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Overlapping of ESP/EAP and content courses revisited

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ABSTRACT

This paper deals with some key issues in a controversial topic, that of the existing overlapping between ESP/EAP courses and simultaneously-run content courses. Some examples are provided and analyzed to be aware of the need of ESP/EAP practitioners to have a fairly deep knowledge of those technical matters they have to deal with in order to be as genuinely communicative as possible. Later on, a list of principles for designing successful ESP/EAP courses is presented and justified. After putting into practice a communicative approach founded on those principles for a period of five years, the opinion of those students who have taken two ESP/EAP courses was gathered –an *ad hoc* questionnaire was developed for the purpose–. Data are analyzed to hypothesize the long-run correlation between applying the above mentioned principles and the positive opinion of students on their teachers when those principles are applied at university level.

Keywords: ESP/EAP courses vs. content courses, ESP practitioners, effective technical communication

1. Introduction

In this paper, the overlapping between English for Specific Purposes (ESP) or English for Academic Purposes (EAP) courses at university level and their connection with the syllabuses and reading lists of simultaneously-run content subjects is revisited.

ESP can be divided into EAP and EOP (English for Occupational Purposes). Moreover, the main branch of EAP is EST (English for Science and Technology) –the oldest branch of ESP. EAP is concerned with those communication skills in English which are required for study purposes in formal education systems (Jordan, 1997). Then, ESAP (English for Specific Academic Purposes) refers to the language and associated skills that students need to undertake in higher education through the medium of English. Most ESAP courses are “a mixture of direct teaching, managing pair and group work, and assisting students to learn by means of a variety of resources” (Jordan 1997, p. 122).

ESP/EAP courses have been organized in Western Europe –at different rates in different countries– for the last 50 years approximately. On the other hand, content-based instruction (CBI) in English is a relatively younger experience, at least in the most southern parts of Europe. ESP is one of the applications of CBI, which focuses on the teaching of academic English through content knowledge. Language learning and content of subject matter can be brought together because a foreign language is most successfully acquired when learners are engaged in its meaningful and purposeful use. The integration of language

and content involves the incorporation of content material into language classes. In this approach to L2 learning both cognitive and socio-cultural processes are at work together (Mitchell and Myles, 2004). Content can provide a motivational and cognitive basis for language learning since it is interesting and of some value to the learner (Kasper, 1997; Brewster, 1999). In fact, Kasper (1997) also supplied quantitative evidence that such students gain a performance advantage over students who are exposed to non-content based ESP training and that they maintain it in the following years.

Due to the role English plays around the world, it is not surprising that a substantial and growing number of colleges choose English-medium instruction at tertiary level. Moreover, since the Bologna Declaration provides a framework for higher education across Europe, many universities in the non-English speaking countries in Europe started offering English-medium programs to remove language obstacles and increase student and staff mobility (Radu and Nicoara, 2006). The main aim of students when enrolling in this type of courses is to enhance their employability and increase their opportunities for professional mobility.

Both in Great Britain and in the US, where CBI/ESP is largely restricted to English as a Second Language (ESL) programs, content teachers teaching ESP classes is not very common. This is largely an overseas phenomenon, but the US and Great Britain do not seem to be immune to it. In fact, when ESL teachers make attempts to learn more about a content program for the purpose of establishing a CBI/ESP course, sometimes content professionals see the course as an opportunity for expansion.

However, several problems emerge when content faculty teach these courses, and their problems occur based upon a lack of practical knowledge of ESL methods and experience teaching ESL students: Various and frequent comprehension checks, interactional adjustments, increasing the use of nonverbal gestures and materials, developing and fine-tuning EAP skills, writing important information on the board and increasing board usage, limiting monologues, controlling syntax, decreasing use of idioms and colloquial phrases, and adjusting voice volume, speed, and articulation are all new issues for the first-time content teacher.

Based loosely on Shulman's (1987) domains of knowledge for teaching, the following should be included: knowledge of subject matter content, knowledge of general pedagogical principles and strategies, knowledge of educational

contexts, goals, purposes and values. ESP/EAP teachers also need to have a great deal of flexibility (Dudley-Evans and St John, 1998; Jordan, 1997).

