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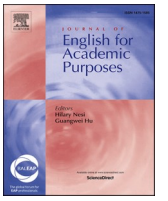

Approaching digital genre composing through reflective pedagogical praxis

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ABSTRACT

With the development of Web 2.0 we have witnessed an ever-expanding repertoire of digital genres. This brings with it new communicative needs and invites us to reflect on possible ways of teaching digital multimodal composing in EAP courses. Using case study research and genre theory as a heuristic, this article critically discusses the implementation of a pedagogical practice that sought to raise the students' rhetorical consciousness of aspects of genre continuity, evolution and innovation, focusing on digital genres of professional and public science communication. The examination of the digital texts composed by the students shows that several factors (genre awareness, genre knowledge transfer, reliance on acquired content and formal schemata and interdiscursive performance) may play an important role when recontextualising specialised content across genres. The study findings also suggest that while rhetorical consciousness facilitates the processes of recontextualising and repurposing content to reach broad audiences, L1 transfer could negatively influence digital genre composing. In light of the findings, I advocate explicit instruction in "metageneric texts" and methodologies for raising awareness of "inter-genre-al" forms across connected genres online. This instruction could support the students' professional development and the participatory framework for scientific research advocated by the Open Science agenda.

1. Introduction

Learning to write in today's digital world involves handling emerging forms of communication that rely on the multimodal, hypertextual and interactivity affordances of the digital medium. Learning these forms requires writing skills, the ability to use semiotic modes other than language (e.g., visual, aural), as well as knowledge of the functionalities of hypertextuality and interactivity in the digital medium. Digital communication therefore necessarily invites critical reflection on pedagogical approaches that, based on EAP and genre theories, offer students opportunities to learn how to compose digital genres.

Digital genres have been defined as web-mediated documents that combine multisemiotic modalities and/or exploit the hypertextual and interactivity affordances of the digital medium for enhancing content and meaning making (Askehave & Nielsen, 2005). The scholarly literature also reports that while many digital genres incorporate innovative elements, these genres emerge "from prior practices and conventions" (Miller, 2016, p. 9). Blogs are conceived of as an evolutionary development of diaries, from which they borrow features such as evaluative language and a personal tone (Mauranen, 2013). Infographics (Li & Molder, 2021) and academic

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homepages (Hyland, 2018) give continuity to traditional forms of scholarly communication such as posters and bionotes but combine verbal texts with multimodal elements and hyperlinks. Lay summaries adopt the move-based structure of the traditional article abstract but they are written in plain language to make specialised content accessible to non-specialist publics (Pérez-Llantada, 2021). Likewise, participatory science genres online such as crowdfunding proposals and citizen science projects exhibit generic continuity and change. They borrow the rhetorical information organisation conventions of grant proposals and research articles but they also show specific register and style features and use of visual rhetoric (Mehlenbacher, 2017, 2019; Paulus & Roberts, 2018).

The manifest "hybridism" (Mauranen, 2013) that characterises digital genres results from a rhetorical response to the social exigences or demands of these genres, namely to give visibility to the social impact of research and to promote public understanding of science and public engagement with science. These are demands advocated by the Open Science movement (Bartling & Friesike, 2014). Open Science in fact represents a turning point in researchers' career development, who now need to communicate the social value of their research and disseminate their research findings beyond the expert community. These are desirable abilities for early-career and established researchers (EURAXESS, n.d.). In a recent survey of STEM researchers ($n = 206$) based in Spanish universities, both novice and experienced researchers recognised the need for training in strategies for adapting specialised content to broad publics, in persuasion strategies (including visual rhetoric), and in the use of social media platforms to disseminate research widely (Pérez-Llantada et al., 2022).

These new language and communication learning needs make it reasonable to engage in EAP pedagogical practice that integrates writing skills and the use of digital tools and resources in effective and creative ways. It also seems sensible to base practice on practical knowledge from applied linguistics and EAP research. In discussing data-driven-learning (DDL) approaches to EAP writing, Feak (2011) emphasises the importance of explicitly stating the reasoning behind the creation of materials and acknowledging that materials design involves trial and error and continuous revision to ensure that they meet students' learning goals. However, this research is scarce. Feak (2011) observes that very few published studies provide insight into the thinking behind the design, implementation and revision of materials based on classroom practice and, more recently, Bell (2022: 9) notes that "classroom methodology and practical pedagogical matters in EAP deserve to be given more explicit attention". Making explicit a possible heuristic for materials design and language pedagogy and how this heuristic can provide a framework for teaching digital composing can be useful and guiding for teachers' practice.

1.1. Genre as a heuristic

Genre theory becomes a useful heuristic to support the practitioner's decisions about how best to address the language and communication training needs identified above. A good starting point is the assertion that differences across genres can be explained by several parameters (Swales, 1990, pp. 62–63). The first parameter concerns the particular rhetorical purposes that characterise each genre. A bionote fulfils the purpose of informing others of an author's background and research interests. At the same time it accomplishes self-promotional goals no matter it is in print form or in web-based form, say a video cv, a personal homepage or a blog. The second parameter, "the degree to which exemplars of the genre are prepared or constructed in advance of their communicative instantiation," (Nystrand, 1986, cited in Swales, p. 62) invites the practitioner to opt for genres that are not extemporaneous or unplanned. The third parameter is "the mode or medium through which [genres] are expressed" (Swales, 1990, p. 62). Here, the Internet brings about significant genre diversity, above all in terms of text length and physical disposition of verbal and visual material in the web environment (e.g. posts on X, blogs or infographics). The selected genres would also need to include multimodal texts. The fourth parameter, as Swales explains, concerns written vs spoken genres. This parameter therefore invites reflection on how digital genres of public communication of science (e.g. science blogs, crowdfunding proposals and citizen science projects) can be taught and used as instances of written discourse that nonetheless exhibit features of spoken discourse (Hyland, 2018; Mauranen, 2013).

Another useful concept is rhetorical consciousness, or awareness of the communicative purpose(s), audience(s) and rhetorical strategies of genres (Rowley-Jolivet & Carter-Thomas, 2005, p. 42). This concept can offer guidance for the creation materials and tasks to teach digital composing, particularly materials and tasks that include models of genre exemplars. With these models the students can notice and understand how "generic form (syntactics)" (Miller, 1984: 152) is shaped and constrained by the communicative purposes of each genre. Feak and Swales (2011) further remark that tasks that focus on linguistic forms across genres (e.g., writing introductions of critiques, short reports, research proposals, journal articles and dissertations) are particularly beneficial as they trigger genre knowledge transfer. The concepts of content and formal schemata (Swales, 1990, pp. 9–10) are also worth considering when developing tasks aimed at raising consciousness of information organisation and rhetorical conventions. The formal schemata of new genres can be learned by activating the students' prior knowledge of the genres they are familiarised with.

Devitt's (2004: 189) inter-genre-ality, or the way in which genres "take up forms from the genres with which they inter-act" is also a thought-provoking concept to design tasks that aim to support digital genre composing. One practical application of this concept could be providing the students with tasks that involves interrelated traditional and digital genres (e.g. those in enhanced publications) or genre networks (Pérez-Llantada & Luzón, 2022). These tasks could ask the students to recontextualise and repurpose the content of a given genre (e.g. a journal article) to compose a digital genre with related content, such as an impact statement, a lay summary, a blog, or a post on X (formerly Twitter). Devitt's (2015: 389) work is insightful in that it delimits what inter-genre-al (cross-genre) features on which these tasks should focus. These features, which are generic forms and therefore intrinsic to the nature of the genres, are identity construction, the roles of social actors and relationships between them, and the institutional/material and cultural settings framing the particular social action each genre seeks to accomplish.

