Teaching lecture comprehension skills through OpenCourseWare video-recorded lectures: A research-informed classroom application

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A B S T R A C T

Lecture comprehension is a complex process that involves the decoding of meanings on various levels (e.g., phonological, lexical, syntactic, pragmatic, cultural), thus creating challenges for L2 learners. Moreover, there may be difficulties caused by unfamiliar prosodic patterns or accents of lecturers, as well as facial expressions and gesturing whose meanings may escape L2 students. To address all of these potential obstacles, lecture comprehension activities should implement materials prepared from authentic classroom lectures to provide L2 learners with realistic input, which may also vary according to instructional context.

The aim of this article is to illustrate how video-recorded lectures can be analysed to gain insights into their multifaceted nature and how the findings can be used to inform classroom activities to improve lecture comprehension. The article provides 1) a description of how video clips cut from OpenCourseWare lectures can be prepared for research and practice, 2) an overview of two case studies performed on video clips that highlight the use of multimodal ensembles integrating verbal and non-verbal features (e.g., idioms, humour, stance markers, culture-specific references, prosodic patterns, gesturing), and 3) a detailed lesson plan to exemplify how video clips from OCW lectures can be used to facilitate lecture comprehension.

Author statement

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1. Introduction

Among the core skills addressed in EAP research, academic listening continues to receive less attention than reading, writing, and speaking, likely due to the complex nature of the listening process itself which encompasses a myriad of factors (Campoy-Cubillo, 2019; Lynch, 2011; Wang, 2018). In addition to the need to process speech input on the phonological, lexical, and syntactic levels, academic listening experiences may also encompass pragmatic and cultural meanings that are related to the interactional setting and the backgrounds of speakers (Flowerdew, 1994). On the extra-linguistic level, meanings expressed by non-verbal cues, such as speech prosody, facial expressions, and gesturing may be missed by both L1 and L2 students (Mulligan & Kirkpatrick, 2000). Moreover, as

Lynch (2011) pointed out, academic listeners are also faced with other issues over which they have little control, such as temporary distractions and unfamiliar speaker accent. Similarly, Buck (2001) discussed more variables of listening input that may come into play during academic listening, such as non-linear organization of content, lack of explicitness, complex pronoun reference, and multi-faceted content that addresses diverse aspects of a topic. All of these factors support the notion that listening is not a passive process as it is often traditionally viewed, but rather an active one that requires considerable interpretive effort beyond simple decoding (Lynch & Mendelsohn, 2010).

Although academic listening may include events that Lynch (2011) classified as one-way (i.e., lectures) or two-way (e.g., small group discussions, seminars, office hours), the largely monologic lecture continues to remain at the core of academic listening research in higher education contexts (Benson, 1994; Lee, 2009; Crawford Camiciottoli & Querol-Julián, 2016). For this reason, some large-scale projects have been undertaken to collect authentic lecture discourse for both research purposes and teaching applications, including the Michigan Corpus of Spoken Academic English/MICASE, the TOEFL 2000 Spoken and Written Academic Language/T2K-SWAL, and the British Academic Spoken English Corpus/BASE.[1] As a result, there is now a considerable body of corpus-based research that has provided important insights into the verbal features of lecture discourse, with particular reference to those that may create difficulties for EAP learners and to which they should be exposed during training activities. Among these are evaluative adjectives (Swales & Burke, 2003), hedging and vagueness indicators (Mauranen, 2004), discourse markers (Schleef, 2008), idioms (Simpson & Mendis, 2003), interactivity patterns (Csomay, 2002), humour (Nesi, 2012), markers of importance (Deroey, 2015), and phrasal verbs (Aldohon, 2018). Studies based on smaller datasets of lecture discourse have also analysed key features such as cultural references (Crawford Camiciottoli, 2018), interactional patterns (O'Keeffe & Walsh, 2012), phonological reductions (Crawford Camiciottoli, 2007), and informal expressions including interjections, expletives, and slang (Crawford Camiciottoli, 2020a). Such studies that conduct in-depth analyses of authentic forms of language constitute an important component of a needs analysis for language teaching (Basturkmen, 2010; Dudley-Evans & St.John, 1998), and thus serve as the groundwork for research-informed teaching applications.

Thanks to research of the type discussed above, we now have a much better understanding of the linguistic features of English lecture discourse. However, generally speaking, lecture comprehension continues to remain a challenge for many L2 learners, as relatively recent studies based on surveys, questionnaires, and interviews with students indicate (Evans & Morrison, 2011; Hellekjaer, 2010; Rahimirad & Moini, 2015; Tzoannopoulou, 2017; Wang, 2018). This is true even in light of the now well-consolidated trend of English Medium Instruction (EMI), which has greatly expanded opportunities for L2 learners to be exposed to lectures delivered in English (Querol-Julián & Crawford Camiciottoli, 2019).

To address the challenges of lecture comprehension in EAP/ESP and EMI settings, teaching activities should prioritize materials derived from authentic lectures (Deroey, 2018) that, in this case, represent "the ultimate goal of listening instruction" (Vandergrift, 2007, p. 199). The notion of authenticity of language was first addressed by Widdowson (1979) and described later by Little et al. (1998, p. 21) in terms of a text that is "created to fulfil some social purpose in the language community in which it was produced." Authenticity is a key criterion in the selection and use of materials to improve listening comprehension skills (MacDonald et al., 2000; Wang, 2018). In particular, authenticity should be reflected not only in the genuineness of the text itself, but also in the learning task in which the text is used, in terms of its real-word purpose and target situation (Guariento & Morley, 2001).

