager's (2018) qualitative research examining world representation in Danish foreign language textbooks employed critical discourse analysis methodology to investigate environmental content presentation. The study revealed that climate-focused chapters lacked coherence, instead presenting loosely connected texts across various genres, including poems, informative texts, recommendation lists, and newspaper articles. Risager identified climate change as a major political and social issue within citizenship education, alongside challenges such as unemployment, religious fundamentalism, war, refugees, famine, and human trafficking. While the study emphasised the civic dimension of climate change education and students' environmental responsibility, it found that materials do not promote active participation in environmental protection efforts.

Guillemette et al.'s (2008) analysis of French textbooks provided additional valuable insights, revealing significant limitations in educational content: environmental themes received minimal coverage beyond immediate contexts, and students were rarely encouraged to consider pro-environmental options or develop actionable environmental competencies.

These studies collectively illuminate substantial gaps in environmental education integration within language instruction, suggesting that while contemporary transnational approaches theoretically recognise climate issues as crucial cultural content, pedagogical implementation remains underdeveloped and inconsistent across different linguistic and cultural contexts, highlighting the urgent need for more comprehensive and engaging environmental content in language textbooks.

2. Multimodal approaches in analysing language textbooks

The evolution of textbook design toward increasingly visual formats has elevated the importance of multimodal analytical frameworks. Visual components now occupy a central position in educational materials, though questions remain about whether these elements genuinely support pedagogical objectives or simply provide aesthetic enhancement to linguistic content (Weninger/ Kiss 2013; Chapelle 2016; Bertucci/ Rossetti 2019). Research indicates that visual aids in educational materials frequently remain confined to contextual or referential roles, serving to introduce topics without actively supporting task completion.

The interconnections among images, texts, and pedagogical tasks represent a crucial area of investigation for this research. Scholars examining these relationships typically seek to understand both their representational coherence and their functional contribution to learning activities (Weninger/ Kiss 2013; Chapelle 2016). The concept of guided semiosis, as applied to image-text relationships in language textbooks, describes how pedagogical contexts shape learners' interpretation of cultural meanings through textbook guidance (Weninger/ Kiss 2013: 696; Xiong/ Peng 2021). This semiotic interplay between textual and visual elements can either limit meaning-making processes or encourage students to independently explore and uncover cultural phenomena, thereby enriching their understanding of foreign language contexts.

Weninger and Kiss (2013) developed their guided semiosis framework through analysis of cultural activities containing three components: textual content, assigned tasks, and visual materials. Their findings revealed that text-image semiotic relationships operate primarily through indexical connections, where visuals reinforce textual denotational meanings while inadequately supporting task-oriented pedagogical actions.

Utilising social semiotic methodology, Xiong and Peng (2021) investigated image-text relationships within pedagogical frameworks, examining visuals and corresponding texts related to Chinese educational cultural values. They identified three categories of semiotic connections: denotational/pedagogic/linguistic relationships, denotational/pedagogic combinations, and purely denotational associations. Despite the prevalence of denotational types, certain images demonstrated effective pedagogical engagement, exemplifying well-constructed guided semiosis that directs learners toward

specific cultural understandings. These effective visuals promote active reflection and enable connections between presented material and personal experiences. However, the predominantly denotational nature of images limits their pedagogical effectiveness by failing to provide opportunities for deeper cultural exploration.

Building upon this methodological foundation, Lendo et al. (2023) analysed semiotic image-text relationships and cultural content in German language textbooks utilised in Indonesian educational contexts. Their research demonstrated that pedagogically-informed construction of these materials creates opportunities for learning, cultural critical reflection, and exploration of students' cultural backgrounds. Effective pedagogical relationships between images and texts emerge when visual and textual content collaborate to enhance learning processes and promote critical thinking.

Chapelle's (2016) examination of visual functions in French textbooks used across the United States merits particular attention. Her research identified five primary categories of image-text-task relationships: task essential functions, text enhancement roles, general orientation purposes, theme construction, and independent operations. Chapelle stressed that the integration of these elements directly correlates with teaching activity effectiveness. Similarly, Bertucci and Rossetti (2019) conducted significant research on cultural sections within Italian language textbooks, examining both elements that foster intercultural communicative competence (ICC) development and prevailing cultural content patterns. Their findings revealed that the primary instructional goal of examined textbooks was not ICC development or accurate cultural representation, but rather grammatical and lexical knowledge construction. Visual elements primarily served to reinforce textual meanings, while cultural representations remained stereotypical and oversimplified, presenting Italy predominantly as a tourist destination characterised by architectural beauty and culinary excellence.

