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Teaching Scientific English to Medical Students at University: The Assessment of Speaking and Writing Skills

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Abstract

Scientific English is a section of academic English which refers to the study of scientific subjects like biology and chemistry rather than humanistic subjects such as history and literature. The teaching of Scientific English can be a demanding task for language teachers since it concerns not only the common instruction of linguistic aspects of the language but also imparting the knowledge of a specific scientific topic. The aim of this paper is to discuss a personal experience about the teaching of Scientific English in an Italian academic context and the assessment of productive skills, writing and speaking. The discussion concerns the activities that are suggested to the students to improve their abilities to speak and write in English at an academic level. The learners' task was basically to prepare an oral presentation and to write an abstract on a topic of their interest. The stimulation of personal interest was essential to increase motivation and participation to the activities since this training may undoubtedly have a practical use in academic and professional contexts. Specifically, the learners consisted of a group of medical students attending a post-graduate school whereas the teacher was an English instructor with a long experience of language teaching at university as well as a medical doctor, thus assuming the double role of linguistic and science expert. In the end, the learning experience was positive, stimulating, and constructive for the improvement of both language productive skills.

Keywords: Language Abilities of Medical Students, Productive Skills, Scientific English

Introduction

The teaching of Scientific English is generally considered as a branch of English for Specific Purposes (ESP) or English for Academic Purposes (EAP). It is a very challenging area for both language and subject teachers, as it is concerned with the teaching of a scientific subject through the medium of English in an integrated learning situation. The teaching process should not be limited to the learning of the subject by using, for instance, a textbook in English because the risk is of demotivating the students and repressing their creativity. The activities chosen for the lesson should be stimulating and concrete in order to increase the students' participation and interest [1]. Another important pedagogical issue is represented by the material and method used during the teaching process. When teaching a scientific topic in English, it cannot be simply a matter of acquiring new vocabulary in L2 but also the engagement of learners in activities in which metacognitive abilities are involved such as analysing a phenomenon or collecting data and scientific evidence [2]. Furthermore, in academic contexts it is extremely important to work on improving speaking skills because communicating in English in an effective way may increase academic and professional perspectives. Speaking abilities concern linguistic aspects such as grammar knowledge and pronunciation, sociolinguistic and cultural competence which refer to the use of language according to the social roles of speakers and to the contexts of the interaction, and the learner's confidence to produce language in a correct way [3]. In this paper, a personal teaching experience is discussed with relation to the assessment of productive skills in an academic context. It is the presentation of a speaking activity and of a writing activity often used in an ELT classroom as the teacher wished to estimate the level of language abilities in a group of medical students in their post-graduate training at university. The English course had a short duration, sixteen hours, no official syllabus but the teacher had to work on improving receptive and productive skills with a special attention to medical and academic writing and speaking. The language level of learners is expected to be B2 according to the CEFR and, therefore, an

informal estimation of students' language level is made beforehand in the following way. Before the beginning of the course, students are provided with a list of scientific articles that they have to read, summarize and then discuss during the first lesson in a group activity. Along with this task, students are also invited to introduce themselves and to talk about their previous academic achievements as well as their expectations for the future. Afterwards, the teacher's work is to make an informal evaluation of the understanding of the main content of the paper chosen as well as an unofficial assessment of the language used (for example, verb tenses, sentence structure, improvisation, etc.). Since these students were attending a post-graduate degree and have studied English in the previous academic years, it was assumed that they will not have great difficulties in performing the tasks required during this diagnostic assessment phase. However, the teacher gave reinforcing feedback to those who might have shown problems in specific areas such as grammar and lexicon. For this the purpose of this essay, the speaking activity suggested to this group of learners will be discussed in the first paragraph, while the assessment of the writing skills will be presented in the second section.

Assessment of Speaking Skills

In a previous lesson students were asked to prepare an oral presentation about a clinical case or a topic of their interest at university. They were then instructed to work as follows:

1. Prepare a power-point presentation with tables, figures, clinical data; feeling free to use their creativity and originality in making the presentation;
2. Summarize the main aspects of a clinical case such as medical history, demographic data, diagnosis, treatments;
3. Pay particular attention to the use of grammar and to the structure of the sentences (use of passive voices, verb tenses, connectors and spelling);
4. Respect the typical structure of an essay: introduction, main body and conclusion.

During his/her presentation, the student is also given some hints on how to improve speaking abilities as follows:

1. Check who is the audience and adapt your presentation accordingly;
2. Speak slowly and clearly monitoring pronunciation, intonation and pausing;
3. Keep eye contact because it is important to examine people's attention and interest;
4. Check the time you spend for each slide and for the overall presentation.

During the oral presentation the other students were asked to:

1. Check the correct use of grammar.
2. Check spelling and pronunciation.
3. Check the authenticity of the content presented.