Advances in technology have enabled growing access to authentic audio-visual materials that can be harnessed for use in EAP settings to improve listening comprehension, including new instructional genres that share common features with academic lectures. Among the most popular are TED Talks which are speeches given by experts on a range of subjects in non-institutional conference-like settings and then posted online. Likely due to their wide variety of choice in terms of content and easy Internet access, TED Talks are now frequently used in instructional settings. With particular reference to academic listening, it has been suggested that TED Talks are useful resources due to their short (maximum 18 min) and dynamic nature which enhances learner motivation, as well as the availability of corresponding speech transcripts (Takaesu, 2013). However, when comparing academic vocabulary, lexical density, and speech rate in a corpus of TED Talks vs. a corpus of Yale University lectures, Wingrove (2017) found that TED Talks were characterised by faster speech rate and less academic vocabulary, and therefore not always suitable for EAP listening activities. Thus, it could be argued that lectures delivered by academics in institutional settings would be preferable for developing academic listening skills. Fortunately, in recent years, there has been a steady rise in the availability of video recordings of lectures posted on the open education platforms of many universities around the world.[2] A particularly rich source of authentic lectures is the Massachusetts Institute of Technology (MIT). In 2002, this institution first pioneered the notion of OpenCourseWare (OCW), which aims to provide free access to high quality educational experiences to anyone who wishes to learn, with video-recorded lectures as its core component (Vladoiu, 2011). Thus, researchers and practitioners alike can now take advantage of these authentic multimodal resources which are more "representative of the real-world situations students face" (Salehzadeh, 2006, p. xix) with respect to the kind of cleaned-up, simplified and often audio-only input found in many EAP textbooks (Deroey, 2018).

The aim of this article is to illustrate how OpenCourseWare (OCW) lectures can be used to improve lecture comprehension. The classroom application that is presented for this purpose is based on research conducted on video clips cut from complete OCW lectures

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[1] MICASE is attributed to Simpson et al. (2002). The T2K-SWAL was compiled at Northern Arizona University. BASE was developed at the Universities of Warwick and Reading under the directorship of Hilary Nesi and Paul Thompson The BASE corpus is part of the Oxford Text Archive and its transcripts can also be accessed through Sketch Engine (Kilgarriff et al., 2014).

[2] For example, the Open Education Consortium (https://www.oeconsortium.org/) hosts a portal where such courses and materials can be searched and freely accessed.

that are freely available on open university platforms. The lecture clips are part of a corpus of video clips that was compiled for the development of multimodal materials across a variety of digital genres to be used in the context of EAP/ESP. Analysis of the lecture clips targeted not only the linguistic features that can create particular challenges for L2 listeners (e.g., idioms, humour, figurative language, phrasal verbs, markers of stance, culture-specific references, and specialized terminology), but also non-verbal features (e.g., gesturing, prosodic patterns). Such extra-linguistic elements have been shown to play an important role in listening comprehension through replication, reinforcement, and integration of the verbal message (Dahl & Ludvigsen, 2014; Querol-Julián & Arteaga-Martínez, 2019; Sueyoshi & Hardison, 2005), and therefore also warrant attention.

The remaining sections of the article will offer 1) a detailed account of the process of collecting and preparing the OCW lecture video clips for subsequent teaching applications; 2) a review of some preliminary research conducted on the clips; 3) an example of a classroom application with OCW lecture video clips, complete with learning objectives, activities, and materials to exemplify how they can be used to enhance lecture comprehension and; 4) some concluding remarks.

2. The OCW lecture video clips

The OCW lectures that were utilized for this research-informed classroom application were collected within the framework of an interuniversity research project funded by the Italian government.[3] The research unit of the University of Pisa compiled and analysed a corpus of video clips representing a range of digitally available genres across different discourse domains that were particularly relevant for EAP/ESP settings. The genres represented in the video clip corpus (a total of 203 clips for about 8 h of recorded material) cover a continuum in terms of formality, communicative mode (monologic/dialogic), scientificity, and authenticity. They include university OCW lectures, Talks at Google, TED Talks, interviews, talk shows, documentaries, docu-tours, guided tours, films, and TV series. The discourse domains represented are business and economics, political science, law, science and technology, medicine and health, and tourism. The underlying rationale was not only to gain insights into their linguistic/extralinguistic features and to create innovative materials for teaching, but also to better engage with EAP/ESP learners who are now avid and expert consumers of multimodal digital resources (Street et al., 2011).

The video clip corpus was annotated with searchable descriptors, which renders them particularly useful for research and instructional purposes. These annotations (or tags) cover a range of potentially challenging verbal features of lectures as discussed in Section 1, including specialized vocabulary, informal register, figurative language, fixed expressions, humour, evaluative language, and cultural references. From this corpus, a set of OCW lectures was extracted and analysed for subsequent classroom applications. This process entailed the following steps:

1. Identification of suitable sources: the OpenCourseWare platforms of the Massachusetts Institute of Technology (MIT), Yale University, and Harvard University were selected as well-developed resources of video-recorded lectures from complete courses across multiple disciplinary areas. The lectures were all delivered by L1 speakers of English. They are thus suitable for teaching lecture comprehension skills in EAP/ESP as proposed in this article, but also for preparing L2 learners for EMI. In today's globalized world of higher education, L2 learners may be exposed to both L1 and L2 speakers in EMI, and therefore can benefit from training with L1 lectures to help them acquire adequate listening skills that are often lacking (Richards & Pun, 2021). The platforms also provide various types of additional supporting instructional materials, specifically orthographic speech transcripts of the lectures, which are particularly useful for both research and classroom use. Lectures representing the six previously mentioned disciplinary areas were collected for inclusion in the corpus.
2. Careful viewing of the selected lecture videos to identify segments relevant for teaching L2 listening comprehension, especially those containing potentially challenging verbal features (i.e., idioms, humour, figurative language, phrasal verbs, markers of stance, culture-specific references, specialized terminology), as well as non-verbal features such as gesturing and prosodic patterns. Following Kaiser's (2011) approach, it was decided to collect relatively short clips (2–4 min) to render listening tasks more manageable. Short clips also offer the option of combining multiple clips to provide more extensive content and context where appropriate. Bloomfield et al. (2011) pointed out that, in addition to length, there are other important factors at play in a listening passage that can also have an impact on comprehension, including speech rate, redundancy, and information density. Thus, a shorter passage, for example, is not necessarily easier for students to comprehend than a longer passage. Moreover, the literature on listening comprehension does not offer a clear consensus on what is considered to be an appropriate length of a passage; studies have mentioned lengths ranging from 2 to 25 min (Jeon, 2007).
3. Clipping of segments, preparation of corresponding speech transcripts into separate files, and formulation of teaching notes for each clip that describe its content and the relevant linguistic/extralinguistic features that emerged in Step 2.
4. Annotation of the speech transcripts with ad-hoc tags to identify relevant linguistic features. As previously indicated, the possibility to search annotated transcripts by tag to identify features of interest for a classroom application is quite useful. Moreover, the same type of targeted tag query can be effectively implemented for research-oriented analyses. The complete tagset is shown in Appendix A.