Some of the most prominent and notorious scholars within the field of linguistics have always defended that for being a competent ESP practitioner [a term used by Dudley-Evans and St John (1998) instead of 'teacher' to emphasize that ESP work involves much more than teaching], it is not compulsory or even necessary to be an expert in the content matter you deal with, since one can either consult a colleague expert in the field or ask him/her for deeper collaboration. A good example of this viewpoint is provided by Dudley-Evans and St John (1998, p. 13): "the teacher is not in the position of being the 'primary knower' of the carrier content of the material".

It seems to be obvious that when the goal is fostering student understanding and meaningful learning, the demands on a teacher's content knowledge intensify since in an ESP/EAP class students expect to be shown how the subject-matter content is expressed in English. This issue has always aroused a lot of controversy and as Widdowson (1993) states, whenever we open our mouth to speak, take up our pen to write (or our keyboard to type) make a bid to focus the recipient's attention on what we mean in the most effective way possible. In other words, we try to be as specific as we can about the point we want to make. In fact, the English being used in this paper is designed to serve a specific purpose. This makes it communicative. In such a view, the S and P of ESP express what communication in English in general is all about.

People make specific use of the resources of a language to design utterances (spoken or written) which will achieve their intended purposes. When we speak, proper words must be located in proper places if we expect communication to be effective. This means that we refer to propriety in terms of the words themselves, their proper places in grammatical construction, and their appropriate placement in context.

The rationale for ESP/EAP at university level wishes to implement language instruction taking into account specific educational needs (Dudley-Evans, 2001). These didactic aims can be fostered by content-based instruction, an approach that enhances both language acquisition and academic success (Kasper, 1997; Song, 2006) by the incorporation of content material into language classes (Kavaliauskiene, 2004). Cross-curricular awareness and specific knowledge are broadened in this way.

The matching of language and content has a high face value in motivating students in English as a Foreign Language (EFL) contexts, but this implementation opens the way to “the ESP teachers’ subject knowledge dilemma” (Wu and Badger, 2009) since ESP/EAP professionals have to tread specialist paths, dealing with areas often outside the remit of language teachers as their training usually revolves around English Language Teaching (ELT) practices.

This dilemma could be focused on the other way round. Subject teachers are supposed to use the language (specific or not) at a level of linguistic accuracy and adequacy similar to the language teacher since students do not distinguish between them, at least unconsciously, and all they expect is “the teacher” to be as communicatively efficient as possible.

Within the following section, some examples from different areas are presented to illustrate the difficulty for ESP/EAP practitioners to reach high standards of linguistic accuracy and adequacy when at a tertiary level.

2. Dealing with specific topics and being fully communicative

Apparently naïve sentences may carry a great deal of technical information in them and one may have to make important efforts to understand them or to become fully and genuinely communicative (both from the point of view of speaker/writer and listener/reader). To illustrate this message, the following examples from different areas have been included since they may help us to be aware of the importance of having a good command of the subject (professional/technical/scientific expertise), in order to produce grammatically and technically or scientifically correct utterances and, consequently, generate genuine communication in the classroom.

- “Water is a weak electrolyte”

This sentence would be differently communicative depending on the specific knowledge of the listener (and speaker!). What is an electrolyte? And a weak electrolyte? A chemical engineering student is supposed to fully understand the message. Students from other branches of engineering may have some under-

standing difficulties. Finally, public in general will have serious difficulties to get the whole message. ESP/EAP practitioners may *a priori* be closer to this last group. If so, s/he will have to “learn” about the tough topic. The following description is easily available:

An electrolyte is any substance containing free ions that behaves as an electrically conductive medium. The most typical electrolyte is an ionic solution, but molten electrolytes and solid electrolytes are also possible. Furthermore, some gases may act as electrolytes under conditions of high temperature or low pressure.

An ion is a dissolved substance, e.g. sodium chloride (ClNa or common salt) in water. The more free ions, the more conductive it is (free electrons!). Therefore, clean water with nothing but pure water in it will not conduct electricity well at all. But if you dissolve sodium chloride in it, it will conduct very well, hence strong and weak electrolytes.

- “Demand was relatively elastic”

The term demand (in contrast with supply) is a term most literate people can understand. However, the term “elastic,” as it is used in this context, is connected to the concept of elasticity but not exactly with the meaning provided by, for example, the Oxford Advanced Learner’s Dictionary [the quality that something has of being able to stretch and return to its original size and shape].

Price elasticity of demand (PED) is a measure used in economics to show the responsiveness, or elasticity, of the quantity demanded of a good or service to a change in its price. More precisely, it gives the percentage change in quantity demanded in response to a one percent change in price (holding constant all the other determinants of demand, such as income).