Contemporary visual elements in educational materials keep functioning primarily as denotational textual supplements, reinforcing meaning or supporting comprehension. As Xiong and Peng observe, "While this line of inquiry has offered refreshing insights on how visual resources are manipulated in making attitudinal and evaluative meanings, much remains unclear about how they are connected to pedagogic designing" (2021: 165). Consequently, establishing comprehensive guidelines for visual aid implementation in educational resources becomes essential, encompassing both traditional textbooks and digital teaching platforms.

3. Research design and methodology

The present study involves a qualitative multimodal examination of selected teaching activities with some quantitative insights (Jacobs/ Goatly 2000; Krippendorff 2004), which allows for both a general analysis of environmental content distribution and the examination of semiotic relations within teaching activities. The three Romance languages, French, Italian and Spanish, were selected based on both their shared linguistic affiliation and a statistical criterion, as they are among the most widely studied Romance languages in Europe and Poland (Eurydice 2024; Eurostat 2024). The environmental issue chosen for the study is seen as a single 'stable curricular issue' that

allows for the credible contrastive analysis across different textbooks (Bezemer/ Kress 2008: 15).

The selection of textbooks followed a three-stage process: (1) identification of Romance language courses at the six highest-ranked Polish universities: University of Warsaw, Jagiellonian University in Kraków, Adam Mickiewicz University in Poznań, the University of Wrocław, University of Gdańsk, and Nicolaus Copernicus University in Toruń (Perspektywy 2024); (2) compilation of all B1-B2 level textbooks from their syllabi; and (3) (3) selection, for each language, of the most frequently adopted textbook that also contained a dedicated unit on environmental themes. This unit, along with its activities, served as the reference point for the subsequent analysis.

The analytical framework draws on Kress and van Leeuwen's (2006) visual social semiotics, which offers robust theoretical tools for examining how different semiotic modes interact within pedagogical contexts. This approach was selected because it specifically addresses the interrelationship between visual and textual elements while considering their pedagogical functions – an essential consideration for educational materials analysis. The notion of 'teaching activity' used in the study refers to tasks or exercises designed to achieve specific learning objectives (Jacobs/ Goatly 2000). It is the basic analytical unit that may consist of instruction, image and text. Each 'teaching activity' constitutes, within this framework, a meaningful whole in which every element plays or should play a significant teaching function (Weninger/ Kiss 2013).

The main objective of this study is to illustrate exemplary uses of visual means in Romance language textbooks by examining teaching activities whose elements interact with each other to achieve specific educational goals.

The study employed several complementary analytical techniques. First, purposive sampling was used for textbook selection, focusing on materials widely adopted in Polish academic institutions that explicitly include environmental themes. Second, a systematic content review was conducted across selected textbooks to identify teaching activities addressing climate change, sustainability, or related ecological themes through text, images, or instructions. Third, multimodal analysis was applied using an analytical grid based on Kress and van Leeuwen's three metafunctions (2006). Each selected teaching activity was examined through qualitative coding of its visual and textual elements according to their compositional, representational, and interactive features. Finally, comparative analysis across textbooks enabled the identification of variations in the multimodal representation of environmental themes.

The analytical process proceeds in three steps. First, the compositional metafunction serves to identify the component elements of the entire activity and their relative positions. This step examines how visual and textual elements are arranged within the teaching activity. Second, using the representational metafunction, we examine the content of text and image – that is, what phenomena, objects, and themes are presented. Our analysis specifically identifies teaching activities in which texts, instructions, and/or images explicitly refer to climate change and environmental themes. Finally, the interactive metafunction focuses on the possible interaction between image, text, instruction and learners, i.e., what kind of pedagogical relationship can emerge

between the activity and the learner, and how it might influence the process of content interpretation.

While this method is intentionally straightforward and does not account for nuanced interpretations, our primary objective was to outline the main tendencies in the implementation of visuals introducing sociocultural content.