3. Preliminary research based on the OCW video lectures

The lecture component of the video clip corpus has thus far served as the source of two studies to identify distinguishing verbal and non-verbal features. As preliminary explorations, they were undertaken in the form of case studies. However, the availability of targeted collections of video-recorded lecture clips and corresponding transcripts has the potential for use in larger scale studies that also incorporate methods of corpus linguistics, in addition to multimodal analytical tools (Crawford Camiciottoli, 2019). Because both case studies relied on the multimodal annotation software ELAN (ELAN, 2020), this section begins with a description of the characteristics of the software that enabled the display and analysis of "multimodal ensembles" (Kress, 2011, p. 38), showing how the synergetic interaction of multiple semiotic resources (i.e., speech, prosodic stress, gesturing, gaze direction, and body orientation) contributes to meaning. Specifically, the user can develop a customized framework in the software to analyse particular verbal and co-occurring non-verbal features in correspondence with the streaming video uploaded into the software. Table 1 illustrates how a multimodal analytical framework could be set up for a lecture video clip, based on a series of tiers that enable the contemporaneous visualization of modes. In this example, the linguistic feature of interest is an evaluative expression (e.g., *very biased*), which is accompanied by prosodic stress; gaze directed toward the audience; a gesture (with physical and functional descriptors based on Kendon (2004) and Weinberg et al. (2013), respectively); and an open body position (Norris, 2004). The particular non-verbal elements to be analysed depend on the filming characteristics in terms of distance from the lecturer. For example, a medium distance will enable the systematic observation of gestures, body orientation and general gaze direction, but not detailed facial expressions that would require close-up filming.

The first study in Crawford Camiciottoli (2016) presents a multimodal analysis of lecture clips extracted from a political science lecture accessed from Yale University's open courses website.[4] The research objective was to understand how non-verbal elements co-occur with interactional features of language and how they may reinforce meanings and thus enhance comprehension in the context of a lecture. The multimodal analysis focused on two episodes that had been identified in the clips involving 1) humour in the form of an idiomatic expression followed by a pun and 2) persuasion encoded by a modal verb *should*, the inclusive pronoun *we* and the comprehension check *right?* These episodes reflect instances in which the lecturer interacts with the audience on a more interpersonal level beyond the topic at hand. In the first episode, the lecturer used gestures (hands open and extended towards the audience) and gaze directed outwards to call attention to the idiom *cart before the horse*, but then prosodically stressed the word *course* in the pun *cart before the course* that followed directly, thus jokingly referring to this first lecture of the course to explain its overall objectives. In the second episode, the lecturer engages in persuasion with the utterance *one thing we should not do* (i.e., consider the works of great political thinkers as solutions to modern-day problems), followed by a comprehension check *right?* This utterance is accompanied by his palms placed together in a praying-like formation, described by Kendon (1995) as a gesture that invokes the listener to believe something, and thus seems to strengthen the persuasive effect. The results of the multimodal analysis suggest that interactional meanings during a lecture can be effectively enhanced by the non-verbal cues that accompany speech.

The second study in Crawford Camiciottoli (2020b) is based on video clips from an economics lecture available on the MIT open course platform.[5] The aim was to explore how the lecturer's stance on particular aspects of the lecture content may emerge both verbally and non-verbally. The multimodal analysis revealed the co-occurrence of verbal expressions of stance by means of language encoding positive/negative attitudes (e.g., *sadly, really interesting*) or positions (modal verbs such as *should*) and non-verbal cues involving prosody, gaze direction, gesture, and body orientation. Thus, the analysis was undertaken from the perspective of Multimodal Critical Discourse Analysis (Machin, 2013), which extends traditional CDA by investigating how other semiotic modes beyond language contribute to the expression of ideologies. The multimodal ensembles (Kress, 2011) that were analysed showed how the lecturer was effective at engaging the students in a discussion of a controversial topic involving access to health care in the United States and related issues of economic inequality. He did so in a nuanced way that revealed aspects of his own expert viewpoint, which students naturally desire to know (Northcott, 2001), but without imposing it and encouraging them to reflect. For example, he posed the questions "*should they be able to do that?*" and "*why shouldn't they?*", which were accompanied by a multimodal ensemble displaying an attention-focusing gesture with palm inward moving up and down, and gaze and body orientation directed pointedly towards the audience.

The two studies reviewed above provide insights into the potential interplay between verbal and non-verbal elements during an academic lecture, as well as their integrated contribution to meanings. Such knowledge is an important first step to help L2 learners better cope with challenging interactional and interpersonal features of lecturers' speech (cf. Crawford Camiciottoli, 2007, 2018, 2020b; Csomay, 2002; Deroey, 2015; Nesi, 2012; Schleef, 2008; Simpson & Mendis, 2003; Swales & Burke, 2003), by alerting them to non-verbal cues that can clarify and/or reinforce meanings. In the following section, I illustrate how this type of research can serve as a basis for developing an EAP/ESP classroom application.

4. Using OCW lecture clips in the EAP/ESP classroom

One of the goals of the interuniversity project described in Section 2 was to produce teaching materials based on the collected video clips and transcripts for use in the classroom. Towards this aim, a lesson plan was developed around three video clips selected from the

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Table 1
Example of tier set-up in ELAN.

Analytical tier	Description	Annotation inserted in ELAN
Transcript	Words inserted under the extracted soundwave of streaming video	
Linguistic stance	Evaluative expression	Eval
Prosody	Paralinguistic stress on word/syllable	Stress
Gaze	Directed toward audience	Tow
Gesture_description	Index fingers extended and pointing to the audience	InFingsEx
Gesture_function	Social gesture to emphasize message	Social
Body orientation	Open facing toward audience	Open tow

introductory lecture to a course entitled Principles of Microeconomics available on the MIT OpenCourseWare platform.[6] The clips were prepared and analysed according to the procedures described in Section 2, with special attention to the teaching notes that had identified linguistic/extralinguistic features of interest for instructional activities. The lesson is designed for a class of 1.5 h for undergraduate L2 students in integrated skills EAP/ESP courses in business/economics degree programs at the intermediate to upper intermediate level of general English competency (i.e., B1–B2 in the Common European Framework of Reference for Languages). It was assumed that the students have some knowledge of basic concepts of economics from concurrent or previous coursework in L1. Table 2 summarizes the characteristics of the lesson in terms of its objectives, the equipment and materials to be used, patterns of classroom interaction, and various stages of the lesson. The pilot implementation of the lesson had actually been planned for the academic year 2020/2021, but it was prevented by the limiting circumstances that arose from the Covid-19 pandemic. It is hoped that a return to normal research and teaching activities will allow the lesson plan to be piloted in the academic year 2021/2022.