In general, the demand for a good is said to be *inelastic* (or *relatively inelastic*) when the PED is less than one (in absolute value): that is, changes in price have a relatively small effect on the quantity of the good demanded. The demand for a good is said to be *elastic* (or *relatively elastic*) when its PED is greater than one (in absolute value): that is, changes in price have a relatively large effect on the quantity of a good demanded.

- “At 900 rpm the crankshaft rotates one degree in 0.18519 milliseconds”

In this sentence, some knowledge of mechanics is necessary. More specifically, engines and the way they work should be minimally familiar to us. The abbreviation rpm (revolutions per minute) is used as a measurement of the speed of an engine (to be more precise, its crankshaft), or any other turning device, and describes the number of turns the crankshaft does in a minute. Moreover, the term degree also requires some basic knowledge of mathematics (not temperature!) since a circle is usually divided into 360 equal parts and these parts are called degrees. Finally, milliseconds are a fraction (one thousandth) of a second but not everybody would get the answer right.

The linear movement of the pistons in common internal combustion engines is converted to a rotating movement via a connecting rod and a crankshaft. The crankshaft turns 360 degrees in one turn (revolution). Therefore, $360 \text{ degrees} \times 900 \text{ rpm} = 324,000 \text{ degrees per minute} = 5,400 \text{ degrees per second} = 1/5400 \text{ of a second per degree} = 0.00018519 \text{ seconds or } 0.18519 \text{ milliseconds per degree}$.

- “The future of household lighting will soon be the wide spread adoption and use of white energy efficient LED light bulbs”

LEDs are becoming familiar to most of us and we see them as small, brilliant-light-emitting bulbs which, in group, provide an amount of light similar to or even higher than conventional light bulbs. We may even know that their cost is relatively high but they consume a lot less than traditional bulbs and the heat they generate is also a lot less. But where does this acronym come from? [LED (Light Emitting Diode)]. Our guess about emitting light was correct, but new questions may arise. What is a diode? In electronics, a diode is a two-terminal electronic component with asymmetric transfer characteristic, with low (ideally zero) resistance to current flow in one direction, and high (ideally infinite) resistance in the other.

The operational life of current white LED lamps is 100,000 hours. This is 11 years of continuous operation, or 22 years of 50% operation. The long operational life of a LED

lamp is a stark contrast to the average life of an incandescent bulb, which is approximately 5000 hours. If the lighting device needs to be embedded into a very inaccessible place, using LEDs would virtually eliminate the need for routine bulb replacement.

There is no comparison between the cost of LED lights vs. traditional incandescent options. With incandescent bulbs, the true cost of the bulb is the cost of replacement bulbs and the labor expense and time needed to replace them. These are significant factors, especially where there are a large number of installed bulbs. For office buildings and skyscrapers, maintenance costs to replace bulbs can be enormous. These issues can all be virtually eliminated with the LED option.

- “Creatinine is detectable in amniotic fluid from 20 weeks’ gestation onwards”

In pregnant women, the concentration of creatinine rises progressively as term approaches, so measuring amniotic fluid can give an approximate estimate of fetal maturity, to within 4 weeks.

Creatinine is a break-down product of creatine phosphate in muscle, and is usually produced at a fairly constant rate by the body (depending on muscle mass). Creatine phosphate is a molecule that serves as a rapidly mobilizable reserve of high-energy phosphates in skeletal muscle and brain.

Amniotic fluid is a clear, slightly yellowish liquid that surrounds the unborn baby (fetus) during pregnancy. It is contained in the amniotic sac. While in the womb, the baby floats in the amniotic fluid. The amount of amniotic fluid is greatest at about 34 weeks (gestation) into the pregnancy, when it averages 800 mL. Approximately 600 mL of amniotic fluid surrounds the baby at full term (40 weeks gestation).

The amniotic fluid constantly moves (circulates) as the baby swallows and “inhales” the fluid, and then releases it. The amniotic fluid helps: 1) The developing baby to move in the womb, which allows for proper bone growth; 2) The lungs to develop properly; 3) Keep a relatively constant temperature around the baby, protecting from heat loss; 4) Protect the baby from outside injury by cushioning sudden blows or movements.