Finally, another concept worth considering in reflective practice on materials design and task design is "interdiscursive connectivity", discussed in Salö and Hanell's (2014: 12) study of a Swedish researcher's writing practices. These authors contend that the

researcher's prior knowledge of "certain styles, genres, modes and linguistic varieties" as well as "knowledge of their value and socio-pragmatic usage" (p. 15) is transposable across genres and modes. Supporting this contention, one could argue that "unprecedented genres" such as emerging digital genres can then be composed by establishing interdiscursive connectivity. EAP research provides further evidence along these lines. Zou and Hyland (2019) report that researchers transpose the interpersonal language resources they use in their journal articles (e.g. self-mentions, boosters, evidentials and attitude markers) to compose a blog with related content. By analysing students' digital text composing, Kang (2022) found that they transfer prior knowledge of narrative and argumentative strategies to composing digital multimodal texts. Jiang and Qiu (2022) also conclude that knowledge of move organisation conventions of print genres is transposed to create 3-min thesis presentations.

In this article I will argue that approaches to teaching/learning digital genres can find a good rationale in genre theory to ensure that learning tasks facilitate digital composing processes. The purpose of this article is therefore to critically reflect on an EAP task-based pedagogical practice that focuses on digital genres of professional and public communication of science. To frame the practitioner's reflections the following questions were posed:

1. How can knowledge from EAP and genre studies inform the development of materials and pedagogical approaches to digital composing?
2. What insights can be gained from this teaching practice considering the digital texts the students composed?

2. Methodology

This exploratory case study involved an 8-hour writing course offered to STEM researchers at the University of Zaragoza, Spain. The course was profiled as a certified continuous professional development course. The aim of the course was to introduce a small repertoire of digital texts currently used in academia to communicate and disseminate research findings within and beyond the scientific community using digital media. These were the target learning needs. The students ($n = 12$) belonged to the STEM fields (Science, Technology, Engineering and Mathematics) and had different previous experience in writing articles for research publication. They attended two synchronous 2-hour sessions online (an introductory session at the start of the course and a group feedback session at the end of the course). After the first session, they were asked to watch five research-informed instructional videotutorials created specifically for the course. These videotutorials described the main features and communicative goals of digital genres of professional and public science communication. They also contained exemplars illustrating the genre texts the students were asked to compose for completing the course. Following Feak (2011), the tasks aimed to activate prior genre knowledge of formal schemata and raise awareness of how genres accomplish particular rhetorical actions through language and other semiotic resources. Task 1 was designed to make the students work with sets of interrelated genres in enhanced publications, including social media networks. Specifically, using an abstract as a starting point, they were asked to compose three digital genres. The first one was an impact statement, a 250-character summary of the social impact of the article's findings. The second was a 250-word lay summary written in plain language to make the content accessible to non-expert audiences. The third was a 280-character post on X. As explained in the videotutorials, by hyperlinking these genres, researchers can increase the impact of their article and reach wider audiences. Task 2 aimed to support language, communication and digital skills learning. The students were asked to create a digital multimodal text using Google Sites. This text could take the form of one of the genres described in the videotutorials (a science blog, a research group blog, a personal homepage, a crowdfunding project or citizen science project). All these genres require similar multimodal composing skills and, while each of them has a specific set of communicative purposes, their generic form (language features and syntactics) and multimodal and hyperlinking features are quite similar.

In order to assess the results of the pedagogical practice, i.e. how the students composed these digital genres, this study adopted a qualitative interpretivist format (Creswell, 2013) generating knowledge by analysing and interpreting a primary data source and secondary data sources. The primary data source consisted of the texts the students composed in the tasks. These texts were coded with Atlas.ti v8 at both at the level of the phrase and the level of syntax by applying grammatical analysis (Biber et al., 1999; Biber & Gray, 2016). For further exploration, several discourse features were also coded with the same software applying genre analysis (Swales, 1990). The selection of features was informed by previous studies on digital genres (Luzón & Pérez-Llantada, 2022; Hyland, 2018; Mauranen, 2013) and included self-mentions (identity markers), reader mentions, and stance and evaluation markers. Exploring the grammatical, syntactic and discourse features of the texts aimed to gain an understanding of the level of conceptual depth of the texts and the functions of language. Code-document correlation analyses based on Boolean searches were run with Atlas.ti to identify statistically significant associations between language features and document types. In addition, lexical and syntactic complexity measures of the texts were retrieved with Ai's (2010–2017) statistical software. Readability measures were also extracted from the Readability test,[1] a tool that calculates different measures for identifying the ease of reading (namely, "the estimated age and grade level a text is understood").

To describe how the students recontextualised and repurposed content across genres, the descriptors of language mediation of the Common European Framework of Reference for Languages (Council of Europe, 2020) were applied. These descriptors include "strategies to explain a new concept" and "strategies to simplify a text" (North & Piccardo, 2016, p. 21). In this author's view, these are essential for evaluating textual strategies that can help writers to adapt specialised content to non-specialist audiences. This case study

[1] <https://www.webfx.com/tools/read-able/>

aims to offer insights into the application of the CEFR mediation descriptors in the context of languages for specific purposes.

Secondary data sources were also used to better understand how the student approached digital composing. One data source was the students' views on their writing practices, collected through the Moodle forum. The second was the students' online reflective comments on the process of composing the texts. This was a post-writing task activity. These data were analysed through close reading of the texts and were also used to interpret the study findings.

3. Results

3.1. Composing impact statements

The abstracts that the students selected for composing an impact statement, a lay summary and a post with related content (Task 1) were either structured abstracts (i.e. divided into sections marked with headings) or one-paragraph texts. They all complied with the move-based organisation of empirical abstracts described in the literature: Move 1_Situating the research by giving a context; Move 2_Stating purpose of study; Move 3_Describing methods; Move 4_Reporting results; and Move 5_Conclusions and implications (Swales, 1990). To turn the abstract into an impact statement the students simplified the text by packaging the content expressed in moves 4 and 5 of the abstracts into a one- or two-sentence statement. Example 1 illustrates how in the process of synthesising the information, the complement clause of the concluding sentence of the abstract becomes the main clause of the impact statement and the abstract term *atherosclerosis* is replaced by a hypernym or superordinate term (*cardiovascular disease*).

(1) Abstract (concluding sentence)
Our results support that men with very short or very long sleep durations are at increased risk of atherosclerosis.
→ Impact statement
Men with very short or very long sleep durations are at increased risk of atherosclerosis and cardiovascular disease.

The abstracts contained abundant informationally dense nominal phrase structures (complex NPs). In the impact statements this information was expressed by simple NPs (e.g.. *critically endangered freshwater mussel Pseudunio auricularius → freshwater ecosystem*). The statistical analysis showed a strong correlation between simple NP structures and this set of documents (Table S1. Noun phrase types across genres). Only occasionally, content formulated by complex NPs, that created a grammatically elaborated discourse style, was expressed in simple NPs in the statements (e.g.. *confinement due to Covid-19 pandemic → pandemic-related home confinement*). As shown in example 2, in the impact statements simple NPs create a grammatically compressed discourse style that improves word economy.

(2) Abstract (concluding sentence)
The experimental results show that an extension of the sensing range in DD C-OTDR can be achieved without reducing the frequency response bandwidth or increasing the scheme complexity.
→ Impact statement
Range extension above 100 km can be achieved in distributed acoustic sensors based on optical fiber sensors by using optical regenerators without reducing its outstanding sensitivity.

The impact statements were also syntactically complex. The main function of the embedded non-finite clauses, that accounted for such syntactic complexity (e.g.. *based on*; *by using*; *without reducing*), was two-fold: to amplify content by clarifying methodological procedures and to highlight the significance of the research. Specialised jargon (e.g.. *distributed acustic sensors, optical fiber sensors, optical regenerators*) was transposed to the statements, thus sticking to the same level of lexical complexity of the abstracts.