3.1. 'Teaching activity' analysis

The first activity subjected to a detailed analysis (Fig. 1) is an example drawn from a French textbook, in which visual elements most often served an essential function. The teaching activity comes from the textbook *Alter Ego + 3* at B1 level, *Dossier 7*, titled *Je sauvegarde*. It is placed in the textbook's section titled *Le vie au quotidien*, which in the case of Unit 7 has an additional thematic subtitle *Ma ville*. The activity is numbered 1 in the textbook. Its purpose is to introduce a new theme, sparking interest among learners (presentation). It should be added that the entire Chapter 7 (*Dossier 7*) is devoted to environmental protection and phenomena resulting from climate change. The presented pedagogical objectives concern observation skills and hypothesis formulation. Regarding the compositional metafunction, the activity is based on three elements: instruction, visuals, in this case, two posters presenting specific themes, and text located exclusively within the posters. Learners must answer two open questions regarding the content of two posters, inferring information from both linguistic and visual content. The entire activity forms a coherent whole, where text and image cooperate in achieving didactic goals. Moreover, the selected posters constitute authentic linguistic-visual input. The first poster features the main slogan "Nantes Capitale verte de l'Europe 2013", with the same title in English alongside it, which may facilitate understanding of the poster's content. The slogan of the second poster is "La nouvelle vie des déchets, c'est aussi notre culture". From the representational perspective, the first poster falls within the thematic scope categorised as 'green cities'; whereas, the second poster refers to the theme of 'waste and recycling'. The second poster presents a more complex multimodal composition centred on an elephant sculpture constructed entirely from cardboard waste materials. The elephant, as a symbol of environmental conservation and one of the largest terrestrial animals, becomes a powerful metaphor for the scale of waste management challenges while embodying the campaign's message – waste can be transformed into something valuable. The textual elements employ a deliberate visual hierarchy: the first part of the slogan in bold green evokes environmental themes, while "c'est aussi notre culture" in brown reframes recycling as a cultural practice and collective civic responsibility, not merely an environmental necessity. The poster's composition places the cardboard elephant prominently in the center, with its texture and materiality clearly visible, making the construction from waste materials explicit. By transforming waste into art, the poster invites viewers to reconsider their relationship with recycling. The textbook question guides learners to identify both objectives: the practical one (promoting recycling collection) and the cultural-educational one (repositioning waste management as a cultural value).

While the first poster uses photography of urban infrastructure to communicate institutional environmental achievement, the second employs artistic creativity and metaphor for grassroots cultural transformation. Together, they present two complementary approaches to environmental communication in language pedagogy.

Moreover, the posters occupy almost half of the page, constituting eye-catching visual material that also draws attention to the linguistic input (Xiong/ Peng 2021). The colours used in the foreground – yellow, green, and brown – are expressive, harmonising with the graphic design of the entire subchapter.

The three elements present in the activity interact with each other in an appropriate manner: the text has been placed inside the poster, creating a coherent whole. Both textual and visual inputs work together in guiding learners' action. Undoubtedly, the image serves an essential function in achieving the specific teaching objectives, e.g., reflection and oral discussion; and the activity itself is practically based on the efficient combination of linguistic and visual elements.

Fig. 1. Extract from "Alter Ego + 3 (B1)", Dossier 7, Je sauvegarde".

The second example (Fig. 2) comes from a Spanish textbook *Aula internacional 3, (B1). Nueva edición*, from chapter 11, titled *Un mundo mejor*, which, as in the previous case, is entirely devoted to the themes, such as 'sustainability', 'environmental protection', and 'climate change'. The selected activity is numbered 4a in the textbook and is found in the *Explorar y reflexionar* section, that is, in the part concerning the analysis of previously introduced linguistic input (practice). Its main purpose is the analysis of grammatical issues: learners must match the beginning of sentences with the proposed endings following the grammatical rules they have learned.

Regarding the compositional metafunction, the activity consists of all three elements: instruction, text, and four images with the same didactic function. The content

of the visual means is clearly linked to the content of the sentences; it's worth mentioning that, in the first case, the inscription *RECICLEMOS* above a graphic depicting a bicycle on a yellow background may more effectively facilitate understanding of the example. As for the representational function, the four visual elements, like the linguistic input, concern various phenomena related to environment protection and climate change: 'waste', 'air contamination', and 'environmental threats'. Activity 4a occupies practically 2/3 of the textbook page; the visual elements are emphasized by placing them in the central part, between sentence fragments, so the learners' gaze probably falls first on them and only later on the text. Their denotational function supports the process of orientation in the themes, facilitating their identification.