- “The coefficient of kinetic friction between a refrigerator (mass 98 kg) and the floor is 0.18, and the coefficient of static friction is 0.32. If you apply the minimum force needed to get the refrigerator to move, what will the acceleration then be?”

This is a typical content-course task for engineers, for example, in their freshman year. If the task is analyzed in class, domain-specific knowledge is expected from the ESP/EAP practitioner. The differences between both types of friction and concepts such as acceleration seem to be important for communication to be effective.

Static friction coefficient = 0.32

mg (weight) of refrigerator = $98 \text{ kg} \times 9.8 \text{ m/s}^2 = 960.4 \text{ N}$

minimum force required to start refrigerator to move = $960.4 \text{ N} \times 0.32 = \mathbf{307.33 \text{ N}}$

Coefficient of kinetic friction = 0.18

minimum force required to keep refrigerator moving at constant speed = $960.4 \text{ N} \times 0.18 = \mathbf{172.87 \text{ N}}$

Now, the question is “what will the acceleration be if the force of 307.33 N still applies?”

$307.33 \text{ N} - 172.87 \text{ N} = \mathbf{134.46 \text{ N}}$ (resultant force)

force = ma $\rightarrow a = \text{force} / m$

$a = 134.46 \text{ N} / 98 \text{ kg} = \mathbf{1.37 \text{ m/s}^2}$

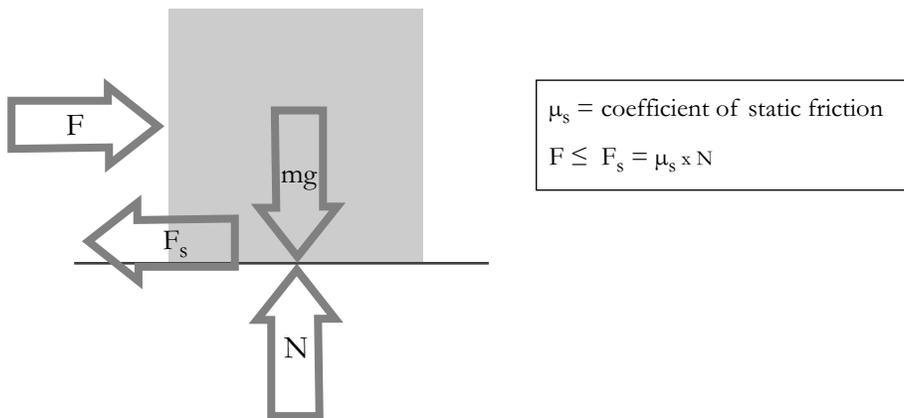
This is the answer, but do we know why? Some concepts must be mastered:

1) If you try to slide two objects past each other, a small amount of force will result in no motion. The force of friction is greater than the applied force. This is static friction. If you apply a little more force, the object “breaks free” and slides, although you still need to apply force to keep the object sliding. This is kinetic friction. You do not need to apply quite as much force to keep the object sliding as you needed to originally break free of static friction.

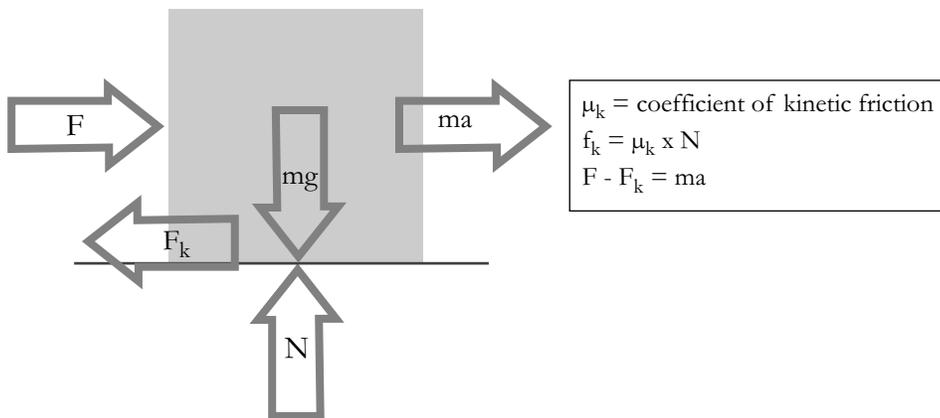
2) The force of friction is a force that resists motion when two objects are in contact. If you look at the surfaces of all objects, there are tiny bumps and ridges. Those microscopic peaks and valleys catch on one another when two objects are moving past each other. This explanation is a little simplified. There are other processes at work, including chemical bonding and electrical interactions.

