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Science dissemination videos as multimodal supporting resources for ESP teaching in higher education

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A B S T R A C T

In recent years, science dissemination has moved from printed to digital formats, and digital genres such as free access videos, along with their own multimodal characteristics (e.g. image, audio, movement, among others) are particularly relevant in order to meet 21st century users' (i.e., *digital natives*) learning needs (Prensky, 2017) and to make them aware of the use of the multimodal traits. However, only a few studies can be found on the use of videos for the dissemination of research in ESP teaching as learning resources in Higher Education (HE) contexts, nor have the multimodal connections embedded in videos which contribute to the engagement of their users been taken into account (Valeiras-Jurado & Bernad-Mechó, 2022). Considering a communicative multimodal procedure in the digital era (Kress, 2010), the objective of this research is to identify the criteria that ESP teachers take into account when selecting this type of video for their courses, as well as the multimodal characteristics of these videos that can be identified and taken into consideration in the classroom. To attain our aim, a questionnaire will be distributed to 10 ESP teachers asking about the criteria they use for the selection of videos (e.g., length, clarity of language, visual aids, subject matter appropriate to the content, difficulty, among other aspects). Secondly, a multimodal discourse analysis of an extract from one of the videos teachers use in their courses will be developed. The teacher who uses this video in his class will be interviewed before and after showing him the multimodal analysis in order to check whether being aware of the video's multimodal traits can change his criteria for video selection and for class activities related to it. The results of this investigation will serve to offer teachers some support in their selection of appropriate multimodal materials for their ESP courses, as well as pedagogical tips about activities that can enhance the multimodal features of this digital genre.

1. Introduction

1.1. Digital genres

With the digital era (Kress, 2010), traditional genres have evolved into digital genres or Cybergenres, and along with this evolution, new forms of oral communication have developed in digital formats, facilitating the spread of new digital platforms (Girón-García, 2013). This research is framed by genre theory and builds on previous studies of genre by Swales (1990, 2004).

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Specifically, the aim is to demonstrate the added value of studying genre in a digital environment through a multimodal analysis of the spoken discourse in *YouTube* videos. Not all definitions of genre that have been provided to date will be addressed, but Berkentotter and Huckin's (1995) description will be taken as a reference since it is directly connected to the scientific discourse examined in this study. They define genre as a key concept for understanding how members of a community use language in a given context. Moreover, they add that genres are not static elements or forms, but rather "inherently dynamic rhetorical structures that can be manipulated according to the conditions of use" (Berkentotter & Huckin, 1995, p. 6). However, with the advancements in technology in recent times and the new demands of the social community to adapt to these new developments, the concept of traditional genre (e.g. newspapers, magazines, etc. in paper format) has been undergoing a transformation towards digital genres. This evolution has allowed for new communication practices available in new digital contexts. These virtual environments have encountered the proliferation of new digital platforms, examples of which include wikis (Kelly & Miller, 2017), social networks, webinars (Ruiz-Madrid and Fortanet Gómez, 2017), and online videos (Erviti & Stengler, 2016) (e.g. *YouTube* videos) (Welbourne & Grant, 2016).

The exceptional transformation of scientific knowledge from printed to digital modes, as a result of the developments of Information and Communication Technologies (ICTs) over recent decades, has brought along with it that much of the knowledge we can find on the web is very easy to understand by a non-specialised user, which places this type of user at the centre of the digitisation process (Lister et al., 2009). Therefore, it would not be surprising that 21st century internet users require this information shift towards digital modes (Girón-García & Boghiu-Balaur, 2021).

In view of this background, the web opens up many new opportunities for academics to disseminate science. Therefore, we could say that the Internet has played a very important role in a context in which scientific knowledge needed a change in order to communicate to the general public in a more successful way. In this vein, the dissemination of science through new digital genres, such as *YouTube* online videos, represents a significant contribution to the dissemination of knowledge (Scotto di Carlo, 2015). Indeed, *YouTube* is considered a growing source of content for disseminating research (Allgaier, 2020; Geipel, 2018); and, in the same way that learning is currently learner-centred, research dissemination needs to focus on its recipients (i.e., consumers of *YouTube* videos). Generally speaking, videos provoke user participation, and it is important to bear in mind that technology has become an excellent tool for addressing a new type of audience, "digital natives" (Prensky, 2001; 2017), who are moving more and more towards an individualised and online learning experience. These generations need to find the reception of knowledge both engaging and motivating to fulfil their interests and goals. Exploring digital genres by means of a multimodal analysis of the spoken discourse in *YouTube* videos can play a key role in this process.

1.2. Digital videos as pedagogical materials

The consumption of science (Russell, 1995) on the Internet has grown exponentially in recent decades (León & Bourk, 2018), as most knowledge has moved online. Moreover, not only can we benefit from the information we find on the web in digital texts (e.g., online newspapers and magazines, blogs, forums, among others), but the dissemination of knowledge has also gone viral through audiovisual content. With all these changes, and especially in the field of higher education, the form and/or means by which knowledge is being transmitted has evolved. Thus, greater accessibility of teaching and research materials and resources has become necessary, and the fact that many of these resources are open in some repositories has facilitated this task. In this regard, the world of education, and especially higher education, benefits from a plethora of educational and research materials that have been made accessible to the university community (whether students or teachers), most of it as Open Educational Resources (OER) such as web-based text resources, video recorded lectures, online books and academic journals, and *YouTube* videos, among others. OER provides similar access to knowledge dissemination to a wider non-specific audience worldwide and this includes content and educational online materials (Caswell et al., 2008; Feldman-Maggor et al., 2016).

