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Popular Science Articles vs. Scientific Articles: a Tool for Medical Education

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Abstract

During the 19th century the need to make science more accessible to the public resulted in the emergence of a new type of written genre, the popular science article (Meadows, 1987). In this study, I will contrast the structure of scientific RAs and popular science articles as well as some linguistic features such as the use of discourse markers and evaluative language in both genres. Here, I analyse a corpus of four articles: two popular science articles taken from one of the top ten websites on popular science called *Science Daily* and two scientific articles published in a prestigious medical journal, *The Lancet*. The topic in the articles is the same: arthritis. To be able to compare and contrast the articles more effectively, corpus analysis tools have been used to analyse the linguistic features above mentioned. This article aims at showing how popular science articles can be used as pedagogical material for the teaching of Medicine, as they are more easily understandable for students (Parkinson & Adendorff, 2004) and therefore bringing about a more intuitive learning process. On the other hand, scientific articles are a source of medical knowledge and should be taken into consideration accordingly. However, medical students in their first years at university who have never been exposed to academic and scientific articles may find the reading and understanding of this academic type of written genre difficult and arduous.

Keywords: popular science article (PSA), research article (RA), discourse markers (DMs), evaluative language, medical discourse

1. Introduction

Academic writing is a means of communication of a scientific community that uses the same scientific discourse. As Widowson (1979: 52) claims, scientific discourse ‘is realized by a scientific text in different languages by the process of textualization’. Thus, academia has taken the Research Article (RA) as the genre to spread knowledge and reach different audiences. Hyland (2010: 117) defines the RA as ‘the principal site of disciplinary knowledge-making’, or in Montgomery’s (1996) words ‘the master

narrative of our time'. Swales (1990: 93) adds to the definition of a RA that 'it is to appear or has appeared in a research journal or, less typically, in an edited book-length collection of papers'. Therefore, the scientific RA has clearly identified writing conventions and norms, being primarily addressed to experts within a concrete scientific community or to a professional audience.

During the 19th century the need to make science more accessible to a non-specialist public in the field enabled the onset of a new type of written genre, the popular science article (Meadows, 1987). This need has been increasingly growing with the emergence of new technologies, their immediacy and rapid spread of knowledge. Nowadays, most daily newspapers have specialized science sections that are largely read (Pellechia, 1997) and the number of science articles in the press, on paper or on-line formats, is constantly increasing.

The popular science article can be addressed to a less expert audience; it provides readable and constant information in an easily accessible way. Popularisation is targeted to a wide reading public, although dealing with specialised topics; it is not addressed to an expert group but to a socially experienced audience (Gotti, 2014). In Hyland (2010: 118) words, popular science 'is produced for audiences without a professional need for information about science but who want to keep abreast of developments'.

Academics should be aware of the different scientific discourses and how these affect and modulate the relations between science and society. In the discourse of popularisation scientists often include views that may not derive from scientific sources and therefore generate an interest in the relation between science and society (Whitley, 1985). In terms of socio-economic impact, science is probably the fastest 'growing enterprise in our society' (Weingart, 2002: 703). Authors such as Weingart (2002) talk about a new phenomenon of 'growth-driven specialisation of science' that expands to society and to a wide variety of fields to study. He continues with a very illustrative metaphorical image of scientific knowledge by saying: 'Knowledge, as it enters the public arena, is inevitably judged and valued by society' (2002: 704). The link between science and society in our century is thus undeniable. In Gotti's words the popularisation of science is an attempt to come closer to society.

Viewed from this new perspective, popularization often provides explanations in terms of the social meaning of the events in question, which is indicative of an increased social awareness of risks (...) Rather than 'explaining science', this new type of popularization sets out to explain the social meaning of such events, with the consequent creation of interdiscursive texts mixing informative and explanatory discourse with other scientifically-unrelated matters of more general public concern. (Gotti, 2014: 27)

Some studies have argued that popular science articles cannot primarily serve as models for scientific writing (Parkinson & Adendorff, 2004); however, in my view, they can make science more accessible to undergraduate students in tertiary education. I believe that Popular Science Articles (henceforth PSAs) could be used as pedagogical tools in the university classroom to facilitate students' understanding of content.

The university classroom situation in the field of Health Sciences in Europe has changed over the last 10 years to adapt to the demands of the European Commission and the creation of the European Higher Education Area (EHEA) in accordance with the *London Communiqué* (2007). The European Commission, in successive meetings and plans (Commission of the European Communities: Action plan 2004-2006), has emphasized the concept of 'employability' and foreign language learning as important aspects of degrees; universities should offer degrees that facilitate, as one of the main outcomes, graduate and postgraduate students' access to the professional world. Thus, there is a need to prepare Health Sciences students as professionals in a globalized world, where not only the specific contents of the field but also the learning of second or foreign languages are paramount for the construction of a dynamic tertiary education. Multilingual education constitutes a common goal of the European Union, where the English language has reached an overwhelming dominance as a lingua franca.

If we look at English for Academic Purposes (EAP) settings or at English for Specific Purposes (ESP) courses at any European or American university, what we can find is a group of non-native students who are enrolled in Health Sciences degrees where most or part of the tuition is delivered in English. In these higher education contexts, PSAs articles might become an extremely useful and illuminating tool for university students who are neither familiar with the academic genres nor used to receiving a large part or all of their lectures in a second or foreign language, especially in their first years at university. Content lecturers can facilitate subject content learning to their native or

non-native students and on the other hand, an English language lecturer can make the English language more comprehensible to their EAP or ESP university students.

It is largely known that the reading and understanding of a medical RA can be arduous for a non-expertise audience such as students in tertiary education, in particular during their first years of study. Clearly, RAs have an easily identifiable and conventionalised structure which has largely been analysed and discussed: Introduction, Method, Results and Discussion (Swales, 1990; Hyon, 1996). PSAs, on the contrary, seem not to have such a fixed standardised structure and organisation of information. They tend to adapt to the communication media where they are published, popular magazine or journal, on paper or on-line. However, there seems to be an agreement on how to present and organise information within the same communication channel in PSAs, something similar to a macrostructure of the genre, as I will explain later on in this chapter.

RAs use forms of high formal register of language, technical lexicon, nominalisation, passivisation and impersonal tone (Parkinson & Adendorff, 2004) because they are addressed to a skilled and expert audience with a high level of expertise on the topic. As a consequence, the RA writer tries to mitigate the impact of what is being told by using hedging. On the contrary, PSAs 'show solidarity with the reader through treating the scientist participants as personalities, by humour, and, if the projected readers are non-scientists, by distancing the reader and writer from scientists as a group' (Parkinson & Adendorff 2004: 389). That is, PSAs tend to use more informal language in a more direct way, sometimes including conversational style, which makes them suitable as an introductory reading on a specific scientific topic. These traits make the PSA a potential pedagogical tool for the university classroom without disregarding the more standardised academic article.

In the sections that follow, I aim at showing how the less conventionalised structure and less formal use of language of PSAs make them suitable models for teaching undergraduate students in the field of Health Sciences, especially those in the first year of their degree, whether native or non-native English students.

2. The Study