3) Normal force is the force at which one surface is being pushed into another. The higher μ is, the more force resists motion if two objects are sliding past each other.

4) The force of Static Friction keeps a stationary object at rest



5) Once the force of Static Friction is overcome, the force of Kinetic Friction is what slows down a moving object.



6) Some common values (approximate) of coefficients of kinetic and static friction:

Surfaces	μ (static)	μ (kinetic)
Steel on steel	0.74	0.57
Glass on glass	0.94	0.40
Metal on Metal (lubricated)	0.15	0.06
Ice on ice	0.10	0.03
Teflon on Teflon	0.04	0.04

- “The building collapsed due to shear-compression failure in several reinforced-steel concrete beams”

To fully understand this sentence, a certain command of civil engineering concepts is necessary. A basic meaning of “beam”, according to meaning number two in the Oxford Advanced Learner’s Dictionary, is: long piece of wood, metal, etc. used to support weight, especially as part of the roof in a building. “Concrete” is a building material that is made by mixing together cement, sand, small stones (aggregates - coarse) and water. The principal component that makes concrete possible is cement, which has developed into a well-engineered and processed material. A simple technical meaning of “shear” (available in most dictionaries) is: to break under pressure; to cut through something and make it break.

Reinforced concrete is concrete in which the undesirably low tensile strength and elasticity of the concrete component are averted by including reinforcing structures of high tensile strength in the mass of the concrete. Such structures usually, though not necessarily, are reinforcing bars of steel and also usually, though also not necessarily, are embedded passively in the concrete before it sets. Such reinforcing structures are designed to take up working stresses that otherwise would have placed the concrete mass under unacceptable tension.

Ultimate tensile strength (UTS), often shortened to tensile strength (TS) or ultimate strength, is the maximum stress that a material can withstand while being stretched or pulled before *necking* (a mode of tensile deformation where relatively large amounts of strain localize disproportionately in a small region of the material), which is when the specimen’s cross-section starts to significantly contract. Tensile strength is the opposite of compressive strength.

Concrete has relatively high compressive strength, but much lower tensile strength. For this reason it is usually reinforced with materials that are strong in tension (often steel).

It can be stated that concrete is elastic but the elasticity is a way to characterize the mechanical response of the material body for applied stresses that stay within the linear regime. Very large stresses, which are high enough to fracture the material, cause non-linear deformations. Concrete very rarely undergoes a crushing or compression failure.

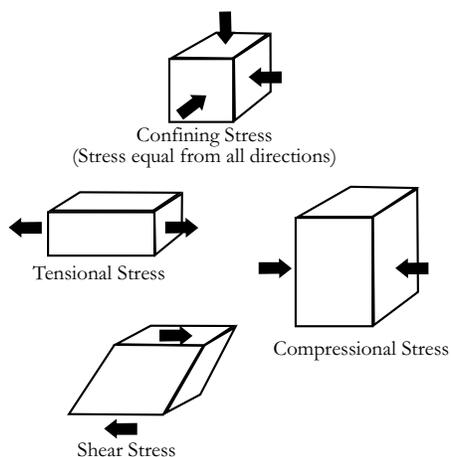
With the selection of materials available today, it is possible to design tailor-made concretes for any type of construction.

Under service loading, the upper half of beams is under compression forces (compressional stress), while the lower half are under tension forces (tensional stress). Under the latter, concrete is relatively weak and steel is relatively strong. Moreover, tensile strength of concrete in shear is very weak. For these reasons, steel rods are embedded mainly along the lower half of concrete beams (reinforced-steel concrete beams).

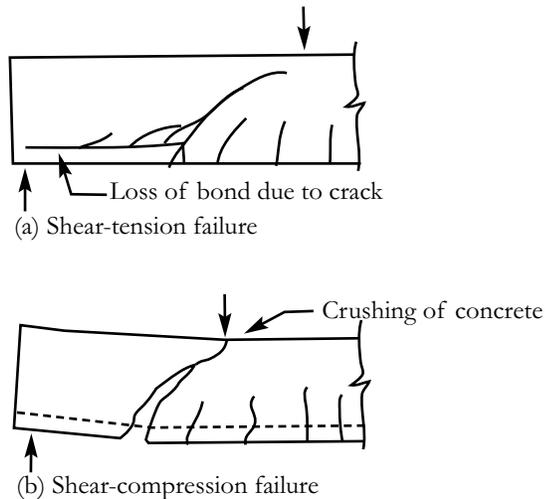
Beam shear is defined as the internal shear stress of a beam caused by the shear force applied to the beam.

