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Modern Teaching Approaches: Listening Skills in Technical English Classes

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Abstract:
The aim of the current paper is to analyse and emphasise the emergence and importance of listening skills in foreign language classes in post-communist formal and informal education. Listening represents the language input that is used most frequently and this is why it is an invaluable learning and, therefore, teaching resource. With a prevalence of listening activities in a minor proportion (if any) during communist foreign language instruction, this skill has acquired importance during the past three decades, particularly in the context of globalization and free travel, free exchange of ideas and the liberation of communicative barriers. The challenging nature of the listening process becomes evident in Technical English classes because the receiver also displays incomplete control of technical language and is often confronted with frustration because of limited knowledge. This article seeks to reveal specifically how listening can be used in modern technical education to increase learner knowledge, confidence and autonomy.

Keywords: English for Specific Purposes; learner autonomy; listening skills; post-communist language instruction; Technical English.

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On the Importance of Developing Listening Skills

It is commonly accepted that adults spend almost half their communication time listening as pointed out by scholars (Gilman & Moody:1984:331). Similarly, ESL students receive the majority of their in-school information through listening to teachers and to one another. Also, regarding the language skills development the same researchers cite that when people communicate, 45-50% of language competence derives from listening, 25-30% from speaking, 11-16% from reading and only 9% from writing. Nonetheless, only recently has the pivotal role of listening been recognized as a powerful comprehension tool and a major factor in enabling language learning (Oxford: 1993:206).

During the communist period, Romanian language teaching and learning relied heavily on the prevailing Grammar Translation method corroborated with little to no exposure to English speaking foreigners. This had created a setting for studying English merely for the sake of studying rather than for communicative purposes. Moreover, with a clear domination of French over English in Second Language classes, English listening activities were simply inexistent during ESL classes. Nonetheless, with post-communist second language classes witnessing the emergence of English as the new Lingua Franca, a massive influx of coursebooks from a variety of English and American publishing houses was triggered bringing along listening course materials (on cassettes initially, CDs later) and has made listening available to two eager categories of learners: firstly, those who had studied English thoroughly with the grammar translation method and who wanted to improve their pronunciation and understanding with genuine material and, secondly, those who knew little to no English and were most willing to learn how to communicate in English. Unfortunately, listening activities in the classroom were not made a priority until recently for a number of objective and subjective reasons:

- Teachers and/or students did not possess listening infrastructure (cassette/CD players, soundproof rooms);
- Listening was perceived as a waste of time since it does not involve overt active effort on the part of students, nor could it be used for evaluation to the best of teachers’ knowledge;
- It was difficult to manage a large group of students so that they would remain quiet for the entire duration of the activity, hence teachers often gave up in favour of other, more manageable activities;
- A lot of grammar translation and mother tongue translation of input was still in practice starting from the wrong assumption that in order to comprehend, students need to translate input; during listening activities this method was not applicable;
- Few teachers possessed the ability to create listening oriented exercises, apply listening to evaluation, use listening activities creatively and communicatively.

Over the past decades, there has been growing interest for communicating in Business and Technical English since, as pointed out by Bălănescu (2021:34) post-communist Romania witnessed “numerous foreign companies set up subsidiaries or started new businesses in the country, employing local workforce. As a result, there emerged a distinctive group of people who needed to communicate in English for very specific, job-related purposes.” Additionally, the rise of social media, music and a variety of games, the availability of various apps and internet channels have contributed greatly to the significant amount of exposure to listening activities outside the classroom creating a need for content comprehension and an inclination to treat listening more
As pointed out by Bălănescu (2019:59) at academic level, in post-communist Romania “there are many faculties which offer undergraduate studies in English [...] such as English for Engineering, English for Business and Economics, English for Medical Science, etc. In the 1990s there emerged a distinctive group of people who were increasingly interested in learning English in order to take direct part in economic transactions and international projects”. These groups of ESP students and technical professionals are the two categories of students with specific communicative needs that represent the focus of technical English teaching in modern Romania.