The proposed lesson plan describes activities for the students' first lecture listening experience. Although the activities address primarily listening comprehension, they also involve some reading and speaking, as well as writing in a follow-up assignment. Moreover, following Lynch and Mendelsohn (2010), the lesson plan also includes post-listening activities. Table 3 provides examples of some activities that mainly address listening comprehension, in line with the focus of this article. With reference to non-verbal elements (Communicative objective), due to the time constraints of a single lesson, I focus only on gestures as the non-verbal resource that would be the most prominent to learners viewing the clips, and thus appropriate for an introductory awareness-raising activity. Other resources such as gaze, body orientation, and prosody could be addressed in subsequent lessons to help learners understand how non-verbal cues can co-occur and contribute to meaning synergistically as a more advanced activity. While it may not be feasible to address non-verbal communication in every academic listening activity, some space should be carved out whenever possible to include this important component of the lecture listening experience (Dahl & Ludvigsen, 2014; Querol-Julián & Arteaga-Martínez, 2019; Sueyoshi & Hardison, 2005).

The first of the two activities in the warm-up stage was designed to provide students with the context of the lecture setting and the overall lecture topic, while engaging them in discussion to activate previous experience and knowledge. The second activity aims to make them more aware of the particular challenges of listening to authentic content lectures in English (e.g., fast speech rate, dysfluencies, digressions, unknown vocabulary, use of humour), in order to better prepare them for upcoming lesson activities and future lecture experiences. The handout used here is adapted from Salehzadeh's (2006) textbook on lecture listening strategies (see Appendix B).

The activities in the presentation, practice, production, and reflection stage for Clip 1 correspond to the first approximately 2.5 min of the lecture (0:00 to 2:41), during which the lecturer begins his general introduction to the course by highlighting *constrained optimization* as one of the fundamental concepts that will be covered. The first activity focuses on vocabulary related to economics, asking students to note down such items while watching the video (*firms, individuals, resources, trade-off, scarcity, constrained optimization*), with follow-up discussion to create a mind map to facilitate learning. The second activity makes use of the clip transcript prepared as a handout to be used in pair work to identify potentially problematic features of the authentic lecture discourse: informality (*what the heck*, *a pile of junk*) and a cultural reference to a traditional contest that takes place in a particular undergraduate MIT course (MIT 270). The handout can also be used to highlight the lecturer's enthusiastic attitude towards the subject of economics through the use of evaluative language (*some may call it dismal, but I call it fun; just like 270 is not a dismal contest, microeconomics is not to me a dismal science*) (see Appendix C). The third activity is dedicated to enhancing awareness of the contribution of non-verbal cues to meanings. While playing the clip again without the sound, students are asked to identify and note down a description of particularly prominent gestures and any co-occurring words. The clip is then played with the sound and students are asked to decide which of the identified gestures contributes to the meaning of the co-occurring words and explain how they do so. The clip contains several instances in which gestures appear to reinforce verbal meanings: hand clenched in fist moving rhythmically toward the audience (*scarcity is key*), open hand moving back and forth between audience and self (*you can't have everything, you have to make a trade-off. okay? you have to give up x to get y*), hands horizontally-positioned and moving towards audience with a pushing motion (*to move a ping-pong ball across a table*).

The presentation, practice, production, and reflection activities for Clip 2 (6:44 to 9:09) refer to another fundamental topic of the course, namely, price and its role in the three fundamental questions in microeconomics: what goods and services to produce, how to produce them, and who will buy them. The lecturer illustrates this concept with the example of the purchase of an Ipod. The first

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[6] https://ocw-origin.odl.mit.edu/courses/economics/14-01sc-principles-of-microeconomics-fall-2011/index.htm.

Table 2

Lesson overview.

Characteristics	Description
Linguistic objectives	To enhance listening comprehension competence with particular reference to lecture listening skills; to acquire specialized vocabulary for business and economics; to produce spoken and written discourse incorporating newly acquired specialized vocabulary
Communicative objectives	To help students learn to communicate in English in relation to key concepts of economics for both their current academic and future professional contexts; to raise awareness of the contribution of non-verbal elements (i.e., gestures) to meaning
Formative objectives	To encourage students to reflect on the ethical aspects of economic choices and how these choices affect society; to foster critical listening skills in order to interpret and evaluate positions of speakers (in this case, the lecturer)
Cross-cultural objective	To help students understand particular cultural references used during a lecture at an American university
Materials and equipment	Equipment: blackboard, computer for projecting images and videos
	Materials: three video clips from an MIT economics lecture "Introduction to Microeconomics"; images for projection; complete transcripts of clips; handouts prepared for classroom use (see examples in Appendices B and C)
Interaction patterns	Plenary, class discussion, individual, pair work, group work
Stages	Warm-up, presentation, practice, production, reflection, application

activity is designed to activate students' prior experiences with making choices in relation to price as an introduction to the content of the clip. The second activity focuses on helping students identify key concepts in the clip as well as economics-related terminology (*goods, services, price, consumers, state variable, marketplace*), using a handout with a gap-filling exercise created from the clip transcript and a corresponding mind map. The third activity implements pair work to analyse informal and attitudinal features of the lecturer's speech. These include *bucks* instead of dollars, *amazing* to positively comment on how some fundamental concepts drive the whole economy, use of irony with the phrase *cast our minds way back* when referring to Apple's launch of the Ipod in 2001, so actually only about 10 years prior to 2011 when the lecture was delivered. The fourth activity highlights the use of co-occurring gestures to emphasize important meanings: hands open and sweeping widely apart (*our entire economy*), thumb and index finger forming a ring and moving towards the audience (*one key state variable*), hands coming together with fingers intertwined (*interact in a marketplace*).