According to the statistical analysis, modality markers showed a very strong association (statistically significant) with the impact statements (Table S2. Interpersonal features). Yet, the epistemic possibility meanings conveyed by the modal verbs used in the abstracts (e.g.. *could be*; *could be used*; *this study may also be*) were not transferred to the statements. The students opted for the deontic modal *can*, that conveyed an assertive tone (*can be used*). By way of illustration, in example 3, *can* co-occurred in its immediate co-text with lexical verbs with positive semantic prosody (e.g.. *suffer sharp declines*). A move from academic/specific vocabulary to general vocabulary use (e.g.. *induced → caused*) was also observed in all the statements.

(3) Abstract (concluding sentence)
In a situation of intestinal dysbiosis induced by clindamycin, lactoferrin restores the normal levels of some anti-inflammatory bacteria and TLRs and, therefore, could be a good ingredient to be added to functional foods.
→ Impact statement
In situations of intestinal dysbiosis caused by taking antibiotics, lactoferrin, a bovine milk protein, improves intestinal health by modulating positively the intestinal microbiota and the immune system and can be used in functional foods.

Alt times, the factual deontic meanings of the abstracts were transferred to the impact statement and reinforced by resultative verbs (e.g.. *can constitute a healthy risk → can result in a healthy risk*). Yet, at other times the assertive tone of the abstract was toned down by a possibility modal (e.g. *permits to → can permit to*), which may mean that the research impact has not yet been achieved. Here, lexical verbs with positive semantic prosody (e.g.. *result in*) are more appropriate language choices, as the primary purpose of this genre is to

state the impact of the research.

3.2. Composing lay summaries

All the lay summaries composed by the students followed the same rhetorical information organisation pattern. They provided the context for the research, stated the research question being addressed, commented on the main research findings and concluded by explicitly mentioning the target groups benefiting from the findings. However, readability and lexical and syntactic complexity measures revealed some differences. While the reading source of the task recommended "writing lay summaries at the reading age of 14",[2] the Readability test showed that none of the summaries satisfied this recommendation. Lay summary #10 scored the closest (an average reading ease of about 50.1 of 100, "easily understood by 17–18 year olds") and lay summary #4 scored the lowest readability result (3.7 of 100, very difficult to read). Both summaries showed very similar lexical density, but they differed in verb diversity and lexical word variation indices (Table S3a. Comparison of lexical complexity indices). Syntactic complexity indices indicated that Summary #10 scored higher in number of verb phrases and clauses, whereas Summary #4 scored higher in number of dependent clauses and complex T-units and complex nominals. Summary #10 also had shorter sentences and fewer clauses per sentences (Mean length of sentence MLS = 19.3077; Clause per sentence C/S = 1.6923). In contrast, Summary #4 used longer sentences (MLS = 25.2; C/S = 2) and showed greater syntactic complexity, with higher scores in the Dependent clause per clause and Dependent clause per T-unit (DC/T) indices. It also scored higher across indices of syntactic complexity (Coordinate phrase per T-unit CP/T = 0.8182; Coordinate phrase per clause CP/C = 0.45) and contained more complex nominal structures (Complex nominal per T-unit CN/T = 3.7273; Complex nominal per clause (CN/C = 2.05) (Table S3b. Comparison of syntactic complexity indices).

Summary #10 was also more readable than Summary #4 because it organised content rhetorically. It opened with a syntactically simple Subject-Verb-Object sentence containing a complex NP that embedded a non-defining relative clause clarifying the content (*Dynamics, taught to engineering students during the first year, studies the movement of machines*). This was followed by a statement of the problem (*However, it is difficult* […]) signposted by a contrast discourse marker. This rhetorical move paved the way to the formulation of what the researchers did (*we have developed an educational software that simulates the movement a washing machine*). Content was elaborated further by paraphrasing (*this means that* […]) and enumerations that contribute explicitness (*how a pulley, a spring, or a damper work*). Discourse markers and reason-result expressions (e.g. *for one thing* […] *for another*; *thus*) were used to make explicit the relationship between ideas and the way arguments unfolded, indicating writer-responsible writing styles. Several strategies of language mediation apply here. As shown in examples 4–5, amplifying the information density of the abstract was realised by relative clauses that provided simple definitions of scientific terms or gave examples or further details. Amplification of the semantic meaning of technical terms was generally traced in the first sentence of the summaries.

(4) Keratoconus is an eye disease that affects the cornea, the clear transparent lens outside our eyes.
(5) In the intestine there is an extensive microbiota that has very important functions for the intestinal homeostasis *such as* protection against pathogens or the development of the intestinal immune system

Technical content was also amplified by means of resultative clauses that explained and clarified the result of actions (example 6).

(6) The appearance of cholesterol plaques in the arteries is a determining risk factor for cardiovascular disease because they can rupture and cause heart attacks or strokes.

Technical terms were streamlined into ideas by means of nominal phrase structures (NPs) with pre/post modification and clausal embedding. These structures showed a strong association with this document type according to the correlation analysis (cf. Table S1). These complex NPs were used to build complex definitions in non-defining relative clauses and longer stretches of discourse. These definitions included listing out of examples, paraphrases of scientific jargon (*this means that*; *in other words*) and parenthetical clarifications (examples 7–8). The modal *can*, conveying assertiveness, showed strong association with this document type (cf. Table S2).

(7) Some of these tools are called "bio-loggers", which are small devices that you can implant under the skin of the animal to study things as temperature, heart rate of the animals of how much they move.
(8) Organic pollutants in water are the most common contaminants which may arise from several sources like printing, paper, food processing and pharmaceutical industries. […] These heterocyclic organic dyes present in some drugs are soluble in water and can enter the body and causes health risks (i.e. skin irritations, nausea, vomiting …).

4. Composing posts

Recontextualising the content of the abstract to create a 280-character post involved, above all, synthesising the content and refocusing it in order to highlight the value of the research. The correlational analysis showed a strong (statistically significant) association between this text type and NPs with pre/post-modification (cf. Table S1). Simple NPs, usually with nominal premodification,

[2] "Perfecting that lay summary" <https://bitesizebio.com/10871/perfecting-that-lay-summary/>

were used to compress the semantic meaning of the abstract into a persuasive post, consisting of a single utterance or a set of utterances (examples 9–10).

(9) Abstract (concluding sentence)
Our results support that men with very short or very long sleep durations are at increased risk of atherosclerosis.
→ Post
Neither many nor few. A recent Spanish research shows that 7 h of sleep duration protects your heart.

(10) Abstract (concluding sentence)
Analysis of light backscatter at the cornea successfully discriminates subclinical keratoconus from control eyes, upgrading the results previously reported in the literature.
→ Post
97% discrimination success in subclinical keratoconus with a twist. Check out our new publication in TVST (doi.org/10.1167/tvst.10.9.32)

As in the other document types (except the impact statements), syntactic subordination was slightly more common than coordination (Table S4. Coordination and subordination across genres). The most salient type of clausal embedding was nonfinite clauses. Nonfinite clausal embeddings *-ed* participle, *to*-infinitive clauses and, above all, non-finite *ing*-clauses scored the highest comparative frequency (200 total occurrences, 56.82%) (Table S5. Clause types across genres). The main communicative function of the latter subtype, the most prominent in the posts, was to explain and clarify means and procedures and outcomes (examples 11–12).

(11) Progress in materials development with highly effective catalysis properties can improve the organic dyes degradation in water using versatile iron-oxide materials.
(12) [Parasites] can get through wastewater treatments, hence reusing treated water will be risky for health until regulations are updated.

