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Authentic lesson material in ESP

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1. Introduction

The word ‘authentic’ has become a credo word in ESP. But the word has at least the following different definitions.

- a. Material written by Native Speakers for Native Speakers and not for any language teaching purpose. This is probably the most commonly accepted definition.
- b. Material written by Native Speakers to improve the first language of Native Speakers. Included in this definition would be school and university level writing courses for instance.

Learners want to use their English as quickly as possible. Learners are motivated to learn mainly the English they need, therefore, it is argued, teachers must use ‘authentic’ materials rather than materials which are simplified or materials that are specially written for the learner.

In fact, the situation is not as simple as meets the eye.

2. Are authentic texts reserved for advanced English students?

It is usually assumed that specialised texts must ALWAYS be in advanced English and ALWAYS difficult to understand. Nowadays, there is an explosion of new genres. It is possible to find specialised texts written in easy English. You only have to search for the speciality with the phrase added “Plain English version” or “Plain English Summary” to find many examples on the web. Only recently I was looking at this Open Access site, the New Journal of Physics, in which a recent medical development, the use of machines which use plasmas to rapidly clean hands and other surfaces was announced and explained. I found the usual, fairly technical Abstract, followed by a “General Scientific Summary” which is written in a less technical style. It is worth reading, so I have copied it below. Authentic texts do not have to be difficult to understand. An increasing number of journals are providing such easier to understand summaries.

Low pressure plasma discharges for the sterilization and decontamination of surfaces

F Rossi et al 2009 New J. Phys. 11 115017 (33pp) doi: 10.1088/1367-2630/11/11/115017

Abstract. The mechanisms of sterilization and decontamination of surfaces are compared in direct and post discharge plasma treatments in two low-pressure reactors, microwave and inductively coupled plasma. It is shown that the removal of various biomolecules, such as proteins, pyrogens or peptides, can be obtained at high rates and low temperatures in the inductively coupled plasma (ICP) by using Ar/O₂ mixtures. Similar efficiency is obtained for bacterial spores. Analysis of the discharge conditions illustrates the role of ion bombardment associated with O radicals, leading to a fast etching of organic matter. By contrast, the conditions obtained in the post discharge lead to much lower etching rates but also to a chemical modification of pyrogens, leading to their de-activation. The advantages of the two processes are discussed for the application to the practical case of decontamination of medical devices and reduction of hospital infections, illustrating the advantages and drawbacks of the two approaches.

GENERAL SCIENTIFIC SUMMARY

Introduction and background. Application of non-equilibrium plasma discharges for sterilization and decontamination of surfaces gains an increased attention since it offers highly effective, low-temperature process without need of toxic substances. However, in spite of numerous studies devoted to this topic, the knowledge regarding the underlying mechanisms of plasma action on biological systems remains still relatively poor, which is especially true in the cases of diverse biomolecules.

Main results. In order to gain a better insight into the processes occurring on the plasma-biological matter interfaces the plasma action on different biological samples was compared with the plasma properties determined by various diagnostics methods. Furthermore, two plasma sources differing in the position of the treated samples with respect to plasma were used: the samples were located either into the active plasma zone or to the near-post discharge. It is demonstrated that these two arrangements differ significantly not only in the rates at which different biomolecules are eliminated from the surfaces, but also in the nature of the processes leading to this effect: whereas in the first case the principal pathway of biomolecules removal appeared to be their chemical sputtering, chemical etching seems to be the dominating process in the near post-discharge.

Wider implications. The change of the main mechanism of elimination of biological residuals from surfaces reported in this study has important consequences in view of process optimization as well as its applicability in a real situation, since both pathways pose certain advantages and drawbacks as discussed in the article.

<http://www.iop.org/EJ/abstract/1367-2630/11/11/115017> accessed 23 February 2010.

3. The link between advanced language and advanced language skills

High specialised knowledge is usually linked with high language skills. Someone without high language skills will find it hard to understand specialised topics material, even in their first language, since, even for experts, specialised texts are often demanding. Specialists are habituated to grappling with demanding texts, therefore will have developed the needed language skills to a very high level. Someone with these high language skills in L1 will have an advantage in L2.

The opposite is also true. Someone with poor and inadequate language skills will find extra difficulty with specialised texts. In other words, in addition to having problems with

the topic, they will also suffer because they are unable to attack the text and work through to the desired level of understanding. Someone with poor language skills for specialised texts in L1 will be even worse off in L2.