The activities for Clip 3 (15:05 to 17:47) are not detailed in Table 3 for reasons of space and manageability, but they build on those of Clips 1 and 2 by introducing other fundamental concepts that will be examined in the course, specifically positive economics vs. normative economics, which the lecturer characterises "as the way things are" vs. "the way things should be", respectively. The activities involve similar types of tasks as those in Clips 1 and 2 to complete while listening to/viewing the clips and follow-up tasks designed to raise awareness of particularly challenging features, allowing students to explore various aspects of spoken language and the lecturer's delivery by using the clip transcripts for verification and analysis (Lynch, 2004). Clip transcripts were used to create a gap-filling exercise that allows students to practice listening and vocabulary skills while listening to/viewing the clips.

On the whole, following Guariento and Morley (2001), the activities and tasks developed for use with the three lecture video clips can be seen as reflecting both text authenticity (i.e., portions of a video-recorded lecture that was delivered in an actual university classroom) and task authenticity (i.e., tasks that have a real-world purpose and target the situation of preparing L2 students for listening to content lectures). To further enhance text and task authenticity, as a follow-up to the lesson based on the three video clips, students can be provided with a link to the complete lecture (approximately 35 min) and corresponding transcript and encouraged to view it in its entirety as advanced extra practice (cf. Salehzadeh, 2006). In a lecture listening comprehension course or module, clips can be effectively used, but it would also be important for students to have the experience of listening to/viewing an entire lecture, for example, as a final assignment (Salehzadeh, 2006).

Tasks that serve to develop skills other than listening that were integrated into the lesson plan include group discussions and oral reporting to the class (speaking) on questions related to ethical issues in normative economics and a group assignment to prepare a PowerPoint presentation (speaking and writing). The assignment requires students to present examples of economic trade-off; decisions regarding what goods will be produced, how they will be produced and who gets the goods; and positive vs. normative economics, thus satisfying the application stage of the lesson plan.

5. Concluding remarks

This article has discussed the ongoing challenges that L2 learners face during academic lectures and has offered a research-informed classroom application grounded in the notion that all semiotic modes (both verbal and non-verbal) can be exploited to improve listening comprehension (Dahl & Ludvigsen, 2014; Querol-Julián & Arteaga-Martínez, 2019; Sueyoshi & Hardison, 2005). Because an academic lecture is a multimodal event comprising both speech and its embodied delivery, regardless of whether it is experienced live and face-to-face or by means of a video recording, it is important to develop what Campoy-Cubillo and Querol-Julián (2015, p. 199) refer to as "multimodal listening skills". Towards this aim, the lesson plan illustrated in Section 4 contributes to promoting such skills by showing how multimodal input can give L2 learners practice with the different semiotic modes that may come into play during a lecture, while also aligning with the communicative approach through the use of authentic video-recorded lectures as the target language (Little et al., 2002). Fortunately, thanks to ongoing progress in educational technology, such multimodal resources are becoming more readily available for practitioners to access and then prepare for classroom use. An emphasis on multimodal listening is also a way to respond to calls to develop "multimodal literacy" among learners, which entails the ability to construct meanings from the range of semiotic resources that characterise multimedia and digital texts (Walsh, 2010). Clearly, to help learners acquire these skills, classroom practitioners need to first develop "semio-pedagogical competence", which refers to their own

Table 3
Examples of activities.

Stage	Activities	Skills	Objectives	Strategies
Warm up	1. Instructor shows images of MIT and asks students (hereafter Ss) to share what they know about it and the American university system. Instructor provides some basic information about MIT and tells Ss that they will hear parts of a lecture recorded at MIT in a course called "Introduction to Microeconomics". Instructor asks Ss to share what they know about microeconomics. 2. Instructor asks Ss about previous experiences listening to lectures in English and what their challenges are, writing down their ideas on the blackboard. Instructor plays Clip 1 and then asks Ss to discuss difficulties experienced, comparing them with their previous ideas noted on the blackboard. Instructor asks Ss to read a handout on challenges of lecture listening, and then leads a discussion comparing their own previous experiences, the expected challenges described in the handout, and what they experienced from the clip.	Speaking Listening Reading	To familiarize Ss with the lecture setting and overall topic To raise awareness of challenges of lecture comprehension	Brainstorming and eliciting ideas Relating prior knowledge to establish background information Evaluating lecture listening challenges
Presentation, practice, production, reflection	Clip 1: Course Introduction/Constraint Optimization 1. Instructor plays Clip 1 again and asks students to write down words that refer to concepts related to economics. Instructor writes words identified by Ss on the black board and asks them to create a mind map of the items and categorize them according to meanings (e.g., concepts, activities, actors) 2. Instructor plays Clip 1 again asks Ss write down instances of informal language, cultural references, and evidence of the professor's attitudes. Instructor asks Ss to work in pairs to analyse these features in the transcript and report their results orally to the class, also including possible reasons for the professor's language choices. 3. Instructor plays Clip 1 again without the sound and asks students to first identify and describe particularly prominent gestures. Instructor plays the clip again so that the students can then identify the co-occurring words and discuss how the gestures contribute to meaning.	Listening Speaking Reading	To facilitate lecture comprehension To acquire specialized vocabulary for economics To raise awareness of informal features of lecture discourse and cultural references To develop critical listening skills to interpret the lecturer's stance To enhance awareness of non-verbal meanings	Listening for specialized terminology Connecting and categorizing meanings of specialized terminology Collaborating with peers to identify and interpret speaker stance and cultural references Utilizing non-verbal cues to facilitate understanding
Presentation, practice, production, reflection	Clip 2: The role of price/Ipod example 1. Instructor asks Ss to share their experiences as consumers of technology products, what role price plays, and what choices they make with expensive hi-tech products. Instructor tells Ss that they will hear the professor explain the important role of price using the IPod as an example. 2. Instructor plays Clip 2 and asks students to write down the main points addressed in the clip. Instructor asks students to report back and discuss their results. Instructor plays Clip 2 again and asks Ss to complete the gap-filling exercise on the handout while listening. Instructor reviews answers with Ss, explaining potentially unknown vocabulary. Instructor solicits students to create a mind map of the items and categorize them according to meanings. 3. Instructor asks Ss to work in pairs to identify words in the handout that reflect informal language and evidence of the professor's attitude. Ss then report back orally to the class, also considering possible reasons for the professor's language choices. 4. Instructor plays Clip 2 again without the sound and asks students to first identify and describe particularly prominent gestures. Instructor plays the clip again so that the students can then identify the co-occurring words and discuss how the gestures contribute to meaning	Speaking Listening Reading	To facilitate lecture comprehension To acquire specialized vocabulary for economics To develop critical listening skills to interpret the lecturer's stance To enhance awareness of non-verbal meanings	Relating prior experiences to introduce the topic Listening for specialized terminology Connecting and categorizing meanings of specialized terminology Collaborating with peers to identify and interpret speaker stance and cultural references Utilizing non-verbal cues to facilitate understanding

awareness of the contribution of multiple semiotic modes to meanings, as well as their ability to design effective learning activities using multimodal and multimedia input (Guichon & Cohen, 2016, p. 518).