Modal markers were also particularly frequent and strongly associated with this document type according to the correlation analysis (Table S2. Interpersonal features). *Can*, conveying deontic meanings, was the most prevalent modal. As shown in example 13, in its immediate co-text, it co-occurred with evaluative adjectives and adverbs (e.g.. *new; highly effective*; *easily*; *fastly*) and verbs with positive semantic prosody (e.g.. *improves*; *permit*), constructing an assertive tone suitable for highlighting the value of the research.

(13) New study of Bellés et al., Food and Function, 2022**!!** In situations of intestinal dysbiosis caused by taking antibiotics, lactoferrin improves intestinal health by modulating positively the intestinal microbiota and the immune system and can be used in functional foods.

Apart from language, no other semiotic modalities for meaning making were consistently used in the posts even though the videotutorial explicitly referred to multimodality possibilities. Although the reading source[3] of the task also recommended the use of these affordances, only one third of the posts contained links to their related journal articles and/or hashtags with related content to reach special interest groups or sub-communities on X (example 14).

(14) Ewes permanently housed presented a clear temperature, heart rate and activity 24-h circadian rhythmicity. Read our last paper https://n9.cl/aa8nx #BiolRhythmRes @tanfonline @IUCAunizar @FacVetUNIZAR @unizar Thanks

4.1. Multimodal composing

The web-documents the students created in Task 2 (personal homepages, research group blogs and citizen science projects) showed that they were able to repurpose specialised content to construct these texts. Nonfinite clauses were especially frequent (Table S5. Clause types across genres). *To*-infinitive clauses recurrently worked as explicitation strategies, elaborating and clarifying purposes and goals (e.g. *it is important to promote healthy lifestyles that help us to face the different adverse situations* […]; *These algorithms are designed to be trained with sample data*). These clauses also streamlined the specialised content making it easier to understand. Phrasal and clausal coordinated structures also made the content non-cognitively demanding and easy to process (example 15).

(15) We think this information is essential to establish toxicological reference limits for conservation and restoration of mussel populations and could help governments and other national or international organisations to promote environmental regulations.

Complex NPs were particularly common, accounting for around 75% of all nominal phrase structures (cf. Table S1). *Of-*

[3] "10 tips for tweeting research" <https://www.natureindex.com/news-blog/ten-tips-tweeting-research-academic>.

prepositional phrases acting as nominal post-modifiers, also especially frequent academic prose (Biber & Gray, 2016, p. 318), contributed explicitness (e.g.. *participation of different types of households*; *the generation of concentrations of natural iron materials*). Nominal post-modification was also observed in defining relative clauses that introduced further information, or clarified the points made (e.g.. *the activity generated wastes that present high metal content*). Coordinated NPs with adjectival and, occasionally, nominal pre-modification (e.g. *natural soils and wastes*; *consumption patterns and technological conditions*) added details, also making meanings clearer. The students adopted a non-formal, conversational style. The texts exhibited some colloquial language features such as informal greetings, present progressive verbal forms, rhetorical questions and exclamatives (e.g.. *I am currently studying the presence of antibiotics in water*; *Let's talk about the use of melatonin to control sheep reproduction; Check out my research page!*). These features are also found in blogs (Luzón, 2017; Zou and Hyland, 2019), crowdfunding proposals and citizen science projects online (Pérez-Llantada, 2023).

Deontic modals, lexical verbs, and interpersonal features associated with identity construction (e.g. self-mentions), all of them especially frequent in conversation (Biber & Gray, 2016), showed strong associations with these texts (cf. Table S2). The deontic modal *can*, again used frequently, conveyed factual scientific evidence (e.g.. *These metals can interact with people*; [...] *some bacteria can survive inside amoebae*). When preceded by self-mentions, it served to give credibility to the researchers (e.g. *we can train the model*; *We can obtain the blind data*). Co-occurring with reader mentions, oblique forms were used in statements aimed at building readers' engagement (e.g., *You can also find me in Google Scholar, ResearchGate or LinkedIn; In this project you can help us to design different scenarios*). In the research group blogs, *we*-pronouns followed by activity verbs (e.g., *We analyse the trends in inequality in the carbon footprints of households in the EU countries*) constructed a professional identity to build credibility and trust (Fig. 1), which also characterises other OS digital genres (Mehlenbacher, 2017; Hyland, 2018).

In the personal homepages, text containing *I*-pronouns was accompanied by a close-up photograph of the researcher in their lab (Fig. 2). This multimodal (verbal-visual) ensemble creates proximity with the audience and builds a credible professional identity. This is also typical of academic blogs, crowdfunding projects and medical campaigns (Hyland, 2018; Mehlenbacher, 2017; Paulus & Roberts, 2018).

As for the use of hypertextual affordances, the design of the web-documents followed a linear logic, allowing simple navigation. Following the task guidelines, the content of the sites was arranged in generic links (menu pages) (About page → Topic 1 page → Topic 2 page, and so on). At times it gave access to specific links (subpages, or second-level hypertext). As shown in Figs. 1–2, colour and font size shifts were used to signal the hierarchy of content in the home page and in each page/subpage. On the majority of sites, hyperlinked content (URLs, articles, Wikipedia entries, interviews, social media post) was textually signposted and made immediately visible (e.g. *You can find more information on this page: https://www …*; *Read the full text: doi.org/ …*). Only one web-document included several externally realised links signalled by deictics (e.g. *You can find more info about my teaching duties here*). Internally realised links requiring activation of the link with the mouse/curser to make them visible (Askehave & Nielsen, 2005, p. 139) were not found. Clearly, the task instructions should have been more detailed about internal and external types of hyperlinks. The majority of the web-documents invited interactivity with readers by providing contact emails (e.g., *If you need more information on this project, please contact us: xxx@xxx.es*; *Ready to send us your data? [xxx@xxx.es]*). Only two documents included an embedded Google form on one of the pages to allow audience's interaction.

Finally, the analysis of the sites showed that the visuals accompanying the verbal elements generally indicated dominant/subordinate verbal/visual relations. Image-text interaction was based on a relationship of complementarity. In the homepages of the students' sites, the background images complemented the verbal message located at the top of the page. While the verbal message was ideologically grounded, the visuals conveyed factual information. Compared to the verbal messages, these images are more immediate and appeal more to emotions (e.g., Figs. 1–2).

In all the sites, colour shifts and the use of italics and bold types were used to highlight specific verbal (textual) meanings and attract

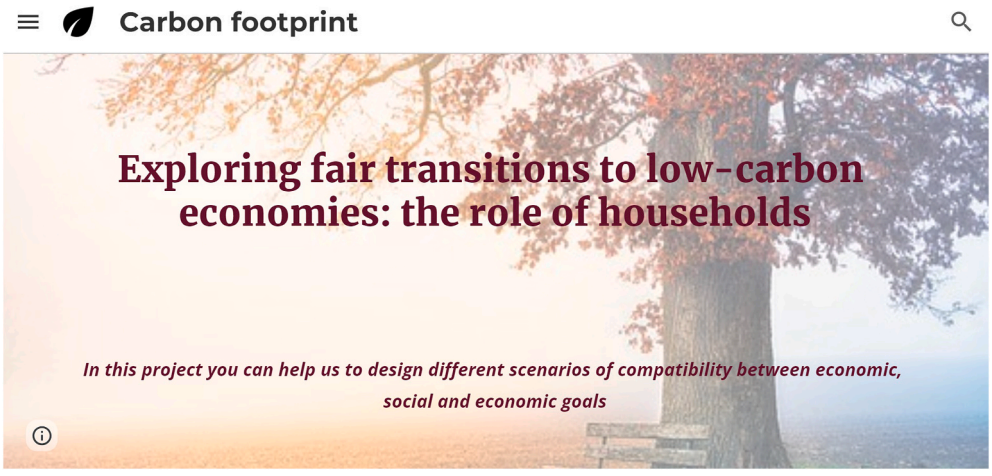

Fig. 1. Identity construction in a citizen science project homepage.