This means that a peer-to-peer evaluation was encouraged, that a specific academic language was used and that critical thinking skill was undoubtedly prompted. The critical points that emerged during the activity were related to the grammar used and to spelling as students were also asked to underline the errors in conjugating verbs and the spelling mistakes that appeared in the slides shown by their colleague. Students were also asked to make comments about pronunciation and intonation. When they were not able to detect any mistakes, it was agreed that during the next lesson the group would have worked on how to improve these aspects of language. For example, the phonetic chart with its symbols and sample words was then explained to students.

At the end of the activity, a discussion about the content of the student's presentation was elicited and this came to be the most stimulating part of the lesson for learners and for the teacher as well. The questions were posed in L2 of course and were focused on the data presented, on clinical aspects, on the results obtained and on research hypotheses. The use of L1 during the lesson was scarce as students were not embarrassed to speak English and native language was employed only for the correction and explanation of some aspects of linguistics such as grammar errors. This activity has been helpful to encourage students to use L2 in the classroom, to improve formal academic language and to stimulate cognitive skills such as evaluating, analysing and synthesizing while focusing on a specific content. In addition, this oral presentation helped learners to speak, listen, read and write. In this way, learners' communication skills can be reinforced since the activity suggested is beneficial because of the use of authentic language, an increase in learners speaking time, personal autonomy and practical application of L2 in real life situation [4]. For this activity and for all the lessons prepared for this group of students no textbook was recommended. The activity was designed by the teacher according to the students' needs.

Assessment of Writing Skills

The activity usually suggested to learners is the writing of an abstract. Students are instructed to write a summary of a scientific article of about 300 words in which they have to outline the main points described in a paper chosen by the teacher in which the original abstract has been removed or obscured. Before performing this task, a preliminary lesson is generally given on the structure of a scientific article and on how to write an essay as shown next.

Students learn that the structure of a scientific article consists typically of the following sections:

1. Title and subtitles
2. Abstract
3. Introduction
4. Materials and methods
5. Results
6. Discussion
7. Conclusion
8. References.

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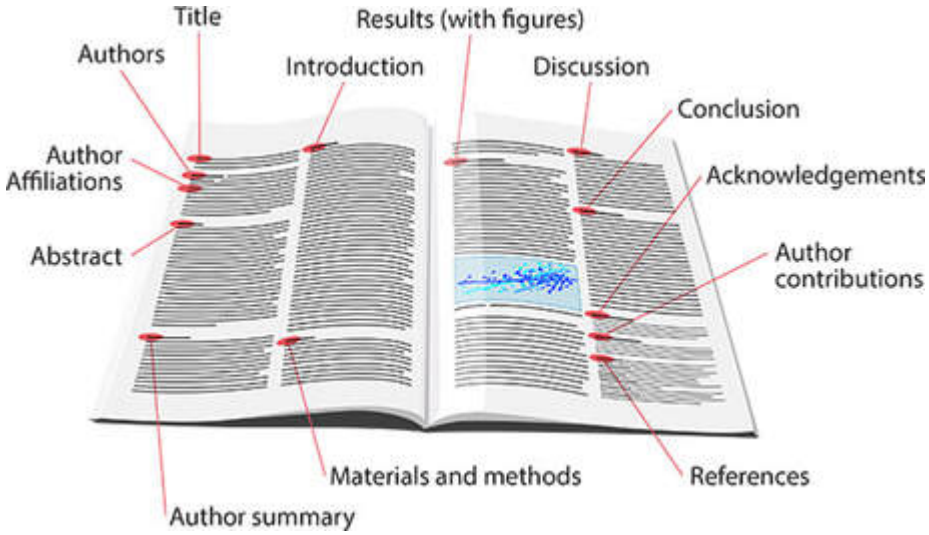
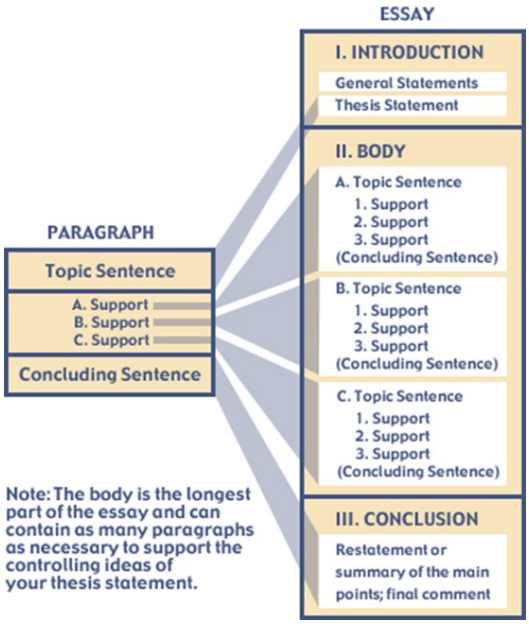
Each section is further discussed in detail in order to clarify the importance and the functions of the different parts of a paper with a particular focus on the purpose of the abstract [5]. See figure 1 for an illustration of the structure of a typical scientific paper.



