

TEACHING FOOD SCIENCE ENGLISH WITH PRODUCT SPECIFICATIONS

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Abstract. *The role of English as the language of international communication asks to redress English language pedagogies to give proficiency new assets. To meet these demands, university language curricula should go beyond the teaching of basic grammar, lexis and vocabulary. They should improve communicative skills and professional competences in line with the international use of English and with the requests of the world of work. This paper wants to discuss how one typical food science written genre, namely Product Specification, can be used to match English language proficiency and disciplinary contents in food science. To this aim, a blue-print describing PDO/PGI Garlics (*Allium sativum* L.) grown in Europe, considered as a typical agricultural product, is presented. The template meets three aims central to English teaching in food science: the outline of the main features of typical food-and-wine products in the target foreign language, the enhancement of presentation skills and the use of specific vocabulary.*

Key words: *Product Specification, PDO/PGI/TSG labels, Food Science English, LSP*

1. INTRODUCTION

The state of the art in English as a Foreign Language (EFL) acknowledges the role played by English as the international language of communication among speakers from different linguistic backgrounds, and for diverse purposes such as academic education and professional intercourses.

In EFL academic settings, English is commonly used in conferences and in lectures offered by visiting professors. It is employed to promote students' international mobility in those exchange study programmes offered by the European Community. In publishing, the number of research papers written in English for international journals or stored *via* open access repositories, attests that English is widely employed by native and non-native speakers as the medium of scientific communication. This use of English as a *Lingua Franca* makes data storage and retrieval easier for professionals from different linguistic backgrounds. It is also an added value in terms of employability. It facilitates workplace and social interactions in the increasingly globalized world of work, where experts from different countries join the same working team and share a common language (Cianflone 2014).

This leading role of English asks to redress EFL pedagogies and to consider university learners not only students but also future skilled experts, capable of interacting with peers from their working communities. The implication for future professionals is twofold. First of all, they will be requested to use English as a contact language; secondly, they will be

asked to code-switch (from their own L1 to English, and *vice versa*) for professional purposes (Cianflone and Coppolino 2011).

To meet these demands, syllabi should redress the notion of English proficiency in view of the global use of this language and should profile EFL lexis and vocabulary accordingly. Learning activities, in fact, should go beyond those wide-ranging skills pertaining to secondary education, where communicative and basic writing abilities are considered adequate for young learners with no clear ideas about their professional careers. In view of the global use of English, basic educational activities - such as text reading, text writing and communicative skills - should be matched to meet specific assets. Language university syllabi should, therefore, consider a top priority the mastering of the written and oral genres employed by experts of a working community.

This paper acknowledges the necessity to meet these pedagogical requests in EFL globalized settings and wants to discuss how EFL proficiency can be developed in one specific educational field: Food Science (FS).

The paper is organized as follows: the educational aims behind the EFL food science syllabus are introduced to describe the competences meaningful to future FS experts; then a specific written and oral genre, namely Product Specifications (PS), is outlined with a blueprint of a typical agricultural product that serves to match EFL to FS contents; the concluding remarks illustrate the EFL gains to be obtained from PSs use.

2. FOOD SCIENCE EDUCATION

Food science is a wide-ranging umbrella term including several interwoven disciplines: from general chemistry to analytical chemistry of food and its constituents, to microbiology, to food technology and food contamination. The field also includes subjects such as human nutrition and human health, quality assessment of food products; distribution procedures; national regulations and, in Europe, common food laws. The implication is that research in these disciplines has a wide-ranging impact on the food industry at large, on the preservation chain, and on preservation methods. It has also an impact on the role played by food experts, asked to certify quality standard on foodstuff made available to the final consumer. The effect is reflected on food as a product, on its quality, on crop improvement, on human health, on animal welfare, and on food packaging (Cianflone 2012). Future food practitioners will work in different sectors. These can be said to range from food production to wholesale/retail distribution, to food inspection and to food evaluation in sectors such as mass catering and gourmet supplies (Cianflone 2010).

In this complex set of interwoven disciplines and sub-disciplines, English plays a pivotal role since research, findings and records are commonly spread in this language. The few available bibliometric data, circumscribed to the situation of Italian academia and of one European institution, have elicited interesting numbers on the impact of English in FS. Figures, in fact, indicate the consistent use of English as the language of election to disseminate findings gained from FS research. The role played by English and the impact of this language on current research, is currently attested at about 97% of the total bulk of published scholarly papers (Cianflone 2012).