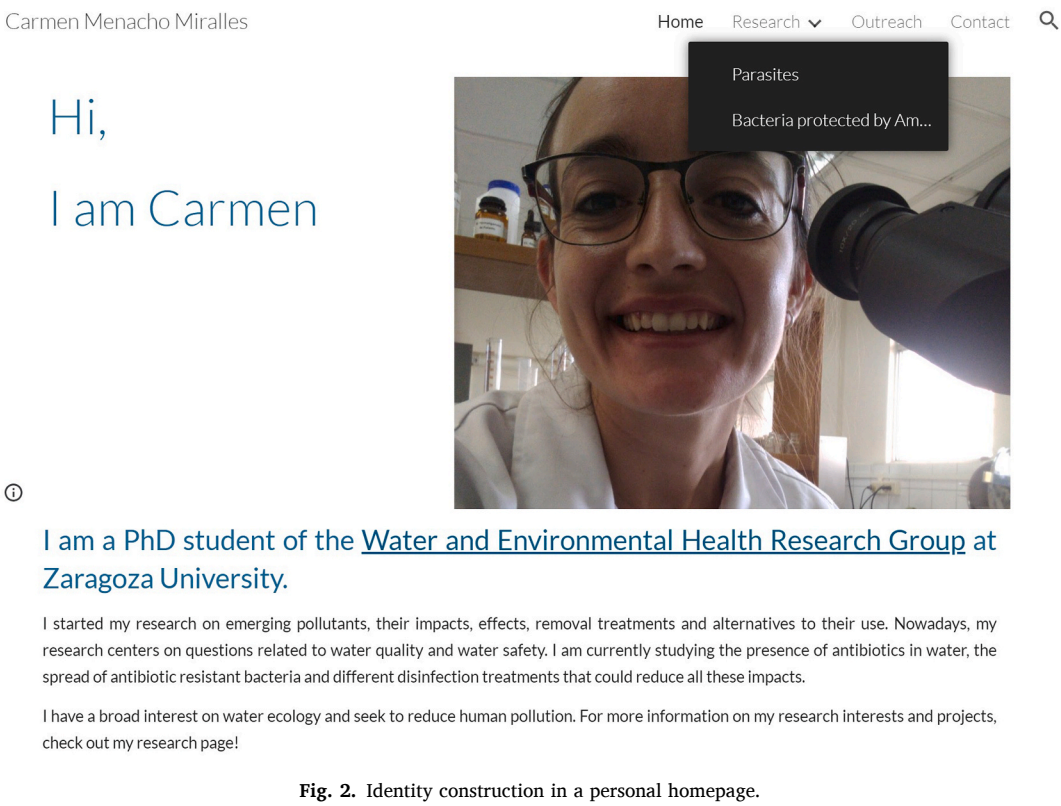

Fig. 2. Identity construction in a personal homepage.

the reader's attention. Headings highlighting key concepts and images and related explanatory text blocks contextualised and further elaborated the specialised content, making it easier to understand (Fig. 3). In the remaining pages, the multimodal elements (mostly images and photographs) helped to understand the verbal messages, for example by illustrating scientific concepts (Fig. 4). More creative multimodal efforts (e.g., embedded YouTube videos explaining scientific procedures and animated explainer videos) were found on a few pages.

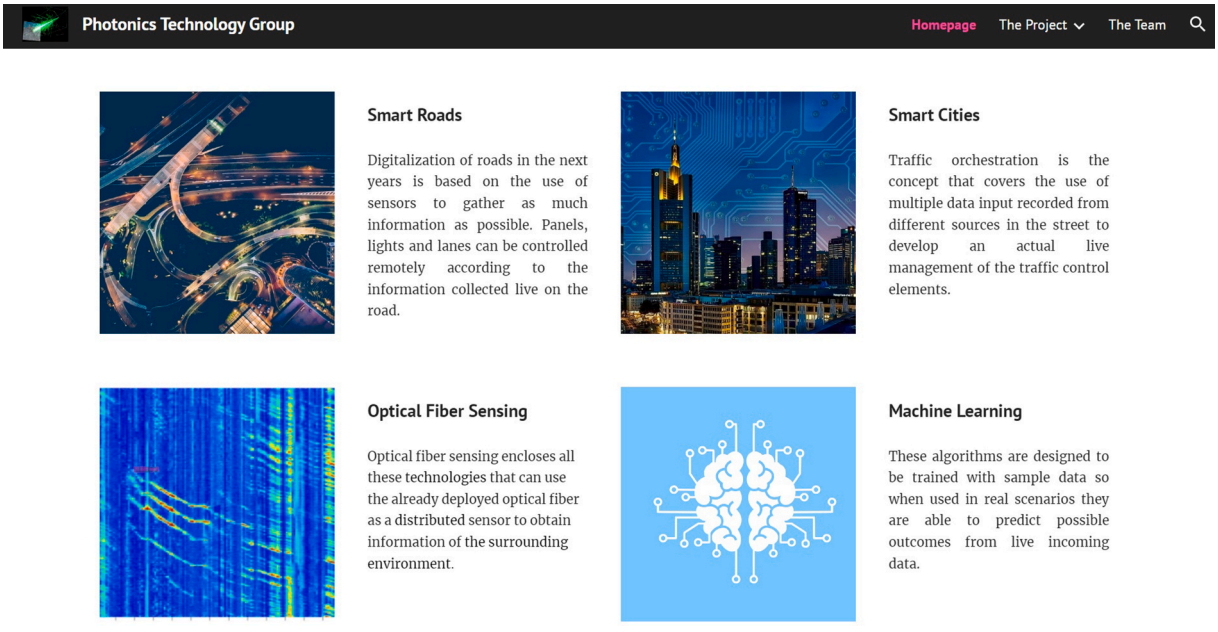

Fig. 3. Homepage design and visual-verbal interactions.