From: http://www.neotropicalscience.com/reading-primary-lit.html

Figure 1 - The basic structure of a scientific manuscript

The structure of an essay is the next step in this preliminary phase. Learners learn the main parts of a typical piece of writing, whether it is an essay, dissertation, or a simple abstract. The following image is shown to the group of students because a visual aid may be very helpful for this purpose.



(From http://www.jcu.edu.au/tldinfo/writingskills/essay/structure.html)

Figure 2- Schematic illustration of the structure of an essay

To write their own abstract, students are suggested to refer to the above structure and, as mentioned above, are invited to outline the essential parts of the scientific article. The task has to be performed in about an hour according to the instructions provided which are shown here.

Instructions on how to write your own abstract:

1. Read the entire article to get a general idea of its content, pay attention to its different parts and underline with a highlighter the information or data or facts that you consider as most important;
2. Write down notes on a separate sheet of paper, make links between the different parts of the article, pay attention to tables, charts or figures;
3. Reflect on the reasons for which the authors of the paper wish to communicate their findings to the scientific community (e.g., originality and novelty of the study, revision of previous publications);
4. Imagine you are writing your own research, that your article has been accepted for publication on a scientific journal and that you are asked to provide a brief summary of it;
5. Start writing the abstract respecting the word length. For this purpose, consider that you might spend 50 words on both introduction and conclusion and the remaining 200 words on the main body;
6. Please write your abstract in a Word document so that it may handed to the teacher at the end of the activity and then shown to the other students on the screen.

The final part of the lesson concerns the reading of the abstracts. The teacher checks and discusses with the students the form and the content of their works. First, the evaluation of form refers to the correct use of grammar, verb tenses, sentence structure, word choice and language used. This latter aspect is very important as the vocabulary used here should be medical and scientific which means not common language. Second, the assessment of content concerns the information provided by the learner in his/her own piece of writing. The content should generally reflect the main data shown in the article. Students are then asked to answer the following questions: Is the information provided in the abstract correct? Did the student write only about superfluous and/or secondary data? How much interesting may the article be according to the abstract produced by the student? At the end of the lesson, a peer-to-peer evaluation is elicited in order to discuss the main difficulties in writing a clear and concise summary of a paper, to provide favourable and supportive feedback, to give the opportunity to share ideas, make comments and judgements in a serene and helpful learning context. Writing an abstract in L2 may have other positive effects on students such as stimulating creativity, putting ideas on a piece of paper, writing sentences correctly as well as analysing, planning and revising a text [6]. A final grading (Pass/Fail) is generally based on the accuracy of the language used, on the presentation of the main points of the article and on the respect of the instructions provided. For the learners who have eventually failed in their task, extra material is given to them as well as individual support from the teacher with the scope to discuss their weaknesses and to enhance their abilities in writing in a foreign language.

Conclusion

To conclude, it is worth to compare the activities discussed in this essay with some studies related to the field of ELT in academic contexts. The speaking task presented here is very close to the Scenario-based assessment (SBA), a recent evaluation method that consists in testing L2 skills in real-life situations and based on linguistic (grammar and syntax) as well as non-linguistic elements such as cognitive and metacognitive strategies [7]. The oral presentation used during the lessons is related to the elicitation of

communicative performance in authentic scenarios like a conference or an academic lecture. As a matter of fact, learners work on organizing ideas, outlining a project, interacting with peers, collecting material, gathering information as well as refreshing previous language knowledge. It is essentially a multi-factorial task that is very useful for the teacher since it allows him to make an accurate and extensive assessment of the learners' speaking abilities. For what concerns the assessment of writing skills, the task of writing an abstract in L2 is another example of an activity that students may perform at any time in their academic career and likely in their future occupational settings. It is indeed a short piece of writing, but it may be a good starting point to work on a longer project, like a dissertation or a scientific paper. As mentioned before, grading for this activity is not expressed in a score rather a Pass or Fail result. In many academic contexts and for longer works, teachers may refer to an evaluation scale which provides criteria for the scoring of the students' essays [8]. This scoring procedure takes into consideration basically five areas which are the content of the composition, the building of the essay, the lexicon, the language adopted by the student and the technical part which includes spelling, punctuation, sentence structure and grammar. This type of evaluation may be very useful to detect the strengths and weaknesses that may emerge from the writing production of the single learners. Individual feedback may also be necessary to those students who may have obtained a low score in one or more of the areas just mentioned above. In the end, the role of an ESP teacher in assessing productive skills in a content language integrated context should be multifunctional since it involves many factors: teacher's sufficient knowledge of the subject taught, the facilitation of a communicative approach for a satisfactory competence in language production, the creation of a comfortable learning environment in which interaction is stimulated, the increase of self-confidence and the student's perception of a his/her own abilities and the final achievement of a higher level of fluency in English.

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