The implication for EFL practitioners teaching FS university students is that language syllabi should consider students in two different ways: consumers and producers of texts edited in English. As consumers, they should be able to access domain-specific literature

for study purposes during the university years, namely to sit formal examinations and to gain field-specific competences to be spent once in the profession. As producers they should master professional literature to keep in touch with up-to-date research, results and analytical techniques. Once in the professional arena, qualified experts should interact for professional purposes with an audience made up of native and non-native speakers of English.

The consequence is that EFL curricula should consider proficiency in terms of field-specific expertise in FS areas. To meet the goal of raising awareness on how communication takes place within the FS community, as many genres as possible should be employed to develop textual and linguistic schemata, rhetorical patterns and communicative practices (Cianflone, Di Bella and Dugo 2010).

In FS, several written genres are peculiar to FS research: research articles, short communications, reports and product specifications (PS). Among these, PSs allow the acquisition of field-specific communicative competences in English. Therefore, they should be employed in FS syllabi to let future practitioners function in globalized settings as skilled experts before a multilingual audience.

3. PRODUCT SPECIFICATION

PSs, also called Food Specifications, are the identity card of food products since they serve to stress the nature, the properties, the origin and the method of production of local food products (Cianflone et al. 2010). PSs fulfill several FS educational objectives: to profile a product by stressing how codes of practice are met to warrant quality along the different production steps; to distinguish an original product from items of lesser quality; to certify manufacturing standards.

The European Community has paid attention to food regulations and has promulgated a strict set of rules to label quality in foodstuff and to protect certified food products. To identify “protected” foodstuffs, the European agenda states that the regulatory framework must include the following descriptive items (EEC Regulation 2081/92 and EEC Regulation No 510/2000):

- a. the name of the product and the definition of the geographical area where it is produced or grown;
- b. evidence that the product originates from a defined geographical area;
- c. a description of the specific growing or production practices;
- d. the main physical, chemical, microbiological characteristics;
- e. information on packaging and on distribution.

The European labeling system serves to certify quality products and to give them one of the following quality trade-marks: PDO (Protected Designation of Origin), PGI (Protected Geographic Indication) and TSG (Traditional Specialty Guaranteed). The PDO label describes the specifications of those products that must be produced, processed and prepared within a particular geographical area and with qualities or characteristics exclusive to that area, natural and human factors included; the PGI label describes those products bearing the name of a particular geographical area where the products’ characteristics are attributable to that same area; the TSG label defines the traditional character of foodstuffs or agricultural products by its composition and/or by its production method, resulting from traditional skills often developed along the centuries.

This regulatory framework describes products in details. It, in fact, indicates the product's name and the manufacturing or the production area, to locate the geographical site where it is produced or grown and the relationship with the environment; the organoleptic traits, that is the external and internal features, e.g. shape, pulp, size, colour, and the main nutritional characteristics (of the chemical and microbiological type, such as vitamins and minerals contents); the production and/or selling season, to stress when the product is available to consumers; other relevant information that are of interest to end users, such as growing or production steps (the former refer to agricultural practices, while the latter refer to traditional methods employed to make, say, dairy products) and packaging details, to allow consumers' identification of the product and to distinguish the same from other items available on shelf that do not meet the European quality requirements.

In FS education, the specific peculiarities of PSs can be exploited to meet the EFL global objectives of proficiency in English discussed above. PSs, in fact, assist EFL teachers develop communicative skills, required in the world of work, by means of technical vocabulary rarely found in commercially available teaching materials.

4. DESCRIPTION OF GARLIC AS A HERBAL SPECIES

To exemplify how PSs can be employed in EFL classes, a blue print of garlic is given. It is adapted from a recent monograph (Block 2010) and from the PSs dealing with quality garlic cultivars grown in Europe and published in the European Commission's Website (DOOR), where all quality food products are listed. Five types are acknowledged:

- Aglio Bianco Polesano (PDO), Aglio di Voghiera (PDO) from Italy .
- Ail blanc de Lomagne (PGI), Ail de la Drôme (PGI) and Ail rose de Lautrec (PGI) from France.
- Ajo Morado de Las Pedroñeras (PGI) from Spain.

Garlic was selected for two reasons: it is grown in several countries and it is extensively employed in local recipes and in phytotherapy worldwide. It was also object of the "Garlic and Health Project (2000-2004)", sponsored by the European Community, to enable European garlic growers meet the internal demand for high quality products and to compete on the international level.

The biggest garlic producers are China and India, followed by South Korea, Egypt and Russia (FAO 2012). The six quality cultivars grown in Europe have a consistent economic and agricultural share in the regions interested in this cultivation, and can be considered niche products by European standards. Therefore, the blue-print outlined in this paper will suit EFL needs in different countries.