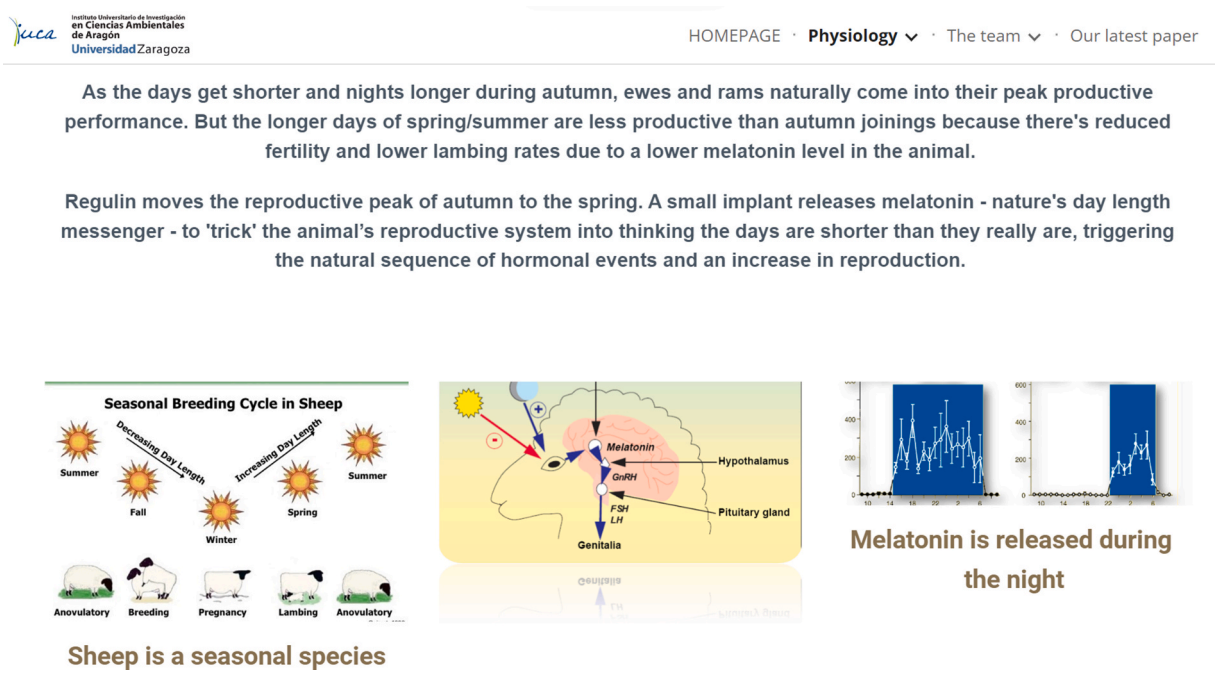

Fig. 4. Visual-verbal complementarity.

5. Discussion

This case study research aimed to critically reflect on a methodological practice designed to support digital genre composing for professional and public science communication. Key findings are discussed below.

5.1. Genre knowledge and metacognition

The study showed that theoretically informed tasks can raise the students' awareness of the salient informational, rhetorical and stylistic features of a repertoire of digital genres and identify their intended audience(s) and communicative purposes. They applied generic form (language features and syntactics) and rhetorical substance (semantics) appropriately and also adapted the style and level of formality to the rhetorical goals of each genre type. The findings also seem to indicate that organising the information and structuring arguments rhetorically, as the students did for example in the lay summaries, was not a challenging task. It can be assumed that the instructional input provided by the videotutorials and the design of Task 1, based on genres that share inter-genre-al forms, supported the composing process. Data from secondary sources also suggest that genre knowledge transfer may play a role in composing interrelated (inter-genre-al) texts. In their posts the students stated that they were familiar with the rhetorical (move-based) organisation and argument construction of traditional academic genres. In their reflective comments they also indicated that they drew on previous experience in writing abstracts. They then applied their acquired knowledge of content and formal schemata to compose the new genres.

Further evidence of genre awareness may be the fact that the students were able to identify the key content of the abstracts and encapsulate it in much shorter texts (e.g., impact statements). They did so by synthesising and repurposing the content expressed in the concluding sentence/s of the abstract. It is also worth recalling that the students mostly relied on simple nominal phrase structures. As shown earlier, this resulted in a grammatically compressed discourse style that constructed concise but informationally dense statements. Rhetorical awareness might also be a good explanatory reason for understanding register shift when composing digital genres. It was clear from the data that the students moved from the formal style of the abstract to a non-formal style in their web-documents, demonstrating awareness of the functions of language, in this case, to build credibility and trust and to create proximity with their audiences. Both functions characterise other digital genres such as infographics (Li & Molder, 2021), blogs (Mauranen, 2013) and crowdfunding projects (Mehlenbacher, 2017). It is also possible that the videotutorial-based instruction and the task guidelines raised rhetorical awareness of the multimodal affordances of the digital medium. In general, the visual elements used by the students cohered with the verbal content and strategies of visual rhetoric created persuasive effects. These features are also typical of other digital genres such as microblogs like X (Luzón, 2017), academic homepages (Hyland, 2018), and medical crowdfunding campaigns online (Paulus & Roberts, 2018). We can therefore assume that the students will be able to draw on their acquired knowledge of multimodality strategies when composing other multimodal genres in the future. Metacognitive awareness of the functions of visuals and embedded genres was also evident in their reflections (*"I aimed to make it very visual and entertaining, not to get into the scientific details"; "I added an infographic in the Research page [of the site] to clarify the topic we investigate"*).

In line with previous studies on digital genre pedagogy (Carciu & Muresan, 2024; Driscoll et al., 2020; Jiang & Qiu, 2022), students here applied genre knowledge and metacognition to identify similarities and differences between features of traditional and digital genres. As inferred from their comments, it is possible that conscious attention to the parameters of "audience" and "communicative purpose" may have motivated their use of plain language ("*I have tried to reduce the information included in the original abstract*"; "*I focused my efforts on making the text understandable for non-specialised public*"). Perhaps, such conscious effort to choose the appropriate syntactic forms for recontextualising content in a digital genre aimed at broad audiences might explain why adjustment of specialised terminology to plain language was somehow overlooked, hence the high level of lexical complexity observed in the texts.

In the context of digital genre pedagogy, Kang (2022) reports that the students transferred content and formal schemata of narrative and argumentative writing. They also developed metacognitive awareness of the functionality of visual elements in digital composing tasks. Jiang and Qiu (2022) also conclude that the students' prior knowledge of move organisation conventions scaffolded the composing of 3-min thesis presentations. In the present study genre awareness may explain why the students were able to readily recognise that the discourse circumstances of web-mediated genres of public understanding of science require the merging of features of both formal academic writing and conversation. They chose the language that best suited the different virtual conversations afforded by the hypertext design to achieve different communicative goals —informing about science, promoting research and/or inviting the public to collaborate. They consistently used a syntactically elaborated discourse style, with abundant use of complex nominal phrase structures (especially *of*-phrases and embedded clause postmodification). Their main functions were to amplify content to explain new concepts and to streamline complex ideas and arguments. At the same time, the students relied on features associated with conversational grammar (e.g. vocatives, contracted forms), thereby suggesting awareness of the need to create proximity with their audiences. From the study data, it is not possible to ascertain the extent to which previous writing experiences were consciously used to construct these texts. The students' posts and reflections are not conclusive either. There were no explicit comments related to speech vs. writing considerations in Internet communication, for example regarding the coexistence of register varieties in a single web-document, depending on the functionality of each web page/subpage of the site. It would be of interest to develop future experimental studies that shed further light on genre awareness in academic literacy development.

5.2. *From inter-genre-ality to metagenres*

The analysis of the students' task performance strongly suggests that genre constructs can be used pedagogically to support the learning of both language and other semiotic resources for digital composing. From the data it appears that, along with instructional input focused on forms, tasks may facilitate engagement in processes of repurposing and refocusing content across digital texts that fit with distinct rhetorical situations. The concept of inter-genre-ality (Devitt, 2015) proved to be a good reasoning to develop a methodology for supporting cross-genre transfer. It guided the design of awareness-raising tasks focused on the language of persuasion and the language of identity construction. In addition, it facilitated the selection of genres that were adequate to explore interrelated (inter-genre-al) genres in enhanced publications and genres of public understanding of science (e.g., lay summaries, science blogs). Given the evidence found in the secondary data sources and the analysis of the digital composing data, the tasks helped the students to consciously recognise the specific roles of author/audiences of each rhetorical situation. The students also became perceptive of the diverse ways in which the materiality of the digital medium shapes digital genres in particular ways (e.g., space constraints, text modularity) and affords multisemiotic meaning making.