The type of classroom application developed and presented in this article undoubtedly requires considerable initial effort and time on the part of instructors. It is likely to require long-term planning, with an initial phase necessarily dedicated to selecting and analysing the video clips, followed by a second phase to prepare the corresponding lesson plan. However, once that investment is made, the materials and lesson plans could be recycled or updated with minor adjustments. The lesson plan could also serve as a model for others that target listening comprehension. Although envisioned for a homogeneous EAP/ESP course for students of business/ economics, it could be adapted to more heterogeneous EAP settings with students from different disciplinary areas. However, in this case, the instructor may need to provide information about key concepts of economics that could be lacking.

Follow-up research could assess the reactions of students to the lesson plan by means of a post-lesson questionnaire to determine which components they found most useful and interesting. It would also be worthwhile to verify the potential beneficial effects of the learning strategies highlighting both verbal and non-verbal meanings through experimental methods, for example, evaluating performance on a listening task based on new authentic lecture video clips. The use of such resources to teach and assess lecture comprehension could be an effective way to engage with today's learners who expertly and routinely interact with multimodal forms of communication in their daily lives.

Appendix A. Tagset for the lecture clip transcripts

Tag	Meaning
SVEC	Specialized Vocabulary/Business & Economics
SVLW	Specialized Vocabulary/Law
SVMD	Specialized Vocabulary/Health & Medicine
SVPS	Specialized Vocabulary/Political Science
SVTE	Specialized Vocabulary/Technology
SVTO	Specialized Vocabulary/Tourism
IRCL	Informal Register/Clipping
IRCO	Informal Register/Colloquialism
IREL	Informal Register/Ellipsis
IREX	Informal Register/Expletives and taboo words
IRIN	Informal Register/Initialism
IRJA	Informal Register/Jargon
IRNC	Informal Register/Novel Constructions
IRNG	Informal Register/Non-Standard Grammar
IRPH	Informal Register/Phonological Reduction
IRPV	Informal Register/Phrasal Verb
IRSL	Informal Register/Slang
IRVL	Informal Register/Vague Language
FE	Fixed Expression (idioms, formulaic language)
SS	Speaker's Stance (evaluative language)
FLHY	Figurative Language/Hyperbole
FLIN	Figurative Language/Insinuation
FLIR	Figurative Language/Irony
FLMT	Figurative Language/Metaphor
FLMTN	Figurative Language/Metonymy
FLPE	Figurative Language/Personification
FLSC	Figurative Language/Sarcasm
FLSM	Figurative Language/Simile
HU	Humour
WP	Word Play
CR	Cultural Reference

Sample of tagged text.

All engineering is really SVEC_constrained optimization. How do you take the resources you're given and do the best job building something. And that's really what SVEC_microeconomics is. Just like CR_270 is SS_not a dismal contest, SVEC_microeconomics is SS_not_to_me_a_-dismal science. You could think of this course like CR_270. But instead of building robots, we're FE_running people's lives. Okay? That's, IRVL_kind of, the way I like to think about this course.

Appendix B. Handout describing challenging features of lectures (adapted from Salehzadeh, 2006, p. 2)

Instructions: Read the list of the challenges of lecture listening. Did you experience any of these in the clip you just viewed? Report to the class.

Some Unique Challenges of Lecture Listening.

1. Professors may speak quickly and with an accent with which you are unfamiliar.
2. Professors may digress from the main topic and tell stories, anecdotes and jokes.
3. Professors may use acronyms or abbreviations that you did not know.
4. Professors' opinions may not be stated explicitly.
5. Professors may change topics without clear signalling.
6. Professors may use informal language that students do not expect to hear.
7. You cannot "re-hear" spoken language like you can re-read written language.
8. Opportunities to get more explanation may not be immediate.
9. There may be particular references to the local culture with which you are not familiar.
10. Terms may be introduced that you don't know how to spell.

Appendix C. Example of handout with exercise produced from a video clip transcript.

Instructions: Working in pairs, read the transcript and underline features of[7]

- *informal language*
- *the professor's attitude or opinions*
- *reference to the American university culture*

So what I want to do today is I want to talk about what the heck this course is. What is microeconomics? What are you going to be learning in this course? And just, sort of, set us up for the semester. Okay. So basically, microeconomics is all about scarcity. It's all about how individuals and firms make decisions given that we live in a world of scarcity. Scarcity is key because basically what we're going to learn about this semester in various shapes and forms is a lot of different types of constrained optimization. We're going to learn a lot about different ways that individuals make choices in a world of scarcity. Okay?

That is, this course is going to be about trade-offs. Given scarce resources, how the individuals and firms trade off different alternatives to make themselves as well-off as possible. That's why economics is called the dismal science. Okay? It's called the dismal science because we are not about everyone have everything. We're always the people who say, no, you can't have everything. You have to make a trade-off. Okay? You have to give up x to get y. And that's why people don't like us. Okay? Because that's why we're called the dismal science, because we're always pointing out the trade-offs that people face.

Now, some may call it dismal, but I call it fun. And that may be because of my MIT training, as I said I was an undergraduate here. In fact, MIT is the perfect place to teach microeconomics because this whole institute is about engineering solutions which are really ultimately about constrained optimization. Indeed, what's the best example in the world we have of this? It's the 270 contest. Right? You're given a pile of junk, you've got to build something that does something else. That's an exercise in constrained optimization.