Garlic (*Allium sativum* L.) is a member of the *Alliaceae* (lily) family, probably first domesticated in Central Asia. The edible part, called bulb or head, consists of several small bulbs or cloves. All cloves are wrapped in one outer and one inner *tunica*. In the most commonly grown *Allium* species both tunics are white, although some cultivars show violet or purple strings, as is the case with *Ail de la Drôme*, pinkish *tunicas*, as is the case with *Ail rose de Lautrec*, or violet/purple cloves, as is the case with *Ajo Morado*.

The two main edible species are: hardneck and softneck. The former is cultivated in colder climates; the latter is grown in milder climates, where it can be grown all year round. The garlic life-cycle, from sowing to harvest, lasts ca. 220/250 days. Cloves are carefully selected and only those in good shape are picked for seed-stock. Cloves, manually-sown,

can be grown closely together, although it is preferable to plant them at a distance of ca. 10 centimetres, thus leaving enough space for plants to mature. When ripe, PDO/PGI garlic is manually-harvested. After the harvest, heads are cleaned from roots and from the outer skin, then they are calibrated and graded. Once graded, garlic is stored to dry, following local praxis. The most common ways of storing this herbal product is to braid bulbs/cloves in strings or plaits of variable size, and to put them in warm-dry places. PDO/PGI garlics can be sold to the final consumer in several formats: braided in strings or plaits, in bunches tied by a special knot – as is the case with the garlic from Spain - packed in cardboard or wooden boxes, in baskets or in plastic nets.

All packages must feature, in legible and indelible characters grouped on the same side of the package, information allowing the packer's or the dispatcher's identification, the nature of the product, the origin of the same, the commercial characteristics and other useful information, e.g. harvest or collection time. The packages must also feature the product's name, the words "protected denomination of origin"/"protected geographical indication" or the acronym "PDO"/"PGI", the product's logo.

As concerns the chemical composition, garlic contains water, proteins, minerals (sodium, potassium, iron, calcium, phosphorus) and vitamins (A, B₁, B₂, B₃, C). It is also rich in sulphur-based essential oils and volatile sulphur compounds (e.g. alliin, allicin, diallyl disulfide, ajoene), responsible, when cloves are cut or crushed, of the persistent and pungent odour and taste.

Garlic offers several pharmacological actions. These include: antibacterial, antiviral, antifungal, antihypertensive, blood glucose lowering, antithrombotic and antiplatelet actions. In modern phytotherapy it is also used to treat hypercholesterolemia and to prevent arteriosclerosis.

Garlic consumption as a food flavoring agent and condiment can be traced back to ancient times, and to date in many of the so called ethnic recipes garlic is commonly used to enhance sapidity or as a dressing agent. In modern times, two factors are associated with the consistent use of this vegetable: the scientifically recognised health-enhancing qualities and the availability in several forms. As concerns the former, garlic has beneficial therapeutic effects in cardio-vascular diseases, as stressed by the EU-funded project cited above. As concerns the latter it is easily available fresh, frozen, and as a dried shelf product. The benefits gained from garlic intake overcome the typical strong taste and the few adverse effects, such as the so called "garlic breath", or allergic reactions due to the ingestion of large quantities.

5. PRODUCT SPECIFICATIONS IN EFL

The educational value of PSs in university settings where English is a foreign language has been acknowledged, together with the benefits offered in terms of English vocabulary and FS contents, in a template describing Sicilian red oranges, adapted from in force regulations stated by the European agenda (EEC Regulation 2081/92; EEC Regulation No 510/2006). Following the European code of practice, the model describes quality in foodstuffs, stressing the features required to characterize food into four interdependent sections: the production area, the main external and nutritional features, the selling season, other specific information, such as growing regulations and harvest time, labelling and packaging details that serve to inform consumers and to make the identification of products easier.

The result is the following PS:

Table 1 Product Specification Template

PDO/PGI Garlics grown in Europe (<i>Allium sativum L.</i>)	
Production Area	Italy, France, Spain (refer to single PSs)
Features	<ul style="list-style-type: none"> a. Bulb or head, consists of 6-14 small bulbs or cloves. Cloves are wrapped in a tunica. The outer tunica is white, while the inner one can be white or of a violet/pinkish colour. b. Rich in water, proteins, lipids, minerals (sodium, potassium, iron, calcium, phosphorus) and vitamins (A, B1, B2, B3, C). Volatile sulphur compounds (e.g. alliin, allicin, diallyl disulfide, ajoene) are responsible of the pungent odour and taste.
Selling Season	Depending on the cultivar (refer to single PSs).
Other (sowing, harvesting, packaging, labelling)	<ul style="list-style-type: none"> a. Cloves are manually-sown and manually-harvested. b. Cloves are graded and calibrated. c. Following local praxis: braided in strings or plaits of variable size; bunched in sheaves; gathered in bunches. d. Following local praxis: sold in plaits or strings; packed in cardboard boxes or in nets. e. PDO/PGI trademarks, product's logo, producer's details, expiry date.