Due to the advent of communicative language learning and teaching, listening has acquired its deserved importance as it had been demonstrated to play a crucial part in facilitating the language learner to develop good pronunciation, stress words correctly, expand vocabulary and develop syntax gradually. Without understanding input appropriately, learning simply cannot get any improvement. Moreover, in the absence of listening skills, no communication can be achieved (Cross: 1998). During listening activities, students can actively involve themselves in the interpretation of what they hear, bringing their own background knowledge and linguistic knowledge to bear on the information contained in the aural text. Listeners need to discriminate between sounds, understand vocabulary and grammatical structures, interpret stress and intention, retain and interpret this within the immediate as well as the larger socio-cultural context of the utterance (Wipf 1984:345). According to Rost (2002:29) listening is a complex, active process of interpretation in which listeners match what they hear with what they already know. Listening can thus be defined as the process of receiving what the speaker actually says (receptive orientation); constructing and representing meaning (constructive orientation); negotiating meaning with the speaker and responding (collaborative orientation); and, creating meaning through involvement, imagination and empathy (transformative orientation).

With the development of communicative language teaching strategies and with a noticeable change in focus on production rather than on accuracy, the development of listening skills began to acquire great prominence. Based on the views expressed by Yagang (1994:4) the specific and numerous challenges of integrating listening into the classroom depend on the message, the speaker, the listener and the setting. Listeners must process messages as they come, often with insufficient time for reaction to the message they have just received. If they are still processing what they have just heard, there is seldom any time for going back or looking ahead in anticipation. Listeners must cope with the sender's choices of speech rate, vocabulary, pronunciation and phraseology (often idiomatic), speech structure and personal syntax (unpredictable and often difficult to follow), and the pace of delivery which may differ dramatically from the listener’s own background or processing capabilities. As discussed by Flowerdew & Miller (1996), the problems of the students revolve around the speed of delivery, new terminology and concept (especially technical), difficulty in focusing and the physical environment. To all these we may add regional accents, non-standard varieties of English and sometimes background noise (often present in technical in production recordings), causing confusion, frustration and students’ low self-esteem if not tackled with diplomacy and teacher professionalism.

Listening During Technical English Classes

Technical English classes, as any other ESP classes, should employ listening with the purpose of preparing future engineers to deal with specialized professional
situations in a foreign language. That is to say that the listening activities will focus primarily on creating professionals that are able to function independently in a foreign language situation specific to their field of expertise such as handling long distance phone calls in English, understand and give technical instruction in noisy production sites, negotiate solutions to engineering problems etc.

As listening skills represent such a large proportion of daily activity in all walks of life and it basically comes down to the way in which we perceive the world, it is essential for language teachers to help their students become effective listeners while helping them develop top-down as well as bottom-up strategies for increasing their listening confidence and develop their functionality in an English-speaking profession. In the communicative approach to language teaching, teachers aim at modeling listening strategies and providing listening practice in authentic situations that learners are likely to encounter when they use the language outside the classroom. Thus, technical students become more likely to cope with the challenges posed by acting and reacting in a foreign language in daily life contexts but also in highly specialized situations that are likely to occur in their future professions.

Language learning during technical English classes requires intentional listening that employs strategies for identifying sounds and making meaning from them. Thus, listening provides the aural input that serves as the basis for language acquisition and enables learners to interact in spoken communication. Effective language instructors show students how they can:

- adjust their listening behavior to deal with a variety of situations, types of input, and listening purposes;
- develop a set of listening strategies to increase comprehension and match appropriate strategies to each listening situation;
- adapt their general English knowledge to incorporate technical English comprehension;
- relax and regain their focus despite imperfect comprehension of the listening input as well as produce relevant output.