Authentic texts can be used even when the students have basic or intermediate English, especially for the professionals with advanced language skills and advanced topic skills.

Use of Authentic Materials does NOT mean that we are limited to texts which are only a little beyond the language level of the students. It is mistakes like this that led, many years ago, to doctors with basic English being introduced to school level human biology lessons. I suggest that **authentic texts means texts at a level of specialisation appropriate to the level of the students.** For undergraduate, preclinical students of medicine, the appropriate level is undergraduate medicine and science. For doctors this means focussing on material they would normally be expected to read in the course of their on-going professional development. This still leaves a wide range of materials and genres. For instance, some doctors might well read the easier summaries presented to nurses, or they might choose to read the plain language summaries, or one of the many professional blogs or news-sites. It does not usually mean referring to sites meant for patients.

4. The impression that technical words are similar in related languages

Where there are related languages like French and English, the impression many people have is that the 'technical words' are similar. To what extent this is true remains to be determined, and based on my own research and some unpublished work from my students, I expect it to be less than people think. But the impression still remains. It is an impression that gives students the confidence to continue in a difficult text. see:

www.scientificlanguage.com/esp/words.pdf,

www.scientificlanguage.com/esp/constancy.pdf,

www.scientificlanguage.com/esp/nonverbals.pdf.

5. The advantages experts have when reading in another language

The more advanced a student is in their knowledge of the content of their subject, the more likely they are to understand a technical text on their subject in another language. Experts have greater tolerance for ambiguity than non-experts do. Experts can fill in the gaps. Experts can jump along in a text, understanding some words, and filling in the gaps for the other (not understood) words. Experts are better at guessing the meaning of words.

6. Problems understanding a text are normal, even for experts in their strong language

It must never be forgotten that students and specialists routinely, in their first language, have to face problems of understanding the text. The skills learned in L1 will transfer to

L2. These skills may well be more advanced in a scientist than those of the Humanities trained teacher who is now teaching them English.

Science students in particular, routinely live with gaps in their knowledge and understanding of a text. They are used to reading a text for the information they want, and either working out what they previously did not understand, or they decide to ignore this information. For instance, as a Human Biology student I learned to accept gaps, and to keep going.

In my experience, Humanities trained teachers are poorly equipped to tackle demanding texts - in any subject. Of course there will be exceptions, but the general trend is, I believe, indisputable. Therefore Humanities teachers are often afraid of demanding texts, and are ill equipped to help science students cope with a demanding text in their second language.

Challenging texts are authentic in that they are used routinely in L1. Therefore, the English teacher must never be afraid to use a challenging text. I will suggest how, later in this article.

7. **Three variables: Content, Language, and Skills**

In a previous article, www.scientificlanguage.com/esp/terminology.pdf

I presented two major variables: the level of language (from basic to advanced) and the level of topic, from general to specialised. [I avoided calling the topic a subject or a discipline, because of the many other meanings of these words]. Now I want to introduce another variable: language skills. The three variables very nicely coincide with three major types of syllabus.

Content Syllabus Topics: general to specialised	Language syllabus basic to advanced	Skills syllabus basic to advanced
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It is important to identify where the students are according to all three of these variables. Someone with very high language skills in a related language has a huge advantage.

In addition, the professional, be it in business or science, has probably developed a wide range of language skills, which transfer easily to English. There are two highly probably scenarios for the English teacher to scientists.

Possible scenario 1: the postgraduate

	Content knowledge: topic/subject	Level of English	Language skills
postgraduate/ professional student	Advanced	intermediate	Extremely high
teacher	Minimal	Advanced	Mediocre to advanced

Possible scenario 2: the undergraduate

	Content knowledge: topic/subject	Level of English	Language skills
Undergraduate	Intermediate	Upper-intermediate to Intermediate	Mediocre
teacher	Minimal	Advanced	Mediocre to advanced

My observation is that very few of the Humanities students I teach have developed beyond the bare minimum of language skills. Few for instance read extensively for pleasure; few can read at even 200 words per minute - the speed widely known to be the minimum for effective reading. I have argued elsewhere www.scientificlanguage.com/adult11a/adult-11-acquisition.pdf and www.scientificlanguage.com/adult11a/lifelong.pdf that Humanities students in their first language have a much lower load of new vocabulary to learn. The idea of being bombarded with over 50 new words an hour, as I was when studying anatomy, is I suspect largely unknown.