For a strong and durable construction, the reinforcement needs to have the following properties: 1) High strength; 2) High tensile strain; 3) Good bond to the concrete; 4) Thermal compatibility; 5) Durability in the concrete environment.

The following illustrations describe some of these basic concepts:



Finally, this new illustration helps us understand what shear-compression failure is.



To sum up, the technical complexity of these texts has nothing to do with their grammatical complexity. In the examples provided, we have seen sentences with an extremely basic grammatical structure but with a technical level beyond the limits of most linguists. What any wise ESP/EAP practitioner should do is to use in the classroom the additional information provided below each sentence –all or just part of it–, for learning purposes both for the students and for ourselves!

3. Some principles for developing successful ESP/EAP courses

Although some of the principles included hereafter are controversial, they apply to intermediate and advanced students of English. The number of items in the list can be increased depending on our own views and available teaching time.

This list has been included to produce as much discussion as possible. Different viewpoints will enrich the list and add plenty of subtle nuances. However, this way of focusing on the matter may be very positive if we consider long term results.

1. Content difficulty should level their content courses or be just slightly below

According to Belcher (2004) ESP is an attempt to help learners accomplish their academic and occupational needs and goals so, one cannot expect engineering students, for example, dealing with high school physics. They need university level content in all subjects, ESP courses included. And if this means that the English teacher cannot understand the science or specific technology, s/he will have to learn it.

The so-called task-based approach can be advantageous in such a context since students are relatively free of language control. That is, they use all their language resources rather than just practicing a pre-selected item. A natural context is developed from the students' experiences with the language that is relevant to them. Consequently, they have a much more varied exposure to language (lexical phrases, collocations and patterns, language forms). Moreover, apart from being enjoyable and motivating, this approach is a strong communicative approach where students spend a lot of time communicating.

2. Content should be useful to the students

Harding (2007) emphasizes the use of authentic materials and provides some old and new guidelines for ESP teachers. These three guidelines have been picked out to illustrate this point:

- Exploit authentic materials that the students use in their specialism or vocation.
- Motivate the students with variety, relevance, and fun.
- Try to take the classroom into the real world that the students inhabit, and bring their real world into the classroom.

This does not mean that the texts used should always be complicated: there are plenty of genres –blogs, the latest news, etc.– where the content is new and interesting enough to cover the students' needs, for example, to reinforce basic language.

3. The material used and the tasks suggested should be authentic

Authentic materials have been many times discussed as beneficial in teaching English for different skills. However, for settings other than general English, these materials may also work as a motivating feature and as a link between students' general knowledge of language and their professional language needs. Authentic materials, being a part of the real world, can serve as excellent resources for introducing language in its real form to ESP learners whose final goal in taking ESP/EAP courses is to communicate properly in real-world contexts. Some of these materials which ESP/EAP learners encounter in their professional settings include articles as a part of their specific filed literature, product labels, advertisements, brochures, newspapers, reports, literacy excerpts, audio recordings, and videotapes and best of all internet which unlike other sources is updated continuously (Haley and Austin, 2004; Berardo, 2006; Crossley et al., 2007; Horwitz, 2008).

This means no more school level material or trivial tasks since, for obvious reasons, this would demotivate, and even humiliate in some cases, the students. However, if the ESP practitioner cannot cope with this content, a subject specialist good enough in English who can should be found (not to replace the former, but to collaborate with her/him).

4. Long texts for listening and reading should be used

Authenticity has been viewed diversely by different scholars over the years. According to MacDonald et al. (2006), if there is a correspondence between the texts used in the classroom and types of texts used outside the classroom then it is possible to call such texts authentic. Mishan (2005) prefers to set some criteria for authenticity rather than defining the term. According to her, authenticity is a matter of: 1) Provenance and authorship of the text; 2) Original communicative and socio-cultural purpose of the text; 3) Original context (e. g. its source, socio-cultural context) of the text; 4) Learning activity engendered by the text; 5) Learners' perceptions of and attitudes to, the text and the activity pertaining to it.

Most authentic texts are NOT short. Short texts are harder to interpret than long texts because short texts lack discourse clues and they lack redundancy.