Since listening strategies are techniques or activities that can contribute directly to the comprehension and recall of listening input, they may differ depending on how the listener processes the input. Listeners employ the so-called 'top-down' processes when they use prior knowledge to understand the meaning of a message. Pre-existing knowledge can pertain to the topic, the listening context, the text-type, the culture or other information stored in long-term memory in the form of schemata (typical sequences or common situations around which world knowledge is organized). Listeners often use content words and contextual clues to form hypotheses in an exploratory manner. Another listening pattern occurs when listeners use 'bottom-up' processes when they employ linguistic knowledge to make sense of a message. They, thus, gradually construct meaning from basic sounds to words to grammatical relationships to lexical meanings in order to achieve message comprehension. Listening for gist primarily entails top-down processing, whereas listening for specific information draws on bottom-up processing to capture the intended details. Listening comprehension is not entirely top-down or bottom-up processing, but rather a complex, interactive, sense-making process in which listeners equally employ prior knowledge and linguistic knowledge in comprehending messages and reacting to it. The degree to which listeners use the one process or the other is profoundly personal and in direct relation with their proficiency in the language, familiarity with the topic and it greatly depends on the
Top-down strategies during technical classes heavily rely on the listener as they will resort to background knowledge, familiarity with the topic, the situation or context, the type of text and the language used. According to Byrnes (1984), when listeners know the context of a text or an utterance, the process is facilitated considerably because listeners can activate prior knowledge and make the appropriate inferences essential to comprehending the message. Hence derives the need to create a significant background for technical students to rely on, such as exposure to an array of written, visual and audible materials that set up the foundation of the technical English course and can later play a structural role during listening activities. Additionally, technical knowledge can be developed by:

- grading informational content from simple to complex;
- practicing templates for describing phenomena, gadgets and scientific argumentation;
- selecting and enlarging upon key vocabulary and phraseology that is technically specific.

The background knowledge will activate a set of expectations that can help the listener to interpret what is heard and anticipate what will come next. Top-down strategies in ESP include: listening for the main idea; predicting; drawing inferences; summarizing.

Bottom-up strategies are text based; the listener relies on the language in the message, that is, the combination of sounds, words, and grammar that creates meaning. Bottom-up strategies include: listening for specific details: gap filling, multiple choice, paragraph matching etc.; acknowledging cognates; recognizing correct word order patterns; reconstructing syntactic chunks.

In extracting meaning from listening to technical input, students need to become aware of what they are doing and follow a number of simple steps:

- Figure out the purpose for listening: is it for grasping the general idea or does it presuppose identifying specific details? In time students develop familiarity with exercise types and thus the purpose of the listening becomes intuitive rather than a thinking process.
- Activate background knowledge of the topic in order to predict or anticipate content and identify appropriate listening strategies. But how does one activate background knowledge? Pre-listening activities play an essential part in focusing interest and in activating preexisting knowledge to serve as a structural aid to the listening task.
- Focus on the parts of the listening input that are relevant to the identified purpose and ignore the rest. This enables students to concentrate on specific items in the input and reduces the amount of information they have to hold in short-term memory.
- Select strategies that are adapted to the listening task and use them flexibly and interactively. Students' comprehension improves and their confidence increases when they use top-down and bottom-up strategies simultaneously to gather meaning.
- Verify comprehension while listening and when the listening task is over. Providing comprehension feedback helps students deal with comprehension problems, and, consequently, directs them to use alternate strategies to ensure future listening success.
How Do We Develop Listening Skills in Technical English Classes?

During technical English classes, teachers can use a wide range of listening activities by means of which they can expose students to genuine language contexts and activate their communicative language in professional environments. According to Lăpădat, L & Lăpădat, M.M (2020:144) foreign language learning entails the development of the necessary skills to perceive the classification systems by virtue of the relevance based on the operational patterns of that respective community, including professional communities. Consequently, learning a foreign language should prepare students for real-life situations, for a variety of experiences and intercultural exchanges they are likely to encounter in their English-speaking endeavour. Authentic materials and situations prepare students for the types of listening they will need to do when using the language outside the classroom. In this respect, it is important to use both one-way as well as two-way type of listening activities to make sure the students are not excessively passive or excessively active in their future job interactions in an English language speaking environment.