The pedagogical interaction between visuals and sentences occurs at the level of denotation (Weninger/ Kiss 2013). The instruction does not in any way suggest using the visual elements in solving the task. They are practically unnecessary, and the sentences could simply be arranged in columns. Learners are not invited either to observe the visuals, or to carry out a given activity.

EXPLORAR Y REFLEXIONAR

4. CUANDO SE HICIERON CAMPAÑAS P. 110, EJ. 2

A. Relaciona las frases de la izquierda con su continuación más lógica. A veces existen varias combinaciones.

1. La gente empieza a reciclar más
2. La gente empezará a reciclar más
3. La gente empezó a reciclar más

Reciclemos

a. **cuando se hagan** campañas en las escuelas.
b. **cuando se hacen** campañas en las escuelas.
c. **cuando se hicieron** campañas en las escuelas.

4. No se puede usar el coche
5. No se podrá usar el coche
6. No se pudo usar el coche

a. **hasta que** no **bajan** los índices de contaminación atmosférica.
b. **hasta que** no **bajen** los índices de contaminación atmosférica.
c. **hasta que** no **bajaron** los índices de contaminación atmosférica.

7. Hay que permanecer en casa
8. Habrá que permanecer en casa
9. Hubo que permanecer en casa

a. **mientras duren** las fuertes lluvias.
b. **mientras duraron** las fuertes lluvias.
c. **mientras duran** las fuertes lluvias.

10. La contaminación del aire en las ciudades desciende
11. La contaminación del aire en las ciudades descenderá
12. La contaminación del aire en las ciudades descendió

a. **en cuanto se tomaron** medidas como la prohibición de entrar en el centro urbano en coche.
b. **en cuanto se tomen** medidas como la prohibición de entrar en el centro urbano en coche.
c. **en cuanto se toman** medidas como la prohibición de entrar en el centro urbano en coche.

Fig. 2. Extract from "Aula internacional 5. (B2.2) Nueva edición, Unidad 4, Antes de que sea tarde".

The third example (Fig. 3) was taken from the textbook *Nuovissimo Progetto Italiano B1-B2*, chapter 7, titled *Andiamo a vivere in campagna*, from the *Elementi comunicativi e lessicali* section constituting the main linguistic input presented at the beginning of the chapter (presentation). The title of the activity is *Vivere fuori città*, and its aim is to read a dialogue and verify previously formulated hypotheses. The composition of the activity is again based on three main component elements: instruction, text in the form of a longer dialogue, and three photographs loosely related to the dialogue. Their position on the page is not central but peripheral, on the sides of the dialogue,

which makes the learners' attention concentrate on the text. The content of the dialogue centers on comparing the pros and cons of city and countryside living rather than directly addressing environmental issues. Nevertheless, two concepts within the scope of analysis appear here: *ecologia* and *ecologista*, which are presented in a slightly humorous or even ironic manner... As for the interactive metafunction, there is only a superficial and loose connection between the textual and visual components present in the activity. While one photograph depicts urban transport, thus seemingly relating to the dialogue's mention of traffic issues, the image presents an idyllic view of a quiet city with a solitary tram – a representation that contradicts the text's focus on traffic congestion, communication problems, fast-paced student life, and allergies. The photos therefore serve primarily an aesthetic-contextual role rather than authentically representing the thematic concerns articulated in the dialogue. The instructions do not contain any reference to the visuals' content, and learners are not asked to take any action in relation to the photos.