In this sense, online video has become the preferred medium for many users in the 21st century, especially those hosted on the diverse *YouTube* channels. Kim (2012, p. 54) highlights that *YouTube* videos "set the tone and format of online video: short, mostly humorous and easily accessible". Recent studies, such as Erviti and León (2017) have confirmed that the combination of science and technology has become remarkably popular on the *YouTube* platform. For this reason, it is not surprising that the need to investigate the dissemination of science through videos on the *YouTube* platform arises, with the field of ESP in Higher Education (HE) being the main focus of the present study.

Previous research has pointed out the vast variety of video productions. Muñoz-Morcillo et al. (2016) identify at least 15: edited talk; monologue; documentary; docudrama; reportage; reality-based interview; feature; portrait; questions & answers; essay film; animation/cartoon; live drawing; live writing; fictional film; and docufiction/mockumentary. Among them, the most frequently found seem to be the short documentary and the animation videos, followed by the reportage (e.g., university productions). Moreover, these authors point out the high degree of complexity most *YouTube* videos have, with over 33% of them containing more than 4 plot points. This is in line with the use of a narrator as voice-over which is often the guiding thread along the whole video.

Muñoz-Morcillo et al. (2016) also underscore the use of close-ups for portraying people in science documentaries, showing the importance of the personal touch when communicating scientific facts to the audience. On the other hand, they also display the unusual perspectives of animations on *YouTube* and the experimental potential they have when the objective is to explain complex concepts and to visualise abstract ideas, that is, in a learning context their role as a "learning tool to enhance conceptual understanding" (Shiu et al., 2020, p. 2020).

Boy et al. (2020) make a different classification of *YouTube* videos, with just four types:

- *presentation films, in which* the speaker talks directly to the camera in a medium closeup shot and answers a limited number of scientific questions. In addition to spoken language, these videos show other modes such as text over visuals, background images, animations, gestures and facial expressions. The speaker's personality is the main strength of these videos;
- *expert films* which focus on an expert person who discusses a topical field of research. These videos combine the speaker's image with moving image material (animations, insertion of comments, etc.);
- *animation films* showing artificial moving images to illustrate a process, a problem, an issue, or a scientific theory;
- *narrative explanatory films* based on a general question that is answered through arguments that follow logical reasoning. These videos are also complex and may contain elements from the previous types, combining narrative and informative elements. They use mainly moving image material and have the highest number of cuts.

As will be seen later, the video selected for the current research is a complex one, that could be classified as a narrative explanatory film, according to Valeiras-Jurado and Bernad-Mechó (2022). It contains several types of video production: from a documentary and reportage (Muñoz-Morcillo et al., 2016), which we have named as *Research* and *Locations*, to *Animation* and a combination of presentation and expert films (Boy et al., 2020), called in this article *Evidentials*. From these parts, due to its reported frequency and relevance, we have selected a fragment of the Animations and another one from the Evidentials for the multimodal analysis developed (see Section 2. Method below).

1.3. Multimodal affordances of digital videos

Digital videos can have disciplinary and pedagogical multimodal affordances (Airey, 2017), that is potential resources for learning. Some disciplinary affordances (such as a formula or specific terminology), which in principle may be obscure to students, can become pedagogical when used by the teacher to clarify a concept (Ruiz Madrid & Fortanet-Gómez, 2019). And in this same vein, the multimodal disciplinary affordances of a digital video may include a term or a formula, and the pedagogical affordances that are used to explain it can be the way the teacher develops it on a blackboard and the teacher's oral explanation, including discipline-specific oral discourse, face expressions, gestures, intonation, stress, among other. As Luzón (2019) states, "the scientific discourse of formal academic genres is recontextualized in online science videos, harnessing the multimodal affordances of digital video" (2019, p.171). Online science videos bring academic language that is complicated to understand closer to the general audience through a series of "recontextualization" strategies (Luzón, 2019) which facilitate the understanding of specialised language. In this sense, online science videos can be particularly useful as pedagogical materials. Moreover, all materials that have not been created for teaching purposes also need a recontextualization when used in class, which is usually implemented by the teacher.

According to Boy et al. (2020), "YouTube science videos are seen as well-organised multimodal arrangements consisting of a variety of visual and verbal modes like stills, moving images, text, spoken language, sounds, animations, graphics, etc. which is a much more complex system of communication than text only" (2020, p. 4). Most research on multimodal affordances up to now has been focused on video recordings of lectures addressed to an onsite audience (Bernad-Mechó, 2021; Crawford Camiciottoli & Fortanet-Gómez, 2022), and the research on pedagogical online video materials is still in its infancy.

Focusing on the modes for the multimodal analysis of these video materials, previous studies (Fortanet-Gómez & Ruiz-Madrid, 2014; Querol-Julián, 2011; Ruiz Madrid & Fortanet-Gómez, 2019) have considered the following:

a) words, mainly those used as stylistic strategies and metadiscourse;
b) four types of kinesics: gestures, head movement, facial expression, and gaze; and the way they interact with the speech, such as showing semantic or pragmatic synchrony, adding meaning, and going beyond the utterance;
c) paralanguage, divided in three types: two voice qualities and one voice differentiator, as well as the functions they accomplish in the discourse.

These modes have been classified by Valeiras-Jurado and Bernad-Mechó (2022) as 'embodied modes'. However, as these authors claim, video recordings also require 'filmic modes', or "modes arising from the editing process of the YouTube videos" (p.13). These authors include the following filmic modes: type of shot, angle, mise-en-scène, cuts, music, visual prompts, sound effects and video effects.