One-Way Communication

Listening materials that can be the learning source include:

- Radio and television programs, YouTube presentations, tutorials with subtitles/captions;
- Public announcements (in factory announcements, production site recordings);
- Lectures and formal presentations, opening addresses at technical universities, technical speeches/debates/reviews;
- Technical research oral presentations at international research conventions.

The actual listening procedure should include pre-listening as well as while-listening activities which will:

- Help students identify the listening goal: to obtain specific information; to decide whether to continue listening; to understand most of or the entire message.
- Help students outline predictable sequences in which information may be presented: who-what-when-where (when creating a technical story line); "for [function], press [number]" (technical instructions), what happens if you...(technical descriptions/cause->result), what->when->why (describing malfunctions of equipment/ troubleshooting).
- Help students identify key words/phrases to listen for in the shape of relevant handouts and customized listening follow-up.

Two-Way Communication

In authentic two-way communication, the listener will focus on the speakers’ message rather than the speakers’ language. The focus should be placed on language only when the message is not clear and analysing the language can provide clarification.

- Telephone recordings with clients providing technical specifications for product customization, recordings of technical meetings, brainstorming sessions in R&D departments;
- Customer-engineer negotiations/ engineer-engineer debates on technical issues;
- Negotiations of engineering solutions during teamwork etc.

When the teacher designs listening materials, they should not expect a complete recall of all the information of the aural input because this is unrealistic even for native speakers. Instead, the tasks should aim at getting students accustomed to following a
two-way interaction, adapting to the succession of speakers each with their own personal style of speaking, being able to detect metalinguistic elements such as emotions (irritation, annoyance, irony), intended message etc. Listening activities are meant to train and develop skill rather than teach a particular piece of information. Therefore, they should be success-oriented and build students' confidence in their listening ability and their general ability to cope with a foreign unfamiliar and unpredictable language situation and provide a meaningful and relevant response.

Technical English teachers should, therefore, be attentive to a set of guidelines in selecting the listening activities that can optimise in their goals during technical classes:

- **The listening activity should be constructed around a contextualized task**
  Situational listening activities emulate real-life tasks and provide the listener with an idea of the type of information to expect and what to do with it in advance of the actual listening. A beginning level task might consist of locating pieces and components on a product map (one way) or exchanging specific technical data and negotiable basic information (two way). At an intermediate and advanced level students could be asked to follow directions for assembling a piece of equipment (one way) or work in pairs to describe an engineering process, to identify arguments in negotiating a technical solution or to compare and contrast pieces of equipment on a set of given criteria (two way).

- **The listening activity defines the instructional goal and type of response**
  Recognizing the goal(s) of listening comprehension in each listening situation is very important as it will help students select appropriate listening strategies.
  - Identification: recognizing or discriminating specific aspects of the message, such as sounds, categories of words, morphological distinctions;
  - Orientation: Determining the major facts about a message: topic, text type, setting, attitudes;
  - Main idea comprehension: identifying the higher-order ideas, producing an abstract, inferring, making generalisations;
  - Detail retention: identifying supporting details in reconstructing a gapped sequence;
  - Replication/ alternation: reproducing/rephrasing the message orally or in writing.

- **The level of difficulty of the listening text ought to be adapted to student level and task goal for obtaining autonomy and listening confidence**
  While cognitive strategies manipulate the material to be learned or apply a specific technique to a listening task, socio-affective strategies depict the techniques listeners use to collaborate one another, to check understanding or to decrease listening stress. Research has shown that skilled listeners employ more metacognitive strategies than their less-skilled counterparts (O'Malley & Chamot: 1990, Vandergrift: 1997). When listeners know how to analyse the requirements of a listening task, activate the customised listening processes needed to make appropriate predictions and monitor their comprehension as well as evaluate the success of their approach, they are using an array of metacognitive tools to increase the success of their listening comprehension. This is critical to the development of self-regulated learning (Wenden: 1998:517). Consequently, each activity should aim at improving one or more specific listening skills and develop learning autonomy. A listening activity may have more than one goal or
outcome, but technical teachers should be careful not to overload the beginners or intermediate students. The teacher must constantly judge the relative ease or difficulty of a listening text for a particular purpose and a particular group of students. There is a number of questions that the teacher must reflect on before choosing a particular listening activity:

*How is the information organized? Does the text content/instruction conform to familiar expectations? Can the sequencing be followed?* Texts in which the events are presented in natural chronological order, which have an informative title and which present the information following an obvious structure (main ideas first, details and examples second) are easier to follow and students will focus on the content rather than waste time getting oriented in the sequence. At advanced levels, the listening materials can contain scrambled sequencing to increase difficulty and emulate real-life digressions and transgressions.

*How familiar are the students with the topic?* The faulty application of background knowledge due to limited previous experiences can cause serious comprehension difficulties. Which is why teachers need to be aware what previous knowledge students rely on, what the commonly shared experiences that can be turned into listening activities are. If listeners are acquainted with the context, comprehension is considerably easier as listeners can activate prior knowledge and make the appropriate inferences essential to comprehending the message (Byrnes, 1984:318). Therefore, teachers need to help students put matters into perspective, to activate appropriate background knowledge for understanding and to enable them to make predictions prior to listening. If need be, contextualizing information can be provided through a number of pre-listening activities in the form of reading tasks that dwell on the technical topics that are to be developed during the listening tasks. For example, if a technical English teacher decides to use a presentation about the braking system of a car or about the four-stroke engine as a listening activity, they might think about introducing students to the topic by performing a reading activity first, with some visual input introducing specialized vocabulary, sequencing schemata that would enable students to develop an understanding of what actually happens to the components during the process and what the outcome is. Thus, watching a presentation on the topic as a listening activity will rely on pre-existing knowledge and comprehension will be optimized into a superior form of understanding, leading to abstract thinking, conceptualization and high-level metacognition.

*Are the text length and complexity adapted to students’ level?* At the lower levels of proficiency, listeners find short, simple messages easier to process, but students with higher levels of proficiency naturally enjoy and are able to cope with the growing difficulty of technical language along with intricate sequencing. Recordings that are deemed too intricate may result in frustration and low self-esteem with elementary students, while listening materials that are too easy seem likely to result in boredom and a feeling of time wasting with more proficient students. Additional to the necessity of adapting listening activities to students’ level, there is the need for meaningful, informative content. Students tend to react positively and achieve better scores to recordings that are interesting and are able to arouse curiosity, challenge their thought processes and provide an interesting outlook on a technical matter.

*Does the text involve multiple individuals and objects that are clearly distinguished?* For instance, it is easier to understand a text with an engineer and a customer than one with two engineers or comparisons between gadgets from different
categories or with clearly marked differences. In other words, the more marked the differences, the easier the comprehension.

*Does the text offer visual support to assist in the interpretation of what the listeners can hear?* Visual aids such as maps, diagrams, pictures, pie-charts or the images in a video help contextualize the listening input and provide clues to meaning. Moreover, visual input is a welcome interruption from the monotony of a white wall to stare at while listening. Additionally, visual input can employ colour-coding strategies, imagery and action to render the comprehension more dynamic, stir up imagination and increase meta-cognition to a greater extent.

- The teacher employs pre-listening activities to prepare students for what they are going to hear or view.

The activities chosen during pre-listening may serve as preparation for listening in several ways because they:

- assess students' background knowledge of the topic and linguistic content of the text;
- provide students with the background knowledge necessary for their comprehension of the listening passage or activate the existing knowledge that the students possess;
- clarify any cultural-specific information which may be necessary to comprehend the passage: for instance, a picture of engineers in protective gear may infer the idea that the conversation is going to take place on the factory premises rather than in an office and that they are about to discuss some safety issues rather than the menu of the day;
- make students aware of the type of text they will be listening to, the roles of the participants and the purpose(s) for which they will be listening;
- provide opportunities for group or collaborative work and for background reading or class discussion activities.