PROGETTO italiano 2

A Vivere fuori città

1 Leggete ora il dialogo e verificate le vostre risposte dell'attività precedente.

Lorenzo: Ma stai cercando in centro o in periferia?
Daniela: Veramente... fuori città!
Lorenzo: Davvero? Credevo che tu volessi vivere in centro.
Daniela: Ma è lo stesso: prenderei il treno e poi sempre con la metro arriverei all'università, 30 minuti invece di 20.
Lorenzo: Vero, ma non ho capito perché.
Daniela: Per tanti motivi Lorenzo: traffico, inquinamento, rumore!
Lorenzo: E va be', come in tutte le grandi città. Ma in compenso avresti tante cose a portata di mano: cinema, teatri, locali, palestre, negozi.
Daniela: Certo, solo che io, fratellino, mi voglio laureare in 3 anni, non in 10!
Lorenzo: E dai! Sarò un po' fuori corso, ma sto per laurearmi, eh?
Daniela: Sì, da tre anni... Comunque, magari trovassi qualcosa in una piccola città vicino a Milano: con più tranquillità, più verde, più aria pulita.
Lorenzo: Non sapevo che fossi ecologista.
Daniela: Non c'entra l'ecologia, è solo qualità della vita. All'inizio, quando venivo a trovarti, pensavo che tutto qui fosse bellissimo.
Lorenzo: Infatti, cos'è cambiato?
Daniela: Non avevo capito che gli studenti vivessero così: sempre di corsa e in appartamenti piccoli come il tuo!
Lorenzo: Dai, non è così piccolo.
Daniela: E non immaginavo che una cosa semplice, come prendere la metro all'ora di punta o trovare parcheggio, potesse essere così difficile.
Lorenzo: Mah, io ormai non ci faccio caso, a me la vita in città piace.
Daniela: Ovvio, con tutte le tue allergie non potresti mai vivere in campagna!
Lorenzo: Io?! Se lo vuoi sapere, domenica accompagnerò Gianna a un agriturismo.
Daniela: Ah... non pensavo che ti piacessero queste cose!
Lorenzo: Infatti, le dovevo un favore...

Fig. 3. Extract from "Nuovissimo Progetto Italiano 2 (B1-B2), Unità 7, Andiamo a vivere in campagna".

The above examples drawn from the textbook document the adopted research procedure aimed at identifying both the composition of teaching activities with references to the environment and climate, as well as the main tendencies in combining visuals with linguistic input and instruction. The qualitative exploration of compositional interaction within teaching activities enabled the identification of various models for integrating visual elements into pedagogical tasks, from the essential/functional to the aesthetic-contextual.

4. Discussion and conclusions

The multimodal analysis of environmental content across Romance language textbooks reveals distinct pedagogical approaches to integrating visual and textual elements, with significant implications for environmental education effectiveness. The examination of representative activities from French, Spanish, and Italian materials demonstrates varying degrees of semiotic cohesion and pedagogical functionality.

The French textbook activity exemplifies optimal multimodal design, where visual elements serve an **essential function** in achieving pedagogical objectives. The authentic poster materials create a coherent semiotic relationship between text, image, and task, effectively guiding learners toward meaningful environmental content interpretation. This approach demonstrates how well-constructed guided semiosis can enhance both linguistic learning and environmental awareness, with visuals occupying a central position that supports rather than merely decorates the learning process.

In contrast, the Spanish textbook illustrates a **denotational approach** where visual elements remain functionally peripheral to the core pedagogical task. While the images relate thematically to environmental content, they operate independently of the grammatical exercise, missing opportunities for deeper multimodal engagement. This represents a common tendency where visuals serve primarily as thematic orientation tools rather than integral components of the learning activity.

The Italian textbook example demonstrates the most limited integration, with visuals functioning in an **aesthetic-contextual role** that bears minimal connection to the textual content or pedagogical objectives. The peripheral positioning of photographs and absence of visual-textual interaction reflect a traditional approach where images serve decorative purposes rather than supporting environmental education goals.

These findings align with previous research indicating that visual elements in language textbooks frequently remain confined to denotational or contextual functions (Xiong/ Peng 2021; Weninger/ Kiss 2013). However, the French example demonstrates that effective multimodal integration is achievable when visual elements are pedagogically designed to work cohesively with textual and task components. This suggests that the challenge lies not in the inherent limitations of visual materials, but in their strategic implementation within environmental education contexts.

The analysis reveals that successful environmental content delivery in language textbooks requires deliberate attention to compositional, representational, and interactive metafunctions. When these elements work synergistically, they create opportunities for learners to engage critically with environmental themes while developing

language competencies. Contrarily, when visual elements operate independently of pedagogical objectives, valuable opportunities for integrated environmental and linguistic learning are lost.

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