1.4. Criteria to select videos for language teaching

As commented above, online videos have become a pedagogical tool for many teachers, especially by those teaching English as this is the most often used language in platforms such as *YouTube*. Wijnker et al. (2019) report that the most frequent aims to select video materials are to engage students, to activate their prior knowledge on the topic and to present examples.

Therefore, selecting the best video materials has become a challenge for these teachers. Zarzycki (2021), following Alhamami (2013), provides a classification of the criteria used to assess *YouTube* videos as learning tools:

1. Technical characteristics: sound and image quality, and length;
2. Attractiveness: the video must be entertaining and can be accompanied by background music, subtitles and pictures;
3. Clarity: speaker's body language, speed of voice, use of colours to highlight grammatical issues;
4. Reaction: how many people liked and disliked the video;
5. Content: good structure, avoid commercial ads and culturally sensitive material.

Zarzycki (2021) adds to these the relevance of selecting materials suitable for the audience or the students they will be addressed to. Videos can provide examples of the use of real English language, and can provide support for teaching grammar, pronunciation, several accents and varieties of English, intonation and listening comprehension.

The aim of this study is twofold: on the one hand, we want to find out the criteria university teachers in specialised contexts use when selecting videos for their students. On the other hand, we want to analyse the multimodal characteristics of an extract from one of the selected videos in order to help the ESP teachers define the ideal characteristics of video as teaching materials.

In order to reach this aim, we will try to answer the following research questions:

RQ1- What are the main criteria used by ESP teachers when selecting videos for their classes?
RQ2- How are these videos used in the class?
RQ3- What are the multimodal affordances videos can provide?
RQ4- How can videos be used in the ESP class considering their pedagogical affordances?

2. Methodology

In this section the method used for the study is described: the context and participants in which it was developed and the two analytical instruments employed: the questionnaire and the guided interviews. Then, the video selected and analysed will also be described.

2.1. Context and participants

The study took place at *Universitat Jaume I* (Spain) during the spring term of 2022. The reason why we chose this period was because it is when many of the specialised English teachers concentrate their classes, which meant that we could be more certain that they would respond to the survey. A total of 10 teachers from the same university participated, and among the courses they teach the following are included: *Legal English* (Bachelors' Degree in Law), *English for Finance* (Bachelors' Degree in Finance and Accounting), *English for Science and Technology* (Bachelors' Degree in Agrifood and Rural Engineering, Bachelors' Degree in Industrial Design and Product Development Engineering), *English for Psychologists* (Bachelors' Degree in Psychology), *English for Medicine* (Bachelors' Degree in Medicine). From the bulk of participants, only one of the teachers was selected for an interview. He holds the position of junior lecturer and has been teaching at Universitat Jaume I for 5 years. At the moment of the research, he was teaching English for Medicine, and used the video *"WHO: Influenza an Unpredictable Threat"*.

2.2. Analytical instruments for data collection

2.2.1. Questionnaire on criteria used to select ESP videos

To meet the objective of this research, a questionnaire was administered to 10 ESP teachers using Google Forms asking about the criteria they use for the selection of videos (e.g., length, clarity of language, visual aids, subject matter appropriate to the content, difficulty, among other things). The questions derived from this questionnaire are related to the use and selection of video materials by teachers (questions 1–4) and the pedagogical objective and type of activities used in the class (questions 5–6). The complete questionnaire can be found in the Appendix.

2.2.2. Interviews

The selected teacher was interviewed before and after analysing two video fragments multimodally. The objective of the first interview was to obtain deeper information about why he had selected this video to be included in his classes and the aims he had, and which should be achieved with it. Therefore, the questions he was asked were:

1. Why did you select this video? Which criteria did you have in mind?
2. What was the aim of this video in your class?
3. Did you introduce any activity to achieve this aim?

The second interview was made after analysing two fragments of the video and the objective was to make the teacher reflect on the multimodal affordances of the video, the new aims it could have and the types of activities that could be offered to students based on the video. The questions he was asked were:

1. After seeing this short multimodal analysis, do you think you could change or expand the objectives of using this video in the ESP classroom?
2. Which type of activities could be added?
3. Can this type of analysis change your criteria to select videos for your ESP classes in the future?

2.3. The YouTube video: WHO: influenza, an unpredictable threat

The selected video "WHO: Influenza an Unpredictable Threat" describes how several viruses have arisen throughout the world in the late 20th and early 21st centuries and how these have developed and impacted on public health. The video, which offers subtitles and a transcription, was created and uploaded to the digital platform *YouTube* by the World Health Organisation (WHO), and at the moment this research was undertaken it had 801.000 subscribers and 608 likes.

It has a duration of 14.02 min, and it is not a totally Open Resource. It holds a standard *YouTube* licence, which means it cannot be downloaded or manipulated. However, *YouTube* has recently incorporated a tool to produce shorter clips and share them. We have used this tool for creating the two clips we have analysed multimodally.

This documentary, published in August 2015, was produced by the World Health Organisation and describes the evolution and characteristics of influenza and its varieties. It follows the argumentative thread of research and starts by describing the Spanish influenza pandemic that affected most of the countries in the world between 1918 and 1920. Then, it shows several locations where the several flu pandemics in the 20th and beginning of the 21st century have affected the most and how vaccination has helped to overcome them. Animations are used to explain the main features of flu, and evidentials from a patient, a pharmacist and two WHO researchers help provide all this information with a human perspective.

This video film gathers several techniques that make it more attractive. Considering these techniques, it can be divided into four parts, which combine along the film and are separated by transitions marked with silence, music, a short image, or overlapping of voice over corresponding to the next scene. Table 1 presents a scheme of this structure.