Our objectives should be to train students to handle authentic texts, which are usually several minutes long (speech) or at least two pages of written text. Long texts are both more authentic, and more natural, and train students to cope with repetition and redundancy. In short, higher order skills can be trained only with longer passages.

5. Methods should draw inspiration from content teachers

Communicative competence (Gilmore, 2004) does not only comprise the knowledge of the language but the need for contextualized communication. Then, the comparison to be made is with how L1 learners advance and learn a new technical subject in L1. Therefore, ESP should draw inspiration from the content teaching methods in L1 (which frequently have high demands on language).

Nevertheless, ESP courses are often discussed in terms of a two-way distinction between ‘wide-angled’ and ‘narrow-angled’ designs. The term ‘wide angled’ is used to refer to courses for learners targeting a broad work place, professional or academic field. The term ‘narrow angled’ is used to refer to courses for learners targeting one particular work place, professional or academic environment. Both options will have advantages and disadvantages.

6. Elaborate, but do not simplify

Elaborated texts retain the original complex authentic text, with all the associated context, redundancy, and language clues. They add extra supporting material, and this elaboration is much more than translations or synonyms. It can include supplementary material and extra extended explanations. In short, elaboration should not lead to simplification. Rather, the material is repeated in another linguistic form.

7. Train students to handle difficult texts

Just as in advanced L1, we should not expect students to understand every idea or word. Native speaker academics frequently do not understand every single

idea or word in a text. Yet they are capable of using the texts. Therefore, the language teacher should not expect students to fully understand every text.

Lack of background knowledge, unfamiliar ideas and vocabulary can discourage ESP practitioners (in the same way that any other reader) when dealing with technical texts but if this is the case, interdisciplinary collaboration (and plenty of motivation) may be the best way out. Texts should teach something new and interesting so this collaboration seems to be fundamental. However, students should be taught to extract information from those long and difficult texts but taking into account that the language learning activities themselves should be authentic.

It is well known that language is learned fastest when there is a desire to know, or when there is controversy. The desire to know should affect both students and teacher. The latter should be interested in the subject area (feel curiosity!) and want to learn more. These should seek out subject specialists, show them their work and ask for their feedback (collaboration). Finally, confidence will grow as teachers explore the new subject matter, engage with subject specialists and learn from their learners.

In conclusion, ESP/EAP practitioners must be ready to engage themselves in a hard learning process. Do not forget that lecturers in content subjects (native speakers), do not always understand what they read. But they read for the information they want (scanning and skimming techniques). Therefore, this skill is authentic.

8. Heavy exposure should be the focus – NOT language points

This point derives from the fact that for students from B2 onwards (upper intermediate) there is no obvious progression in language points and grammar. Students should know the main grammatical patterns. They need to practice their skills in acquiring language, picking up the language they need.

Finally, to fight for (an)other subject(s) to be taught in English or at least for (some) compulsory readings in English to be set by content specialists could be a useful tactic. When students really want to understand, when they are encouraged by examination pressure, then they will make the extra effort to learn.

4. Measuring the opinion of university students about their ESP/EAP teacher

All the situations presented so far are highly common in our everyday routine. Our students suffer or enjoy our lessons according to certain personal parameters but their opinions can be measured rather objectively by using *ad hoc* questionnaires and analyzing data with more-or-less-complex statistical tools.

In this section, the opinions of tertiary students about their ESP/EAP teacher are presented and analyzed.

a) Participants and scope

The study was completed in the Basque Country. The participants were engineering students in the 19-26 age range (data collected from students beyond this upper limit have not been taken into consideration because of their exceptionality). They belonged to different branches of engineering (mechanical, electrical, electronic, chemical, and information technology engineering) but the results of the questionnaire did not differ significantly from one subgroup to another. Differences due to sex (male/female) were not statistically significant either. For these reasons and for the sake of brevity, data is presented as a whole.

b) Instrument

Apart from the compulsory questionnaires –developed by our own institutions– our students have to fill in at the end of each term, a specifically-designed questionnaire containing key questions about our teaching was developed 5 years ago. The questionnaires have been completed by different groups of engineering students for the last five years, after having completed two 4.5-credit ESP/EAP courses.