Pre-listening activities may include but are not restricted to: analysing pictures, maps, diagrams, or graphs; reviewing vocabulary or grammatical structures; reading a piece of text related to what the students will be listening to; constructing semantic webs (a graphic arrangement of concepts or words showing how they are related); predicting the content of the listening text; getting a better grasp of the directions or instructions for the activity. Questions should be used to guide students’ attention towards the elements of the text that are essential for comprehension. Before the listening activity begins, students review the questions they will answer orally or in writing after listening. Listening for the answers will help students recognize the crucial parts of the message.

- Predicting encourages students to monitor their comprehension as they listen

A well-chosen predicting activity before listening arouses interest in what follows and builds students’ confidence. The teacher should remind students to review what they are hearing to see if it makes sense in the context of their prior knowledge and what they already know of the topic or events in the passage.

- While-listening activities should be well timed and adapted to the instructional goal, the listening purpose, and students' proficiency level.

While-listening activities are directly related to the tasks, and students tackle them during or immediately after the listening activity, thus ensuring optimal information retrieval. If students are to complete a written task during or immediately
after listening, they should be allowed to read through it before listening. Students need to devote all their attention to the listening task which they can do successfully if they don’t have to read the instructions of the tasks while listening. Technical English teachers need to make sure students understand the instructions for the written task before the listening activity begins so that they are not distracted by the need to figure out what to do while listening.

- **Writing should be kept to a minimum during listening.**

  The primary goal in listening should be comprehension rather than production. Having to write while listening may distract students from this essential goal and create frustration when writing speed is not fast enough to keep up with the influx of the aural input. If a written response is to be given after listening, it should be kept within reasonable limits and not rely heavily on the reproduction of what the student has listened to. Instead, rephrasing, inference and deduction do better job at verifying comprehension while offering students a chance to use alternative language and make personal contributions.

  While-listening activities include one of the following examples, but they can also combine a maximum of two tasks per listening activity: listening with visuals, filling in graphs and charts, following a route on a map (either geographical or technical), checking off items on a list, listening for gist, searching for specific clues to meaning, gapped text exercises, deciding on true/false statements, distinguishing between formal and informal registers etc.

- **Immediate feedback, whenever possible, is essential**

  The teacher should involve technical students in the process of error correction and encourage students to examine how or why their responses were incorrect and reinforce correct ones based on the assumption that it is better to strike the iron while it is hot. If immediate feedback is offered, short term memory is consolidated through repetition and this increases the chance that concepts are retained in long-term memory. Transcripts can be used as a resource for increasing comprehension as well as a source of new vocabulary, syntactic and idiomatic input. Students often develop an internal understanding of listening traps in the sense that they notice how task formulation differs from audible input and they will get a better grasp of correct answer due to this ability to surf through technical listening input and steer clear of language traps.

**Conclusion**

The greatest challenges with technical listening recordings refer to how to integrate the listening experiences into classroom instruction and making them relevant, interesting and educational. The challenges arise from the fact that technical English is often wrongly assumed to be particularly difficult and from the fact that most technical teachers have to construct their own listening activities and find technical listening material that they can adapt to suit their purposes. Fortunately, as opposed to two or three decades ago, there is hardly any shortage of listening material for technical English due to the unprecedented access to a great number of channels that can be used as listening input. As far as the students’ interest in listening goes, students seem to be very excited whenever a listening task is announced and this is due to the entertaining nature they associate listening to, often a passive reception of music or dialogues. Thus, teachers can take advantage of the alluring side of listening to stimulate students into completing technical tasks without even being aware of its technical nature. As the activities increase in difficulty, students become increasingly proficient in dealing with
the challenges of technical listening, especially since most students nowadays are interested in technology and are more than keen on watching videos or listening to presentations about their object of interest. As opposed to the post-communist language instruction classes, contemporary teachers are able to produce and enjoy the teaching results that are noticeable in the contemporary tech-savvy generation of students.

References:

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