For the purpose of the present research, we have selected one short fragment from the Animations and another one from Evidentials in order to make a simple multimodal analysis. There are two main reasons for this choice: on the one hand, to show the variety in format, and on the other hand, the pedagogical affordances of these two fragments. In fact, animations are used to explain concepts; whereas evidentials' main focus is to support data and events provided in the video.

Regarding the Animations fragment (from 3.48 to 5.17), it has a duration of 1 min and 25 s, and in order to exemplify the multimodal analysis we have used a shorter clip of just 15 s (from 4.00 to 4.15). This animation shows a scientific explanation of the effects of the influenza virus using plain language and illustrative animated three-dimensional drawings.

As for the Evidentials fragment (from 12.30 to 12.50), it has a duration of 20 s. A lady scientist explains the World Health Organisation's (WHO) function to prevent influenza.

3. Results

3.1. Questionnaire results

In this section, we will present the responses of the 10 ESP teachers to the criteria that they use for the selection of videos in their courses:

As for the question "*How often do you select videos from the internet for your ESP lessons?*" Figure 1 shows that 50% of the teachers surveyed responded that they used at least one video for each unit in their courses, followed by 30% who have used videos in their classes for every 2 or 3 units. Lastly, the lowest percentages are attributed to teachers who have used videos only once or twice in the development of their entire course or have rarely used them.

Regarding the type of *complementary activities* that help in the understanding of the videos, the results in Figure 2 indicate that half of the teachers surveyed claimed to have administered a questionnaire to their students after having implemented the video they had selected. This type of follow–up activity was designed to check that the students had understood the content of the video. On the other hand, almost half (40%) of the teachers implemented activities related to language learning (in relation to the correct use of verbs, adjectives, among other linguistic elements) in their courses. Ultimately, only 30% of respondents claimed to have included supplementary activities focused on learning vocabulary related to the video the teacher had used in the course.

With regard to the *frequency* used by teachers, and according to the parameters "*Always*", "*Sometimes*", "*Rarely*", and "*Never*", (see question 2 in the questionnaire, Appendix), the following criteria were used for the selection of videos:

Content is the main criterion used by teachers to select the videos. The content of the video must correspond with that of the unit, and it has to be adequate to the students' background knowledge.

Secondly, the *platform* on which the videos used by the teachers surveyed are hosted (e.g., *YouTube*, *Purdue OWL*, etc.) is also an essential factor for 80% of the teachers who responded to the questionnaire.

Table 1
Structure of the video *"WHO: Influenza an Unpredictable Threat"*[a].

RESEARCH (documentary)	TRANSITIONS	LOCATIONS (reportage)
		
TRANSITIONS	TRANSITIONS	TRANSITIONS
		
ANIMATIONS		EVIDENTIALS

[a] According to the Article 17 of the directive of the European Union about authors' rights in the Digital Single Market, the content of YouTube channels may be reused for citation purposes. This is also one of the legitimate uses of these videos according to the USA law (https://www.youtube.com/howyoutubeworks/policies/copyright/).

Thirdly, taking into consideration the videos' *technical characteristics*, such as length, quality of sound, and visual aids, just over half of the teachers surveyed said that they always considered the *length* of the video when selecting it for their students, making sure that it was a short video, whereas slightly less than half of the teachers who responded to the questionnaire did not take this into account. Similarly, the same number of teachers (60%) as in the previous item took into account that the video they had selected should have *good sound quality*. The percentage changed for *visual aids*, which was only considered as a preferent aspect by 40% of the teachers. Regarding *language*, half of the teachers who responded to the questionnaire affirmed that the *complexity of the discourse* in the videos used was always adequate for the students' average English proficiency level. However, the other half stated that they sometimes took this element into account. Furthermore, in terms of providing the *transcript* of the video shown, half of the respondents acknowledged that they rarely offered this resource to students. As for *external factors* such as using videos featuring an expert in the field to be taught (i.e., *the speaker is an authority in the field*), just under half of the teachers surveyed acknowledged that they had only sometimes, or rarely, considered this element when selecting videos for their students. On the other hand, only 2 teachers stated that they had taken this item into

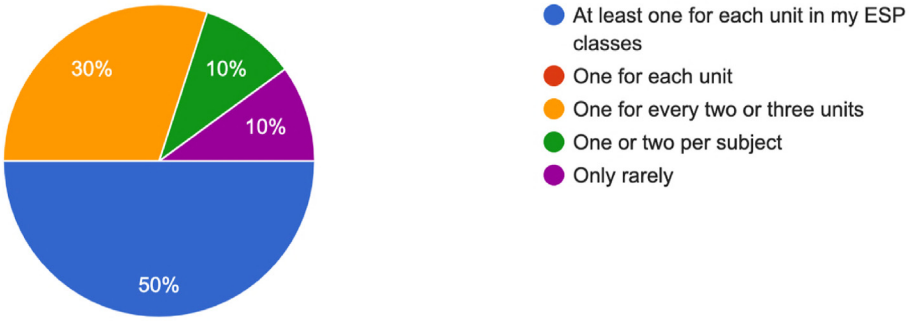

Figure 1. Frequency of the video selection from the Internet for ESP courses.