All engineering is really constrained optimization. How do you take the resources you're given and do the best job building something. And that's really what microeconomics is. Just like 270 is not a dismal contest, microeconomics is not to me a dismal science. You could think of this course like 270. But instead of building robots, we're running people's lives. Okay? That's, kind of, the way I like to think about this course. Instead of trying to decide how we can build something to move a ping pong ball across a table, we're trying to decide how people make their decisions to consume, and firms make their decisions to produce. That's basically what's going to go on in this class.

References

Aldohon, H. I. (2018). *A corpus-based investigation of academic vocabulary and phrasal verbs in academic spoken English*. Doctoral dissertation. Carleton University https://curve.carleton.ca/system/files/etd/ee869c93-ee19-4872-863a-64b33c381f64/etd_pdf/9647e614178fa124bc316d5816aadf1f/aldohon-acorpusbasedinvestigationofacademicvocabulary.pdf.

Basturkmen, H. (2010). *Developing courses in English for specific purposes*. Palgrave Macmillan.

Benson, M. J. (1994). Lecture listening in an ethnographic perspective. In J. Flowerdew (Ed.), *Academic listening: Research perspectives* (pp. 181–198). Cambridge University Press.

Bloomfield, A., Wayland, S., Blodgett, A., & Linck, J. (2011). Factors related to passage length: Implications for second language listening comprehension. *Proceedings of the Annual Meeting of the Cognitive Science Society, 33*, 2322–2327.

Buck, G. (2001). *Assessing listening*. Cambridge University Press.

Campoy-Cubillo, M. C. (2019). Functional diversity and the multimodal listening construct. *European Journal of Special Needs Education, 34*(2), 204–219.

Campoy-Cubillo, M. C., & Querol-Julián, M. (2015). Assessing multimodal listening. In B. Crawford, & I. Fortanet-Gómez (Eds.), *Multimodal analysis in academic setting: From research to teaching* (pp. 193–212). Routledge.

Crawford Camiciottoli, B. (2007). *the language of business studies lectures: A corpus-assisted analysis*. John Benjamins.

Crawford Camiciottoli, B. (2016). A multimodal analysis of interaction in academic lectures: A case study. In V. Bonsignori, & B. Crawford Camiciottoli (Eds.), *Multimodality across communicative settings, discourse domains and genres* (pp. 65–92). Cambridge Scholars Publishing.

Crawford Camiciottoli, B. (2018). Representing culture in OpenCourseWare lectures: A corpus-based semantic analysis. *Lingue e Linguaggio, 28*, 33–47, 2018.

Crawford Camiciottoli, B. (2019). Harnessing multimodal literacy for knowledge dissemination in ESP settings. In V. Bonsignori, G. Cappelli, & E. Mattiello (Eds.), *Worlds of words: Complexity, creativity and conventionality in English language, literature and culture, I* pp. 47–52). Pisa University Press. Language.

Crawford Camiciottoli, B. (2020a). The OpenCourseWare lecture: A new twist on an old genre? *Journal of English for Academic Purposes, 46*(1–13). Article 100870.

Crawford Camiciottoli, B. (2020b). Detecting ideological stance in an economics lecture: A multi-faceted approach. *Iberica, 40*(2020), 35–58.

Crawford Camiciottoli, B., & Querol-Julián, M. (2016). Chapter 24. Lectures. In K. Hyland, & P. Shaw (Eds.), *The Routledge handbook of English for academic purposes* (pp. 309–322). Routledge.

Csomay, E. (2002). Variation in academic lectures. Interactivity and level of instruction. In R. Reppen, S. M. Fitzgerald, & D. Biber (Eds.), *Using corpora to explore linguistic variation* (pp. 203–224). John Benjamins.

Dahl, T. I., & Ludvigsen, S. (2014). How I see what you're saying: The role of gestures in native and foreign language listening comprehension. *The Modern Language Journal, 98*(3), 813–833.

Deroey, K. L. B. (2015). Marking importance in lectures: Interactive and textual orientation. *Applied Linguistics, 36*(1), 51–72.

Deroey, K. L. B. (2018). The representativeness of lecture listening coursebooks: Language, lectures, research-informedness. *Journal of English for Academic Purposes, 34*, 57–67. https://doi.org/10.1016/j.jeap.2018.03.011

Dudley-Evans, T., & St John, M. J. (1998). *Developments in English for specific purposes. A multi-disciplinary approach*. Cambridge University Press.

ELAN (Version 5.9) [Computer software]. (2020). Nijmegen: Max planck institute for psycholinguistics. https://archive.mpi.nl/tla/elan.

Evans, S., & Morrison, B. (2011). Meeting the challenges of English-medium higher education: The first-year experience in Hong Kong. *English for Specific Purposes, 30*(3), 198–208.

Flowerdew, J. (1994). Research of relevance to L2 lecture comprehension. In J. Flowerdew (Ed.), *Academic listening. Research perspectives* (pp. 7–29). Cambridge University Press.

Guariento, W., & Morley, J. (2001). Text and task authenticity in the EFL classroom. *ELT Journal, 55*(4), 347–353.

Guichon, N., & Cohen, C. (2016). Multimodality and CALL. In F. Farr, & L. Murray (Eds.), *The Routledge handbook of language learning and technology* (pp. 509–521). Routledge.

Hellekjaer, G. O. (2010). Language matters: Assessing lecture comprehension in Norwegian English-medium higher education. In C. Dalton-Puffer, T. Nikula, & U. Smit (Eds.), *Language use and language learning in CLIL classrooms* (pp. 233–258). John Benjamins.

Jeon, J. (2007). *A study of listening comprehension of academic lectures within the construction-integration model*. Doctoral dissertation. Ohio State University http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.977.5106&rep=rep1&type=pdf.

Kaiser, M. (2011). New approaches to exploiting film in the foreign language classroom. *L2 Journal, 3*(2), 232–249. http://escholarship.org/uc/item/6568p4f4.

Kendon, A. (1995). Gestures as illocutionary and discourse structure markers in Southern Italian conversation. *Journal of Pragmatics, 23*(3), 247–279.

Kendon, A. (2004). *Gesture: Visible action as utterance*. Cambridge University Press.

Kilgarriff, A., Baisa, V., Bušta, J., Jakubíček, M., Kovář, V., Michelfeit, J., Rychlý, P., & Suchomel, V. (2014). The Sketch engine: Ten years on. *Lexicography, 1*, 7–36.