Although exploratory, the present study suggests that tasks focusing on inter-genre-al features across digital genres might have potential to trigger strategies of interdiscursive connectivity. Task 1 demanded the recontextualisation of specialised content across genres. It focused on language forms and language (register) variation across genres. Task 2 involved using the same hypertext design to compose genres that respond to the same social exigence, public understanding of science. It engaged the students in thinking about how to use language, various semiotic modalities and hypertextual possibilities in web texts. Overall, the tasks enabled the students to gain a comparative understanding of digital genres, their intended audiences and communicative purposes. As previously noted, the students transferred prior knowledge of formal schemata (e.g., rhetorical and discourse style conventions). They constructed various identities to position themselves on the texts, responding to the rhetorical demands of each genre. It can be tentatively asserted that the tasks enabled them to reflect on their accumulated writing experiences and then to make conscious rhetorical choices when composing digital texts prior to "their communicative instantiation" (Swales, 1990, p. 61). In the forum the students commented on issues of preferred language patterns and vocabulary choice across languages (e.g., posting in English or Spanish). This suggests that the methodological approach raised awareness of linguistic universals vs. culture-specific patterns. However, very little evidence was found in this respect and therefore this task outcome needs to be further explored in future research.

Wickman (2023) underlines that knowledge of broad patterns of language that are similar typified responses to social actions, conceptualised as "metagenres" or "metageneric texts", enables genre users to attach values to them and frame their rhetorical conventions. This study found preliminary evidence to claim that the students relied on knowledge of broad language patterns to make rhetorical decisions regarding how to compose different types of metageneric texts. For example, they practised with primarily promotional genres (impact statements, post on X), primarily informational genres (lay summaries, personal homepages), and participatory genres (science blogs and citizen science projects), to which they attached values and conventions. It would then be worth introducing the concept of metagenre in the instruction as developing metageneric strategies could assist the processes of writing digital genres. Feak and Swales's (2011) methodological approach to writing introductions across genres is, again, an insightful source to help the practitioner decide how to expand the repertoire of digital genres addressed in the course along these lines. Academic homepages, 3-minute thesis presentations and video cvs, among others, could be used to support writing practice across promotional genres. Data articles, podcasts/vidcast, or infographics could support writing practice across primarily informational genres. And

explainer videos, science talks, or tweetorials could elicit writing practice across genres that have primarily didactic purposes. Rhetorical consciousness of metageneric texts in task-based methodology can therefore make the students' genre repertoires more comprehensive. An additional benefit is that it can support professional development, at a time in which achieving social impact and engaging in participatory science, as advocated by the Open Science agenda (Bartling & Friesike, 2014), have gained momentum.

Finally, this study offers preliminary evidence to assert that, if theoretically-grounded, tasks may lead to noticing or raising conscious attention to forms (Feak, 2011). In this study the task-based methodology supported transversal skills learning —language, communication, digital and multimodal skills development. Several digital tools and resources offered the students opportunities to notice generic forms in digital genres, experiment with technologies (e.g., Google Sites for composing multimodal texts). Others helped them to explore and even self-assess the quality of their outcomes (e.g., using the Dejargonizer tool for writing lay summaries). They guided and assisted the digital composing process along the way. In addition to this, a further pedagogical value became evident in the views that the students articulated around digital genres, as their reflections showed they were critical towards digital communication practices and digital technologies. Most criticised having to devote their time to types of writing that are highly valued in the current research assessment systems, primarily journal articles and abstracts ("*imposed to all of us*"; "*we need to publish and raise funds*"). Others raised concerns towards the constraints imposed by the materiality of the medium (*"synthesing an article into a short text may over-simplify science"*). Finally, but importantly, others highlighted the usefulness of transversal skills, pointing to broader applications of the digital resources and platforms learnt in the course ("*composing a blog to later use it as a digital cv*") or using the genres for teaching purposes.

5.3. Reflective pedagogical praxis

Further implications for teaching practice arise from this case study research. Firstly, close analysis of task performance proved insightful to the EAP practitioner to understand the context of learning and the various factors that might influence the processes of composing digital genres (e.g., the possible role of input and noticing, conscious awareness of accumulated writing experiences and the transfer of transposable multisemiotic resources). Secondly, this praxis allowed experimentation with the CEFR mediation descriptors (Council of Europe, 2020). It helped to assess the students' overall communicative competence and, using the CEFR as a validated tool, to describe the strategies the students used to recontextualise specialised content across digital genres. Zou and Hyland (2019) offered an interesting perspective on how academics responded to a novel rhetorical situation (writing a blog) by discoursively recontextualising the content of their journal articles. Carter-Thomas and Rowley-Jolivet (2020) also reported recontextualisation strategies in 3-minute thesis dissertations. Putting mediation strategies in parallel with discourse strategies and strategies for multisemiotic meaning making, as seen in section 3.4, enabled the practitioner to examine and understand how the students sometimes simplified and sometimes amplified and streamlined specialised content to accommodate to Internet audiences. Assessment is a cornerstone of language learning, yet a somewhat unatttended area in EAP scholarly publications. Introducing validated descriptors in EAP contexts, as proposed by North and Piccardo (2016), may enable practitioners to more effectively monitor learning outcomes.

As illustrated in this study, case study research proves valuable in comprehending two key issues. The first, why genre knowledge transfer and interdiscursive performance might lead to inappropriate use of lexical, grammatical, syntactic and pragmatic features in composing digital genres. The second issue is what this means for interlanguage development in expert academic writing. Such understanding is particularly beneficial for providing formative and corrective feedback as well as revising the task-based approach accordingly. Composing lay summaries required plain language but the data showed that the students, either consciously or unconsciously, applied the complex grammatical structures they used in their abstracts. They also used specialised jargon and academic vocabulary, which hampered the readability of the texts. Additionally, the data analysis revealed some pragmatic infelicities, specifically issues related to the overuse of the modal verb *can*, as identified by the correlational analyses. Therefore, there seems to be evidence of L1 transfer. Complex syntactic patterns and deontic modality are typical features of formal academic Spanish, which would substantiate previous findings on academic writing across cultures. Inappropriate language choice might contradict to some extent Salö and Hanell's (2014) claim that the use of language repertoires in interdiscursive practices is supportive in L2 writing. L1 transfer is then a possible area to explore in future research on digital genres in relation to second language acquisition and, also, academic writing cultures.

Through the case study research it was also possible to identify several learning challenges related to the syntactic complexity of the texts. In the web-documents, content was very frequently expressed by complex noun phrase structures and semantically and syntactically dependent finite, non-finite and complement clauses. Retrieving syntactic complexity measures enticed reflection on the need to provide more explicit instruction and guidance on plain language use. It also indicated the need to make the tasks more demanding as regards the use of digital tools and resources to self-check the quality of the texts, for example their level of readability. Instruction making explicit the link between the discourse functions of linguistic forms and mediation strategies could make the students consciously notice that relative clauses break down complicated information, that exemplification markers and other discourse organisers (e.g., listing) clarify content, or regarding discourse pragmatics, that resultative verbs and clauses make utterances assertive and hence more persuasive. The posts on X composed by the students rarely contained multimodal elements, probably because they had no prior experience in writing/communicating in social media networks, as they stated in the forum. More detailed guidelines on the use of multimodal resources in the task prompts and more focused input in the corresponding videotutorials are areas for improving the methodological approach.

Case study research gives the practitioner access to the emic perspective, or the insiders' views of the social action of genres in the current socio-historical context. This case study became an opportunity to know about the students' concerns regarding issues of writing science in digital environments. The most important one was misinformation. As one of the students put it, "producing short

and direct messages can communicate incorrect ideas". Indeed, oversimplifying complex scientific processes and outcomes by packaging them into short digital texts, such as posts on X, impact statements, infographics, science talks or explainers, to name but a few, requires careful consideration of how much science might be lost in the oversimplification process. Related to this important concern, the ethical use of AI writing assistance in this process also becomes a timely and worthy instructional target.

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CRediT authorship contribution statement

Carmen Pérez-Llantada: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jeap.2024.101349.