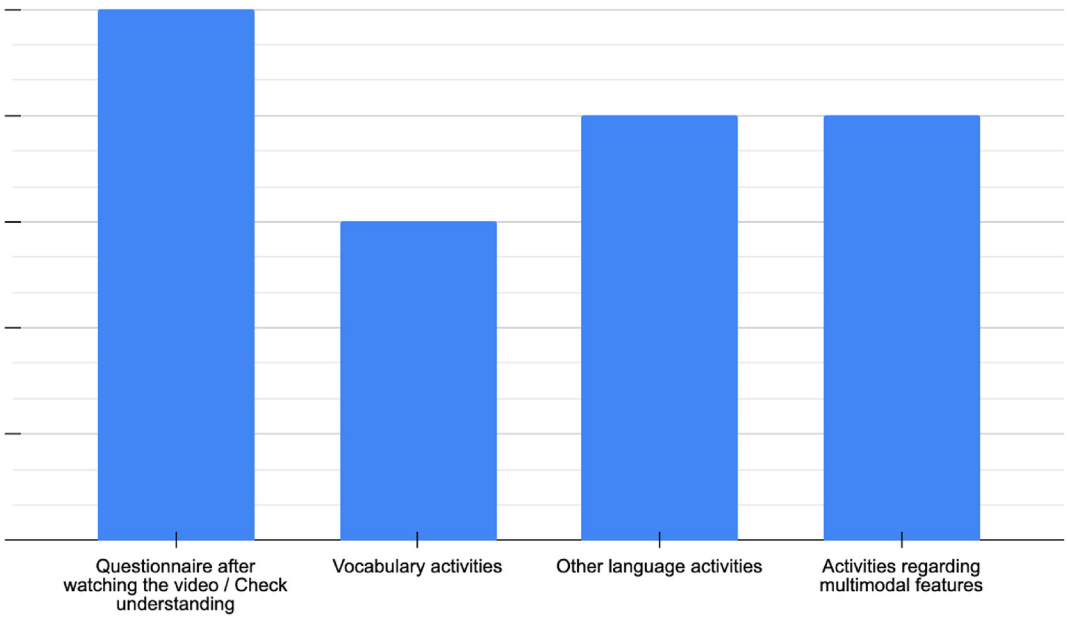

Figure 2. Complementary activities to understand the videos.

account, as opposed to only 1 teacher who had never considered this element. When asked about other criteria, only one teacher reported selecting videos that are *attractive* to students:*"Motivation: that students may find it useful, interesting and, if possible, entertaining"*.

As for the *type of video(s)* that teachers use in their courses (Figure 3), we offered them the following categorisation: instructive and science dissemination. In addition, they could propose others. Most of the teachers interviewed (90%) used *instructive* videos, while 70% stated that they also used videos for the *dissemination of scientific knowledge*. In addition, 30% proposed other types of videos, such as TED Talks or videos that show informal conversations, videos that exemplify the topic or the language (e.g., from a TV series where someone is teaching), and authentic real-life school videos.

Finally, concerning the question "*What do you use the videos in ESP for?*", almost all of the teachers who responded to the survey stated that they used the videos to learn new vocabulary and specific terminology (taking into account that the content taught in this type of programmes or ESP courses is specialised English language), as well as to learn discipline-specific content in order to better understand the subject matter of the course.

3.2. Multimodal analysis

A multimodal discourse analysis of two extracts from the video "*WHO: Influenza, an unpredictable threat*" has been carried out. These fragments are as follows: 'Evidential' and 'Animations'. Next, we present the main multimodal traits derived from the video following Valeiras-Jurado and Bernad-Mechó (2022).

3.2.1. Multimodal traits: 'Evidential' (from minute 12:30 to 12:50)

Content: A scientist from the Center for Disease Control and Prevention (CDC) in the USA gives evidence of the functions of WHO, as a researcher for this organism.

Transcript: "*One of w-h-o's very important functions is (Ah) (PAUSE) working with (PAUSE) countries and capacity building (Ah) (PAUSE) to improve surveillance in countries where (PAUSE) they they really don't know what's going on with respect to influenza*". (Voice over and background music)

- Language: Two parts can be distinguished in this sentence. The first part includes formal institutional discourse ("capacity building" and "surveillance"). The second part refers to people in countries and uses a more informal language ("really", "what's going on").
- Paralanguage: American English, slow calmed voice, pauses and fillers (e.g., ah), excellent articulation (spontaneity).
- Physical traits: senior lady in formal attire,
- Colours: golden and dark
- Locations and types of images: Center for Disease Control and Prevention (CDC) in the USA.

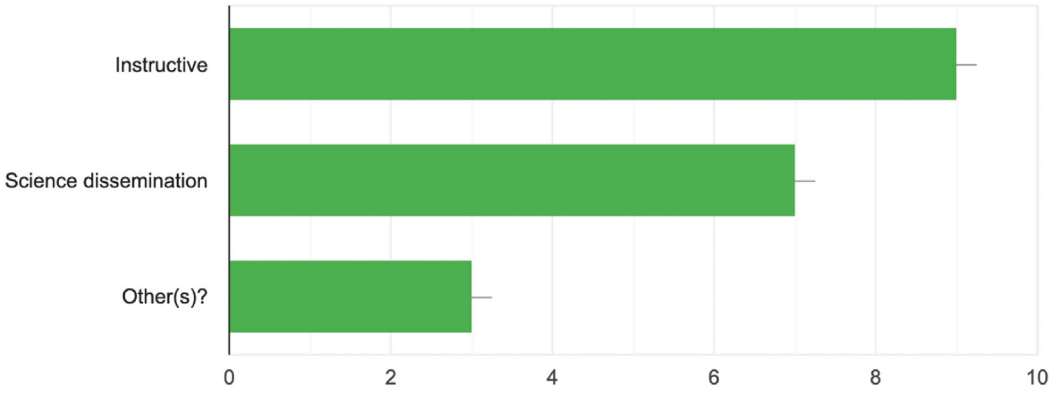

Figure 3. Type of video(s) used.