The different sections of the model are organized to highlight the peculiarities of the product. The first section calls attention to the production area, an item of paramount importance in FS practice to stress the link to the place of origin and to its geographical location. It is followed by a unit where the main traits in terms of garlic's external appearance and of the sensory features are sketched. The following two sections delineate details on the selling season, to stress when the product is available to consumers and to highlight the agricultural practices concerning sowing and harvesting.

The benefit this description offers FS students is the possibility to acquire EFL competences related to their field of study and presentation abilities, as well. First of all, the model facilitates the acquisition of domain-specific vocabulary, rarely - if ever - addressed in commercially available EFL teaching materials; secondly, it fosters the exploitation of content knowledge in English. This, in turn, will enhance intercultural skills, thus preparing learners for the global dimension of mobility in exchange study programs or, better, in the labour market.

As can be inferred from the description of garlic given in tab. 1, vocabulary variety is easily reached. This variety includes the different vocabulary types outlined by Nation (2007), namely high-frequency, specialised (academic, technical) and low-frequency. In the model described here, vocabulary ranges from general FS nouns (e.g. *vitamins, minerals*), to specific terms of general use (e.g. *plait, condiment*) to technical terms of general use (e.g. *cloves, tunica*) to highly technical terms (e.g. *alliin, allicin, diallyl disulfide, ajoene*). The template also covers scientific vocabulary made up of terms of Latin origin (e.g. *sulphur*) that are of paramount importance to FS students, since these nouns are frequently met in literature or in professional intercourses. The blueprint also

incorporates nouns and adjectives that form the common FS vocabulary (e.g. *bulb*, *head*, or *volatile* as in “volatile compounds”); highly technical verbs (e.g. *to calibrate*, *to grade*); verbs of general use are also included, together with their correct collocation (e.g. *to braid in strings/plaits*; *to be rich in*).

The benefits offered by the model sketched above are not limited to vocabulary. As a written genre widely employed by FS experts, PSs are also a means to revise EFL grammar and some syntactic rules of English. In the case of garlic, the description of the plant allows EFL teachers to outline the difference between countable and uncountable nouns and to point out the correct use of verbal tenses. As regards the former, students learn how *garlic* can be used in both the countable and the uncountable forms. In the former case, “garlic” in the uncountable form describes the vegetable product as a category, whereas “garlics” in the countable form is used in reference to a specific crop production or to the species cultivated in one country. As concerns verbs, the description of the production steps, can serve to highlight the use in the appropriate context of the passive voice or how to employ the different past tense forms (simple past, present perfect or past perfect) in the same paragraph, when referring to the codes of practice employed by garlic growers. PSs can also serve to introduce weight, length and measures and to discuss the different systems adopted in Europe, UK and USA, a topic often difficult to be understood by non-native speakers of English since the activities based on this important issue are rarely addressed in EFL educational materials.

6. CONCLUSION

The role played by English in today’s globalized society requires a shift in the EFL pedagogy and in the educational objectives set out for university curricula. In view of the impact of English on a global level, language practitioners working in non-Anglophone contexts are asked to revise the concept of EFL proficiency and to shape university syllabi accordingly. In university settings, in fact, learners should be shown how to “navigate their learning” (Hyland and Hamp-Lyons 2002:1) by implementing language activities aimed at developing EFL communicative skills to be used to proceed to the graduation and, most important, to be spent once in the professional arena.

The implication for syllabus design is that EFL classes should be pivoted on competences to access English literature and to produce texts written in English either to fulfill academic requirements or to produce scripts connected to the profession or to the workplace.

In the case of FS education, current research (Cianflone 2010; Cianflone et al. 2010; Cianflone and Coppolino 2011) has shown that EFL proficiency pivoted on the discussion of food-related matters can be successfully employed to meet the globalized requests of academia and of the professional world. The educational benefits are in the field of EFL fluency and of domain-specific competence required to act as skilled expert once in the profession.

As concerns fluency, PSs provide EFL learning activities that facilitate the acquisition of FS-focused vocabulary by means of one important genre rarely discussed in contemporary EFL literature on FS education. As concerns FS competences, PSs cater for the implementation of textual schemata and of rhetorical patterns pertaining to FS practice. The PS blueprint, organized into different sections, facilitates the exploitation of communicative practices based on topics taken from the curriculum. Furthermore, PSs

serve to develop novel communicative aptitudes differing from secondary school experience, where the EFL learning activities and the communicative interactions mainly consist of rote-learning drills and unreceptive responses to the requests.

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