References

Ai, H. (2010-2017). Web-based L2 syntactic complexity analyzer. Available at: https://aihaiyang.com/software/. (Accessed 25 July 2022).
Ai, H. (2010-2017). Web-based lexical complexity analyzer. Available at: https://aihaiyang.com/software/lca/. (Accessed 25 July 2022).
Askehave, I., & Nielsen, A. E. (2005). Digital genres: A challenge to traditional genre theory. *Information Technology & People, 18*(22), 120. https://doi.org/10.1108/09593840510601504, 14.
Bartling, S., & Friesike, S. (Eds.). (2014). *Opening science*. Cham: Springer.
Bell, D. E. (2022). Methodology in EAP: Why is it largely still an overlooked issue? *Journal of English for Academic Purposes, 55*. https://doi.org/10.1016/j.jeap.2021.101073
Biber, D., & Gray, B. (2016). The competing demands of popularisation vs. economy: Written language in the age of mass literacy. In T. Nevalainen, & E. C. Traugott (Eds.), *The oxford handbook of the history of English* (pp. 314–328). Oxford: Oxford University Press.
Biber, D., Johansson, S., Leech, G., Conrad, S., & Finegan (Eds.). (1999). *Longman grammar of spoken and written English*. Harlow: Pearson Education Limited.
Carciu, O., & Muresan, L.-M. (2024). Designing multimodal learning for developing multilingual undergraduate students' communication competences in English. In F. V. Lim, & M. Querol (Eds.), *Designing learning with digital technologies: Perspectives from multimodality in education*. London: Routledge.
Carter-Thomas, S., & Rowley-Jolivet, E. (2020). Three Minute Thesis presentations: Recontextualisation strategies in doctoral research. *Journal of English for Academic Purposes, 48*, Article 100897. https://doi.org/10.1016/j.jeap.2020.100897
Council of Europe. (2020). *Common European framework of reference for languages: Learning, teaching, assessment*. available at: Strasbourg: Council of Europe Publishing www.coe.int/lang-cefr.
Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks: SAGE Publications.
Devitt, A. J. (2004). *Writing genres*. Carbondale: Southern Illinois University.
Devitt, A. J. (2015). Translating practice into theory in genre studies. In N. Artemeva, & A. Freedman (Eds.), *Genre studies around the globe. Beyond the three traditions* (pp. 386–402). US, Canada: Inkshed Publications.
Driscoll, D. L., Paszek, J., Gorzelsky, G., Hayes, C. L., & Jones, E. (2020). Genre knowledge and writing development: Results from the writing transfer project. *Written Communication, 37*(1), 69–103. https://doi.org/10.1177/07410883198823
EURAXESS (n.d.). Retrieved July 27, 2023 from https://euraxess.ec.europa.eu/europe/career-development/training-researchers/research-profiles-descriptors.
Feak, C. B. (2011). Putting strategy into ESP materials development. In C. Pérez-Llantada, & M. Watson (Eds.), *Specialized Languages in the Global Village* (pp. 239–260). Newcastle: Cambridge: Scholars Publishing.
Feak, C. B., & Swales, J. M. (2011). *Creating contexts: Writing introductions across genres*. Ann Arbor, MI: The University of Michigan Press.
Hyland, K. (2018). *Narrative, identity and academic storytelling. ILCEA*. https://doi.org/10.4000/ilcea.4677 [Online], 31.
Jiang, F., & Qiu, X. (2022). Communicating disciplinary knowledge to a wide audience in 3MT presentations: How students engage with popularization of science. *Discourse Studies, 24*(1), 115–134. https://doi.org/10.1177/14614456211037438
Kang, J. (2022). Transfer of knowledge across genres and media: Investigating L2 learners' multiple composing practices. *Journal of English for Academic Purposes, 56*, Article 101096. https://doi.org/10.1016/j.jeap.2022.101096
Li, N., & Molder, A. L. (2021). Can scientists use simple infographics to convince? Effects of the "flatten the curve" charts on perceptions of and behavioral intentions toward social distancing measures during the COVID-19 pandemic. *Public Understanding of Science, 30*(7), 898–912. https://doi.org/10.1177/09636625211038719.
Luzón, M. J. (2017). Connecting genres and languages in online scholarly communication. *Written Communication, 34*(4), 441–471. https://doi.org/10.1177/0741088317726298.

Luzón, M. J., & Pérez-Llantada, C. (2022). *Digital Genres in Academic Knowledge Production and Dissemination: Perspectives and Practices*. Bristol: Multilingual Matters.
Mauranen, A. (2013). Hybridism, edutainment, and doubt: Science blogging finding its feet. *Nordic Journal of English Studies, 13*(1), 7–36. https://doi.org/10.35360/njes.274. .
Mehlenbacher, A. R. (2017). Crowdfunding science: Exigencies and strategies in an emerging genre of science communication. *Technical Communication Quarterly, 26*, 127–144. https://doi.org/10.1080/10572252.2017.1287361
Mehlenbacher, A. R. (2019). *Science communication online. Engaging experts and Publics on the Internet*. Columbus: The Ohio State University Press. .
Miller, C. R. (1984). Genre as social action. *Quarterly Journal of Speech, 70*(2), 151–167. https://doi.org/10.1080/00335638409383686. .
Miller, C. R. (2016). Genre innovation: Evolution, emergence, or something else? *The Journal of Media Innovations, 3*, 2.
North, B., & Piccardo, E. (2016). Developing illustrative descriptors of aspects of mediation for the common European framework of reference (CEFR): A council of Europe project. *Language Teaching, 49*(3), 455–459. https://doi.org/10.1017/S0261444816000100
Paulus, T. M., & Roberts, K. R. (2018). Crowdfunding a real-life superhero: The construction of worthy bodies in medical campaign narratives. *Discourse, Context and Media, 21*, 64–72. https://doi.org/10.1016/j.dcm.2017.09.008
Pérez-Llantada, C. (2021). Grammar features and discourse style in digital genres: The case of science-focused crowdfunding projects. *Revista Signos. Estudios de Lingüística, 54*(105), 73–96. Open access.
Pérez-Llantada, C. (2023). 'Help us better understand our changing climate': Exploring the discourse of Citizen Science. *Discourse & Communication*, 0(0). (online first) https://doi.org/10.1177/17504813231158927.
Pérez-Llantada, C., Abián, O., Cadenas-Sánchez, C., Carciu, O., Clemente-Gallardo, J., Erviti, M. C., … Vivas Peraza, A. C. (2022). Digital Science: Sustainable, transformative and transversal. Final report. *Mendeley Data, V1,*. https://doi.org/10.17632/2yv5brwxg5.1
Pérez-Llantada, C., & Luzón, M.-J. (2022). *Genre networks. Intersemiotic relations in digital science communication*. New York/Oxon: Routledge.
Rowley-Jolivet, E., & Carter-Thomas, S. (2005). Genre awareness and rhetorical appropriacy: Manipulation of information structure by NS and NNS scientists in the international conference setting. *English for Specific Purposes, 24*(1), 41–64. https://doi.org/10.1016/j.esp.2003.09.003
Salö, L., & Hanell, L. (2014). Performance of unprecedented genres. Interdiscursivity in the writing practices of a Swedish researcher. *Language & Communication, 37*, 12–28. https://doi.org/10.1016/j.langcom.2014.04.001
Swales, J. M. (1990). Genre analysis. In *English in academic and research settings*. Cambridge: Cambridge University Press.
Wickman, C. (2023). Genre and metagenre in biomedical research writing. *Journal of Business and Technical Communication, 37*, 2. https://doi.org/10.1177/10506519221143113
Zou, H., & Hyland, K. (2019). Reworking research: Interactions in academic articles and blogs. *Discourse Studies, 21*(6), 713–733. https://doi.org/10.1177/1461445619866983

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