- Gestures accompanying voice: head movements (beats), gaze (eye rapport with the camera).
- Relationship between image and text: annotation at the bottom of the image with a description of the centre where the researcher works, as well as the name of the person appearing in the video, i. e, Nancy Cox.
- Gentle sound and music
- Type of shot: medium close-up shot
- Angle: frontal
- Gestures: still
- Proxemics: standing
- Head movements: nod (beat)
- Mise-en-scène: reading desk, American flag, blue curtain, logo.
- Visual prompts: CDC visual sign

This multimodal analysis can lead the audience to interpret that the World Health Organisation is integrated by senior researchers, some of them women and working for American Centers, and who can be trusted in their work (words reinforced by slow-paced speech and nods, and frontal eye rapport) and in what they tell the society.

3.2.2. Multimodal traits: 'Animations' (from minute 3:58 to 4:10)

Content: The animation explains visually how the virus enters the body of an individual.

Transcript: *"Even a very small droplet may contain hundreds of viruses (PAUSE) droplets can enter the body of another person through their mouth or nose (PAUSE) and contact with this person's respiratory mucous membranes"* (Voice over and background music)

Although in the animation there is a human figure representing a woman, it is an avatar and is used as a static figure. It is the droplet that is provided with movement. In this case, the multimodal analysis of the animation needs to be focused on the filmic modes rather than on the embodied modes, which do not add any additional meaning. However, we have kept some embodied modes, such as language and paralanguage which are associated with the voice over and disassociated from the avatar and rest of animations.

- Language: simple sentences but using scientific and comprehensible terminology
- Paralanguage: standard British English, voice over, calm voice, pauses, excellent articulation.
- Image in motion: It is an animation of three-dimensional computer drawings representing a drop of saliva containing virus, which enters through a woman's mouth and the virus, represented by spiky balls, navigates down her trachea. The spiky balls try to realistically represent the influenza virus.
- Colours: vivid, especially the representation of the virus.
- Relationship between visuals and voice: the animations represent exactly what the voice over is describing.
- Vivid music, which becomes more evident during the brief pauses, adds a sense of dynamism and a certain mystery.

The interpretation of this second multimodal analysis is that scientific explanations can be accessible to everyone, and this kind of animation can help the audience understand complex terminology and processes by adding animated images to a simplified explanation. Therefore, these results are in line with Luzón's "recontextualization" (2019) strategies to build credibility and a receptive frame of mind, since this approach tailors the information to the assumed knowledge of the audience.

3.3. Interviews with the teacher

3.3.1. Introductory interview

The first interview we conducted with the selected teacher aimed to delve into the reasons that led him to use this video for his Medicine classes, the objectives he wanted to achieve with it, and whether he employed any type of additional resource and/or activity to attain those aims. In the following paragraphs, we will describe this teacher's reflections on the questions he was asked:

With the first questions "*Why did you select this video? Which criteria did you have in mind?*", we wanted to know why this teacher selected the video "WHO: Influenza, an unpredictable threat" and what criteria he considered in his choice.

In this regard, the teacher replied that his main motivation was to introduce basic concepts and vocabulary related to vaccines, pandemics, influenza, among other notions. In addition, this video was used as part of a broader unit covering topics such as the main advances in the history of Medicine, as well as basic vocabulary about diseases in general. The specific reasons for selecting this video were mainly twofold: On the one hand, it is a video that is at the forefront of today's society, such as the pandemic (even though it does not deal with COVID'19):

"*I chose this one because it's very much up-to-date. I mean, it's not talking about COVID, but still talks about the pandemic, and… you know, it provides with the… mm… with some perspective, you know, to see how that is something that, you know, "COVID is something that happened before*".

The professor considers this background to be relevant for the knowledge of students of Medicine since it deals with the perspective of the pandemic in the past, before the current pandemic with COVID. On the other hand, such a video is useful for the students' training on basic vocabulary in relation to Medicine concepts (e.g., diseases) and also as listening comprehension practice:

"*… basically I chose this one, as I said, to introduce some basic vocabulary on vaccines and to introduce… mm… you know, also as a listening practice for them,... mm …, yeah*".

The second question revolves around the main objective of using this video with his students: "*What was the aim of this video in your class?*"

The main purpose for which the teacher used this video in the classroom was to practise listening skills: *"The purpose of the video is listening comprehension"*. Listening comprehension is fundamental to the English language classroom, and in this case to English language learning in the field of Medicine. Although the main objective is listening comprehension, what the teacher expects from the students is to look for very precise and detailed information: "*… I want them to identify specific information within the text*". Therefore, the objective is to acquire listening comprehension of precise data.

The last question we addressed to the teacher concerned the possible resources and/or activities he required the students to achieve the previous objective (i.e. listening comprehension): "*Did you introduce any activity to achieve this aim*?"

As described above, the teacher's main aim with this video was to practise listening skills, and to this end he asked students to do a listening task structured in 3 sub-tasks: Pre-listening, while-listening, and post-listening tasks: "*Well, as a listening comprehension task,... uh… what I did was a pre-listening task, a while listening and post-listening tasks*". In the pre-task, the aim was to engage students in a discussion in which they talked about developments in the history of Medicine using specific terminology in English (not general English). Concepts such as penicillin, treatments to cure cancer, among others, were covered in the pre-task discussion. Secondly, in the while-listening task, about 20 questions were posed to the students to look up very specific details and which, in turn, were related to the terminology of the medical field. Finally, in the post-listening task, students were asked to provide a piece of writing in which they would reflect on the current pandemic situation (i.e., COVID'19) and compare it with the information they had seen in the video (e.g., Spanish flu or influenza in general).