Therefore it is quite possible that the professional in science or business has learned language skills to a level undreamed of in the Humanities. These professional students in Scenario One are ready to tackle difficult topics written at an advanced level of English and demanding extremely well developed language skills. In fact, in Scenario One, the student has only one lack: the level of English, whereas the teacher has two major lacks: their subject knowledge and their poor language skills.

In Scenario Two the situation is completely different. The undergraduate is unlikely to have highly developed language skills, and, while their subject/topic level may well be beyond that of the English teacher, it is still quite low. In this scenario the students cannot profit from high content and high language skills of the professional. While it is not the English teacher's job to teach content per se, it is their job to teach language skills. These language skills, such as reading, may well be taught more in the weaker second language (English) than in the first language. Paradoxically, the English teacher often has to teach the language skills that ideally should have been taught in the first language. Once learned in English, they are then transferrable back to the stronger language.

There is an interesting parallel. A similar situation exists for mathematics. In schools and universities, mathematics is both taught as a separate subject and taught by subject specialities such as biology physics and chemistry. I have documented in www.scientificlanguage.com/adult11a/lifelong.pdf that I can remember finding statistics (taught in mathematics classes but needed in biology) very difficult, so the biology teacher took us in hand and taught them to us in a way that made them clear. Similarly, the Genetics teacher at university taught us the statistics we needed - not the mathematicians.

Both mathematics and English are servant subjects. They exist as distinct specialities, but their main role is when used by others. Skills that should ideally be taught in the first language/primary discipline are often taught in the second language/secondary discipline.

8. How can the English teacher cope with specialised topics?

a. The gaps in the English teacher background can be used to an advantage.

In Scenario one, advanced topics can be used, but the focus can be on the intermediate English needed by the students. Fortunately for the language teacher, there is a lot of basic and intermediate English in a specialised text. For instance, there are various ways of identifying the words belonging to the first 1000 word families, and it is these basic English words and structures that can be practised in the lesson.

I have also shown that the mixed, semi-technical words in which a word has a technical sense and a common sense are a major problem to the learner - they are much more of a problem than the specialised words. see

www.scientificlanguage.com/esp/terminology.pdf .

Useful programs/sites for identifying word difficulty

My favourite program is called Range, by Paul Nation.
<http://www.victoria.ac.nz/lals/resources/range.aspx> Please make sure to read the readme file. This program is very powerful, but runs under dos. To start it, unzip the program into a new directory, then find the exe file, right click it, and choose the option to send a shortcut to the desktop. In this way you will have an icon on your desktop. There is a version for Windows.
http://www.antlab.sci.waseda.ac.jp/antwordprofiler_index.html It even has video tutorials. All these programs are free. As well as being used for research, they allow a text to be marked, word by word, for level of language.

The online version is found here <http://www.lex tutor.ca/vp/eng/> and it is very simple to use. You copy the original text to the clipboard, then pasted it into the box. Press submit, and study the output.

I presume the English teacher knows the common senses of the mixed words. Therefore, whenever they see common words used in a technical way, they can teach the common meanings - which may not be known to the learner. In turn, the learner-specialist can try to explain the technical words to the teacher. The effort to explain them will be useful language training. In this way, **problem words become opportunities for language growth.**

b. The language teacher can teach content

I have suggested in www.scientificlanguage.com/esp/commonground.pdf the several areas where a language teacher can teach content. They include history, biography, news, ethics and economics. I want here to stress one important area: they can bring recent items of news to the classroom. For instance, I have written a course of English for first year undergraduate medical students. One major theme is that of hygiene and hand washing. On 26 November I just happened to see an item on the BBC about a new way of cleaning the hands, equipment, and surfaces, using 'plasmas'. The BBC provided the link to the New Journal of Physics.

If I were teaching I would then have a news source, and journal articles to bring to the class. The students themselves could help me to understand the content. For a more detailed discussion of this problem see www.scientificlanguage.com/esp/content.pdf.

9. Elaborate, do not simplify. Provide language expansion, provide repetition and redundancy.

This point is made by Doughty & Long (2003) in an excellent article discussing the principles of Computer Assisted Language Learning. Instead of simplifying text, they suggest that learners are provided with elaborations. I understand this to mean repetition in various ways - explanatory comments, footnotes, exercises, and language training in which synonyms are provided, different sentence structures used, etc.