The questionnaire contains 22 questions but only 6 are going to be presented in this paper for their relationship with the topic dealt with. The questionnaire is original, that is to say, it is neither a replica, nor an adaptation of someone else's questionnaire. The range of answers moves from 1 (minimum score) to 10 (maximum score). The expected mean score was obviously as close as possible to the maximum score.

1. *What's your overall opinion about your ESP teacher? (Q1)*
2. *To what extent do you think your ESP teacher masters the subject? (Q2)*

3. *To what extent do you think your ESP teacher SHOULD master content subjects, that is, electricity, electronics, mechanics, chemistry, IT (information technology) in order to be a good ESP teacher? (Q3)*
4. *To what extent do you think your ESP teacher masters your content subjects? (Q4)*
5. *How effective do you think his/ her communication is when the topic develops beyond certain limits due to a discussion on a controversial point? In other words, does s/ he show enough content competence? (Q5)*
6. *To what extent do you think s/ he would be technically and linguistically prepared to teach content courses (in English) from your branch of study? (Q6)*

c) Method

The questionnaires were completed in class. In order to let the students fully understand the process and the questions, prior to ticking the boxes in the questionnaire, a thorough explanation was provided. The answers were anonymously recorded on answer sheets and, later on, statistically evaluated.

d) Evaluation of the results of the questionnaire

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
	86*	74	70	73	43
Q1 – mean/SD	6.63/1.32	6.89/1.26	8.03/1.41	7.27/1.27	7.41/1.19
Q2 – mean/SD	6.58/1.46	7.01/1.38	8.21/1.47	7.63/1.33	7.20/1.34
Q3 – mean/SD	7.93/1.12	7.88/1.24	8.83/1.38	8.02/1.19	8.55/0.98
Q4 – mean/SD	7.04/1.08	7.46/1.19	7.72/1.53	7.29/1.21	7.89/1.32
Q5 – mean/SD	6.84/1.23	6.39/1.17	7.45/1.36	7.26/1.39	7.41/1.21
Q6 – mean/SD	5.78/1.54	6.01/1.32	7.03/1.39	6.87/1.28	7.11/1.20

*Number of answers considered per academic year

Only the arithmetic mean and the standard deviation (SD) have been included since it is easily observable how much variation or “dispersion” exists from the average (mean, or expected value). The low SD values all and every year, and for each single question, indicate that the data figures tend to be very close to the mean. In other words, it can be stated that the mean values for each question represent a fairly general opinion of most students. Then, it can be observed that there is a clear upward trend for most questions along the years. Nevertheless, there is an exception. The results obtained the course 2009-2010 were outstandingly (and surprisingly) good.

The main conclusion of these results is that the opinion of our students has improved these last years because after applying the principles mentioned in this paper, the results the table shows are supposed to be the fruits of great effort and constancy.

5. Concluding remarks

Both language and content area teachers may be frightened at the prospect of integrating language and content instruction, since there is limited attention to language needs in the preparation of content teachers, and limited attention to either the specific discourse of academic disciplines or to the practical concerns of needs analysis, text adaptation, curriculum development, or collaborative teaching in most language teacher education programs (Crandall, 1998).

Fluency in academic English is an inevitable skill for an ESP/EAP teacher to be successful, because ESP/EAP teaching requires particular and sometimes special skills, such as dealing with language input, answering questions on terminology, and listening to lectures and research presentations. Therefore, the main barrier to student and teacher in comprehension of texts or in a collaborative teaching in ESP/EAP settings in general is the lack of functional academic literacy.

Language content and subject content of a given text and content and formal schemas are inseparable. For this reason the ESP/EAP practitioner is supposed to have not only functional academic literacy but also content knowledge of the field. Academic literacy is thus ideological and includes issues of identity, not merely writing techniques and grammar skills (Street 1996, cited in Parkinson, et al, 2007) as in general English courses.

Language teachers lacking functional academic literacy and content knowledge to teach academic English are unprepared to integrate authentic texts, tasks, or tests from content areas in their English classes. Consequently, EFL teachers who have to teach ESP/EAP—and content teachers who have to teach academic English—should get special training to perform well to meet the needs of tertiary level students.

Nowadays, students are increasingly expected to participate in English-medium classrooms for at least some of their academic or professional careers. This situation

entails both the planning of new courses and the preparation of materials. And most importantly, this situation requires language teacher training specifically designed to meet the new language requirements of those who will be engaged in science, technology and industry. The results of our questionnaire tell us that we seem to be a long way off from perfection, but on the right track.

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