3.3.2. Post-intervention interview

The second interview, which took place after the analysis of two fragments of the video, aimed to make the teacher reflect on the multimodal possibilities of the video under discussion, the new targets it could have and the types of activities students could carry out based on the video. His answers to the questions we posed to him are presented below.

Regarding the first question, and after showing the teacher two multimodal analyses, he was inquired about the possibility to expand or add to the objectives of using the video in the ESP class: "*After seeing this short multimodal analysis, do you think you could change or expand the objectives of using this video in the ESP classroom?*"

The teacher foregrounded the clear differences between the two fragments. In the first one, there is a real person talking to the camera in a very specific context, showing a place: the 'CDC' (i.e., *Center for Disease Control and Prevention*, USA) logo and the American flag. In addition, he highlighted some paralinguistic features, such as pauses and hesitations. He also compared this part of the video with the second analysis, in which an animation is shown, designed on purpose for the production of the video, so that the language had already been prepared beforehand.

The teacher considered that the initial objectives could be expanded by "*moving from a general listening comprehension to actually reflecting on different types of genres, or the idea of formal registers in interviews or, also through the animation …. explain some concepts*" in order to explain medical concepts.

The second question dealt with some possible activities that could be included in his Medicine course: "*Which type of activities could be added?*"

The teacher proposed several activities, for example, asking students to record themselves in a very formal context (similar to the Evidential in the first analysis) and using a formal register and embodied modes and the corresponding complementary filmic modes, in which they have to explain a concept they had learnt, either from this video or from another source. For the animation part of the video, on the other hand, the teacher would ask students to (a) take notes as they watch the video and summarise the main ideas, (b) as well as explain concepts in their own words.

Lastly, the question "*Can this type of analysis change your criteria to select videos for your ESP classes in the future?*" revolved around how the multimodal analysis conducted in this study had made him change his selection criteria for the use of videos in his future ESP classes.

He acknowledged that it is necessary to consider this type of analysis, especially when working with *YouTube* videos. It is important to understand the type of video selected. In addition, as a lecturer, he added that the videos a teacher selects should be "*meaningful, engaging, easy to watch, easy to understand, dynamic...*". In this particular case, the combination of documentary-life explanations and computer animations, as well as real-life interviews... all these different elements combine to make a video dynamic, easy to watch, and easy to understand. According to him, the visual input is very important, in addition to the auditory input characteristic of any common listening activity in which the video factor is not present. He affirmed that the video selected should be "*engaging, very directed to the audience, it has to be dynamic and, after seeing this analysis, I would argue that, you know, these are to some extent, mmm dynamic and engaging, and definitely varied*".

4. Discussion

In order to meet the double objective: finding out the criteria ESP teachers use in their selection of videos for their students, and analysing one extract from one of the videos selected, we hereby discuss the results obtained in light of the research questions addressed.

4.1. What are the main criteria used by ESP when selecting videos for their classes?

Most ESP teachers nowadays use Internet videos in their classes. The most often used criteria to assess a video film positively are content closely related to the topic under study and content adequate to students' previous knowledge. The platform from where it was taken is also prioritised by teachers. Thirdly, technical aspects such as the length, the quality of sound and of the visual aids are taken into account. Surprisingly, as the participants are ESP teachers, the adequate complexity of the discourse has not been prioritised by many of them. The reason may be that they consider their students are proficient enough to understand these videos or because the use of authentic material is for them more important than the complexity of the language. Other aspects such as whether the speaker is an authority in the field or if the transcript is provided do not seem to be so relevant. This seems to be only partly in line with Alhamami (2013) and Zarzycki (2021), who highlight the technical characteristics of the film as the most relevant criteria, and secondarily the content matter, when trying to select the right materials. Alhamami (2013) underscores the entertainment and attractiveness of the video, something ESP teachers do not seem to prioritise maybe because they focus on the application of these materials for language learning at the university. Though ESP teachers were not asked whether they consider the users' reaction (likes and dislikes) to videos, they state to pay close attention to the platform they take the films from, such as *YouTube* or education platforms (e.g. OWL-Online Writing Lab, Purdue University) as a guarantee of quality.

Regarding the type of video, most ESP teachers opted for instructional videos, that is films especially created for language teaching. However, some teachers also acknowledged using science dissemination videos, which could be regarded as documentary or reportage videos. It also needs to be pointed out that a number of participants use videos as examples of the language, and try to find recordings from TV or real life situations. This may be a use outside the scope of this study, since it would involve spontaneous rather than prepared situations and therefore a specific type of recording.

In the interview held with the teacher, he pointed out the criteria followed to select the video used in this research were based, on the one hand, on the present relevance of the content which made it attractive for the students. On the other hand, he valued its language characteristics, appropriate to the previous knowledge of the students and their needs to learn new discipline-related vocabulary. Although the technical characteristics of the video are high quality, that does not seem the main priority to assess it positively.

4.2. How are these videos used in the class?

Videos seem to be used for listening comprehension but also with other linguistic aims related to content as well as to language. However, these activities seem to be observations rather than specific learning activities based on the multimodal traits of videos.

Following the general tendency, the selected video was primarily used by the teacher interviewed for listening comprehension and vocabulary acquisition. The capacity to engage students had already been reported by Wijnker et al. (2019) as one of the most frequent criteria to select a video, and listening comprehension was also considered as one of the main applications of these materials by Zarzycki (2021), accompanied by grammar and vocabulary activities.