10. Should texts be simplified?

We need to select texts which do much more than repeat what students already know in their other languages. We need to bring something **new** to the classroom. The material should enrich the knowledge the students already have. I have suggested several areas where this is possible in a separate paper. www.scientificlanguage.com/esp/commonground.pdf. These include biography, ethics, and history. Recent advances in a field which are too new to get into the textbooks and subject courses are also highly relevant, especially since they are often reported by many different media at many different levels of assumed expertise. to see which are the most popular.

11. As Gilmore (2007) points out, in some areas, such as business, non-standard English is becoming acceptable. This is in the whole context of World Englishes, and includes the recognition that most of the English spoken in the world is spoken by non-native speakers. In particular, most business is conducted by second language speakers of English. Therefore, is it legitimate to use good examples of second language English as authentic material for the classroom? In my view, the case is very complicated and far from clear. Students usually want native speaker texts as examples to study and imitate. But, may be students need to be trained to recognise and understand authentic good second language English texts, while still aiming to produce material which is closer to the native speaker norms.

12. Use authentically long authentic texts.

I disagree with Doughty & Long (2003) when they say (p59) that authentic texts are usually too complex for all but very advanced learners.

- a. Even someone totally ignorant of a language can often read for understanding**
I do not know a word of German. But when in Germany I routinely study the adverts for electronic and computer equipment. Adverts which have some prose, with a description, list of features, etc, are usually the ones I prefer. My subject knowledge, plus language skills, plus similarities between German French and English, means that as an absolute beginner I can read such material.

b. It all depends on what the learner is expecting

When I read a specialised text in my speciality I do NOT expect to understand every word, or always to be able to follow the argument. I frequently read a whole article to find one sentence of information that is interesting to me.

c. Abstracts are often dense

Abstracts are an easy choice of lesson material: they are plentiful, largely follow predictable structures, are authentic, and are conveniently short. But there are problems with using Abstracts alone - without the accompanying text.

I as a specialist often find that the Abstract is the densest part of the text. Abstracts are short, but, they bear the same relationship to the text as do newspaper headings to the columns of story. It is well known that newspaper headings are frequently difficult to understand for the non-native speaker. In a similar way, Abstracts are often very dense. But because I know my way around abstracts and the format of an article, I can speedily jump to the article section that meets my needs, or which elaborates the information in the abstract.

If we only provide learners with short texts, we miss out on the essential training and practice of the global skills that they need, and the global clues that help a student to interpret the text. **Students need practice in extracting relevant meaning from a long text.**

A similar line of reasoning applies to listening. An easy way to understand this is to consider the different lengths of news bulletins available on the BBC. The one-minute news bulletin is notoriously fast and difficult, and requires that one hears clearly every key word - especially when the subject is introduced. It also helps to have been following the news therefore to have some background knowledge as to what to expect.

The five minute news suffers in a similar way. When Short Wave transmissions still functioned, I would frequently turn on the radio and find myself in the middle of a story. Often the country name was not repeated, and I heard, and understood, news about a country, whose name I frantically tried to guess and frequently failed. But at least I could usually grasp the story.

In addition, in listening, it can sometimes take a minute or more to accustom the ear to the accent of the speakers. Even native speakers sometimes find this difficult: how much more so second language speakers.

Paradoxically, longer texts can sometimes be much easier to understand than shorter texts.

Language tasks must be authentic.

Most of the debate on authenticity has entirely missed this important point. It is not enough to choose authentic texts - **authentic activities must be used.**

13. Use authentic purposes and authentic tasks for reading/listening

Few specialists read a whole book, or all an article. Fewer still read from the beginning to the end. High language skills includes the ability to move fast through a document, picking out, marking for closer reading, linking with other material, and otherwise interacting with the text. I routinely take a pile of research articles, read through and evaluate them and put a short note on the cover page as to what was interesting, where it should be filed, and for what purposes I can use that information eg lectures, research etc. Frequently material is thrown away - the initial read of the title and abstract that led me to print the article proved disappointing. It is this sort of skill that the postgraduate should have, and the undergraduate probably does not yet have, which need teaching and exploiting in the classroom.