Kress, G. (2011). Multimodal discourse analysis. In J. P. Gee, & M. Handford (Eds.), *The Routledge handbook of discourse analysis* (pp. 35–50). Routledge.

Lee, J. J. (2009). Size matters: An exploratory comparison of small-and large–class university lecture introductions. *English for Specific Purposes, 38*, 142–156.

Little, D., Devitt, S., & Singleton, D. (1988). *Authentic texts in foreign language teaching: Theory and practice*. Authentik.

Little, D., Devitt, S., & Singleton, D. (2002). The communicative approach and authentic texts. In A. Swarbrick (Ed.), *Teaching modern languages* (pp. 43–47). Routledge.

Lynch, T. (2004). *Study listening: A course in listening to lectures and note taking*. Cambridge University Press.

Lynch, T. (2011). Academic listening in the 21st century: Reviewing a decade of research. *Journal of English for Academic Purposes, 10*, 79–88.

Lynch, T., & Mendelsohn, D. (2010). Chapter 11. Listening. In N. Schmitt (Ed.), *An introduction to applied linguistics* (2nd ed., pp. 180–196). Hodder Education.

MacDonald, M., Badger, R., & White, G. (2000). The real thing?: Authenticity and academic listening. *English for Specific Purposes, 19*(3), 253–267.

Machin, D. (2013). What is multimodal critical discourse studies? *Critical Discourse Studies, 10*, 347–355.

Mauranen, A. (2004). "They're a little bit different". Observations on hedges in academic talk. In K. Aijmer, & A.-B. Stenström (Eds.), *Discourse patterns in spoken and written corpora* (pp. 173–198). John Benjamins.

Mulligan, D., & Kirkpatrick, A. (2000). How much do they understand? Lectures, students and comprehension. *Higher Education Research and Development, 19*(3), 311–335.

Nesi, H. (2012). Laughter in university lectures. *Journal of English for Academic Purposes, 11*(2), 79–89.

Norris, S. (2004). *Analyzing multimodal interaction: A methodological framework*. Routledge.

Northcott, J. (2001). Towards an ethnography for the MBA classroom: A consideration of the role of interactive lecturing styles within the context of one MBA programme. *English for Specific Purposes, 20*, 15–37.

O'Keeffe, A., & Walsh, S. (2012). Applying corpus linguistics and conversation analysis in the investigation of small group teaching in higher education. *Corpus Linguistics and Linguistic Theory, 8*(1), 159–181.

Querol-Julián, M., & Arteaga-Martínez, B. (2019). Silence and engagement in the multimodal genre of synchronous videoconferencing lectures: The case of didactics in mathematics. In C. Sancho Guinda (Ed.), *Engagement in professional genres: Deference and disclosure* (pp. 297–319). John Benjamins.

Querol-Julián, M., & Crawford Camiciottoli, B. (2019). The impact of online technologies and English medium instruction on university lectures in international learning contexts: A systematic review. *ESP Today, 7*(1), 2–23.

Rahimirad, M., & Moini, M. R. (2015). *The challenges of listening to academic lectures for EAP learners and the impact of metacognition on academic lecture listening comprehension, 5*. Sage Open. https://doi.org/10.1177/2158244015590609 (April-June), 1–19.

Richards, J. C., & Pun, J. (2021). A typology of English-medium instruction. *RELC Journal*. https://doi.org/10.1177/0033688220968584. Advance online publication.

Salehzadeh, J. (2006). *Academic listening strategies. A guide to understanding lectures*. The University of Michigan Press.

Schleef, E. (2008). The 'lecturer's OK' revisited: Changing discourse conventions and the influence of academic division. *American Speech, 83*(1), 62–84.

Simpson, R. C., Briggs, S. L., Ovens, J., & Swales, J. M. (2002). *The Michigan corpus of academic spoken English*. The Regents of the University of Michigan.

Simpson, R. C., & Mendis, D. (2003). A corpus-based study of idioms in academic speech. *Tesol Quarterly, 37*(3), 419–441.

Street, B., Pahl, K., & Rowsell, J. (2011). Multimodality and new literacy studies. In C. Jewitt (Ed.), *The Routledge handbook of multimodal analysis* (pp. 191–200). Routledge.

Sueyoshi, A., & Hardison, D. M. (2005). The role of gestures and facial cues in second language listening comprehension. *Language Learning, 55*, 661–699.

Swales, J. M., & Burke, A. (2003). "It's really fascinating work": Differences in evaluative adjectives across academic registers. In P. Leistyna, & C. F. Meyer (Eds.), *Corpus analysis: Language structure and language use* (pp. 1–18). Rodopi.

Takaesu, A. (2013). TED talks as an extensive listening resource for EAP students. *Language Education in Asia, 4*(2), 150–162. https://doi.org/10.5746/leia/13/v4/i2/a05/takaesu

Tzoannopoulou, M. (2017). Lecture comprehension in English-medium programs. In E. Agathopoulou, T. Danavassi, & L. Efstathiadi (Eds.), *Selected Papers on Theoretical and applied linguistics, 22* pp. 480–497). https://ejournals.lib.auth.gr/thal/article/view/6011.

Vandergrift, L. (2007). Recent developments in second and foreign language listening comprehension research. *Language Teaching, 40*(3), 191–210.

Vladiou, M. (2011). State-of-the-art in open courseware initiatives worldwide. *Informatics in Education, 10*, 271–294.

Walsh, M. (2010). Multimodal literacy: What does it mean for classroom practice? *Australian Journal of Language and Literacy, 33*(3), 211–223.

Wang, H. (2018). *Testing lecture comprehension through listening-to-summarize cloze tasks. The trio of task demands, cognitive processes and language competence*. Springer.

Weinberg, A., Fukawa-Connelly, T., & Wiesner, E. (2013). Instructor gestures in proof-based mathematics lectures. In M. Martinez, & A. Castro Superfine (Eds.), *Proceedings of the 35th Annual Meeting of the North American Chapter of the international group for the Psychology of Mathematics education, 1119*. The University of Chicago Press.

Widdowson, H. G. (1979). *The authenticity of language data. Explorations in applied linguistics, Paper 12*. Oxford University Press.

Wingrove, P. (2017). How suitable are TED talks for academic listening? *Journal of English for Academic Purposes, 30*, 79–95.

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