4.3. What are the multimodal affordances videos can provide?

In the two short fragments analysed, it has been made evident that meaning involves a multimodal ensemble. In the excerpt from the Evidential, the embodied modes consist of the affordable language, the use of the American accent, a calm voice, pauses and fillers, that give the impression of authority voice. These elements are accompanied in harmony by physical traits such as formal attire dressed by a senior lady, a serious face expression, eye rapport and head movements to accompany her voice. The filmic modes also complement the scene. The lectern at the back with the logo of the Research Center where the watcher has been announced the speaker conducts her research and the American flag supports her words. She works for a well-known Research Center in the US closely related to the World Health Organisation. Other accompanying elements are golden and dark tones as prevalent and soft background music.

Regarding the Animation, there is no speaker. The female narrator voice-over is heard and she takes the role of a teacher explaining a difficult process. The language used is simple but with specific terminology. She uses a British accent, a calm voice and excellent standard articulation. The British accent combined with other accents and languages along the video give the idea of an inclusive world organisation. The image in motion is based on moving drawings or cartoons representing a drop of saliva containing virus and how the virus enters a woman's body though her mouth. This image, as pointed out by Muñoz-Morcillo et al. (2016) shows an unusual perspective of the process and helps the audience to understand its complexity. The voice over describes exactly what is seen on the screen. The filmic modes add reality to the image through several shots and camera angles as well as vivid colours, especially the representation of the virus, and vivid music adds dynamism and some mystery to the scene.

4.4. How can videos be used in the ESP class considering their pedagogical affordances?

When asked about the affordances a multimodal analysis of a video film can disclose, the interviewed teacher acknowledged multimodal traits should be essential aspects to consider when selecting a video as pedagogical material. The multimodal ensemble must make the video meaningful, entertaining and easy to watch and understand. A precise, though simple, multimodal analysis can make students aware of the subtleties the author of the video has implemented, which help in the understanding, as well as in further language production.

5. Final conclusion

This research has focused on identifying which materials in video format ESP teachers prefer to use in order to bring multimedia literacy to the attention, as well as to guide teachers in their future selection of videos for their ESP courses. With this objective in mind and in order to answer the research questions that have been posed, we selected two excerpts from a medical video. Following the framework of Valeiras-Jurado and Bernad-Mechó (2022), we conducted a multimodal analysis focusing on *embodied* modes (e.g., paralanguage, gestures, gaze, proxemics, etc.) and *filmic* modes (e.g., type of shot, angle, cuts, music, visual prompts, etc.).

Besides, we also surveyed 10 ESP teachers to know about their criteria for video selection in their courses: length, visual aids, difficulty, clarity of language, etc., were some of the questions they were asked in the questionnaire. Finally, we conducted an interview with one of the selected teachers before and after our multimodal analysis. The aim was to find out more about (a) the criteria he had considered when using the above-mentioned medical video in his classes, and (b) the objective he wanted to achieve with its implementation in the classroom, or even suggest activities that could be done with the use of that same video after having reflected on the multimodal elements present in the video.

With all the above, we could conclude that the use of videos in ESP classes as a pedagogical resource becomes particularly relevant. Especially with the integration of multimodal elements in *YouTube* videos (in this research), the presence of embodied modes and filmic modes helps to increase the motivation and engagement of such a demanding audience as the 'digital natives' (Prensky, 2001, 2017). This way, research is more accessible to 21st Century learners, who demand a transformation of the information from physical to digital modes (Girón-García & Boghiu-Balaur, 2021). Following Wijnker et al. (2019), the main objective for using video in the classroom is to engage learners and trigger their prior knowledge on the topic presented in the course. Finally, more awareness should be given to the multimodal pedagogical resources in *YouTube* and other platform videos.

Although we believe this research has unveiled interesting and relevant results, we must acknowledge some limitations such as the number of participants. Only 10 ESP teachers were considered for this study. Further research could involve a larger number of ESP, and also maybe EMI teachers. On the other hand, the multimodal analysis of more videos may give more clues to the teachers in order to show them the relevance of the multimodal affordances of videos for the selection of pedagogical materials.

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APPENDIX

Questionnaire on criteria used to select ESP videos

The information provided through this questionnaire will be anonymised. Please click to provide permission to use the data from this survey for research purposes.*

- Yes, I provide permission

Teacher's name*
Course(s)*

1. How often do you select videos from the internet for your ESP lessons?**Mark one.*
   - At least one for each unit in my ESP classes
   - One for each unit
   - One for every two or three units
   - One or two per subject
   - Only rarely
2. How often do you use these criteria for video selection?* *Mark one per row.*

	Always	Sometimes	Rarely	Never
Length: it is a short film				
The quality of sound is good				
Visual aids: they are appropriate and help students understand				
Appropriate content: the video deals precisely with the topic				
The content is adequate to students' background knowledge				
The complexity of the discourse is adequate for the students' average English level				
The speaker is an authority in the field				
The transcript is provided				
Platform used to extract videos (e.g., YouTube, Purdue OWL, etc.)				

3 Do you use other criteria?
4. What kind of video(s) do you use?*
   - Instructive
   - Science dissemination
   - Other(s)?

   4.1. If you selected "Other(s)", explain …
5. What do you use the videos in ESP for?* *Choose those options that correspond.*
   - To learn new vocabulary?
   - To learn specific terminology?
   - To learn discipline-specific content in order to better understand the subject matter of the course?
   - Other:
6. Do you carry out complementary activities that help the understanding of the videos?* *Choose those options that correspond.*
   - A questionnaire before watching it to focus students' attention
   - A questionnaire after watching the video to check understanding
   - Vocabulary activities
   - Other language activities (on the use of verbs, adjectives, etc.)
   - Activities to call students' attention towards multimodal features (colours, gestures, intonation, etc.)
   - Other:

Data availability

The data that has been used is confidential.

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