14. Examples of authentic activities

a. Summarising

One MA student observed that ESP students were rarely requested to summarize a text's content or prepare project papers based on extensive reading. Yet both of these are authentic activities.

b. Presenting news and summaries orally

Apart from classroom discussion, involve learners other (authentic) classroom activities which integrate reading with speaking.

c. Inferencing questions

It is vital that course writers and teachers do not just concentrate on the students explaining the text. We need to make a major effort to **strengthen the inferencing skills of our students**. For this a global view is frequently needed, since the parts needed for the inferencing may well come from two or more paragraphs, and these paragraphs can be widely separated in the text.

Inferencing questions are easier to set in authentically long texts.

When I have explained this principle to my students, I have found that many of them do not know what inferencing questions are. Therefore I will summarise here. Inferencing questions are when valid implications or extensions are drawn from a text. For instance, the assumptions might be inferred, or an argument might be extended, or conclusions drawn that are not stated explicitly in the text. Often, inferencing means combining material from two or more parts of the text. There are many websites that teach this subject. When I looked I liked Chikalanga 1992 for a helpful summary. It should be

noted that inferencing questions are an important part of the American entrance examinations for those intending to do a Masters, such as the GRE and GMAT, and googling “inferencing questions gmat” will find plenty of helpful sites, such as <http://www.flgmat.com/critical-reasoning/gmat-inference-questions> (accessed 23 February 2010) These sites are useful because there is an ample supply of authentic material which tests the inferencing skills of native speakers, and they provide many examples with explanations of inferencing.

d. Giving reasons for the meaning they have guessed for a word or phrase

It is all too easy to set questions which require students to guess the meaning of a word, and the main criteria for success are how close they have come to the real meaning. Words can easily be translated or glossed (explained and not translated). The real work is in looking at the reasons, and correcting the reasoning. This work is similar to adults learning advanced first language.

e. Read in English and summarise in the strong language

In some ESP situations this may well be an appropriate authentic activity. When our students are going on to do research in for instance French or Arabic, and they have references in English, they need to be able to summarise them in the stronger language. Someone who is employed in business may well be required to read or listen to something, and present the main points in the stronger language to the employer.

f. Outlining

The ability to outline a text is an ability that is essential for all academics and many other professionals. It is an ability that is tolerant of language that is not fully understood. In other words, to outline properly, it is not necessary to understand every word, phrase or sentence. But to do so properly requires that the logic of the text is understood. The very act of outlining can help someone understand a text, and in particular can help them to follow, to make explicit, the line of reasoning. When faced with a difficult text, in any language, within or outside my expertise, I routinely turn to outlining as a tool.

g. Explaining technical ideas in non-technical language

Experts frequently have to explain their ideas to a wider audience - of other experts, or to an audience of non-experts. Teachers are doing this all the time. Therefore, this task of explaining in easier language is authentic, and common, and is a suitable task for our students.

15. Use a LOT of authentic text

Gilmore (2007:111) points out that “Authentic material is likely to expose learners to a wider variety of grammatical and lexical features but with less frequency than contrived input specifically designed to highlight particular target language”. The answer is to use a LOT of authentic text - a lot more than the small passages traditionally studied in depth.

This is likely to meet with resistance from students who are used to working on small texts, and expecting to understand and translate every single word. It means providing many examples of the authentic texts they need to be interacting with. It will mean using some of these texts for detailed study and some of them for activities such as find the main point.

16. Meaning and form

Gilmore also points out that learners are struggling with both meaning and form simultaneously. The usual answer is to allow students to focus on meaning first, then work on the form.

This is actually similar to adult First Language Acquisition, as explained www.scientificlanguage.com/adultl1a/adult-l1-acquisition.pdf and www.scientificlanguage.com/adultl1a/lifelong.pdf

Adults when they study medicine will be bombarded with new forms and new meanings, and may well find it difficult to understand the meaning until they have learned the new words (the forms) but the forms are not easily learned until they have learned the meaning. This really requires the effort of working on both problems in parallel.

17. Use difficult authentic texts, but vary the support and language tasks

Gilmore (2007:109) points out that authentic texts can be adapted to different language levels by varying the tasks. At this point, the goal of authentic tasks may have to be sacrificed for the benefits of using authentic texts.

Conclusions

It is much easier nowadays to find authentic material that is specialised in content but not advanced in language. With the internet there has been an expansion in the genres, and a trend towards less difficult English. Difficult topics are possible if the English teacher is willing to set exercises which ask the student to explain them. It is far better to elaborate than to simplify. We should be providing authentic activities (instead of the traditional activities like Cloze tests) as well as authentic texts.

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