

Pragmatics in Scientific Discourse: An Investigation of the Functions of Research Article Abstract in Agriculture

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Abstract

In scientific context, studying a phenomenon means observing, defining, and describing it. That is, writing scientific discourse is inherently issuing acts of a pragmatic nature. To know how to define, describe, classify, and other acts is an important goal for scientists. This paper aims to investigate the functions that are performed in abstracts of agricultural articles. Zimmerman's Findings (1989) about acts of scientific discourse are exploited to examine a number of articles in terms of function and the rate of their occurrence. It has been found that research abstracts in agriculture comprise particular functions such as describing, classifying, reporting, cause and effect, and comparing, etc.

Keywords: scientific discourse, pragmatic nature, functions, research abstracts

Introduction

Pragmatics has known a great momentum recently (Allen & Jaszczolt, 2013). It has become the subject of many studies and discussions including Austin, 1962; Searle, 1965; Leech, 1983; Levinson, 1983; Kasper & Bulm-Kulka, 1993; Rose & Kasper, 2001 and others. Pragmatics is concerned with the study of meaning in context (Leech, 1983). In other words, it is the study of how meaning can change in different speech situations, that is, with different interlocutors, in different places, at various times, for different purposes and so on. For instance, it is pragmatics that explains why people 'greet' using 'Good morning' in a situation and not 'Hi' (Edwards & Csizér, 2004). This means that a given context involves the use of particular linguistic items and that these linguistic items acquire different meaning in various contexts (McCarthy, 2001). This capacity of use among language user i.e. their pragmatic competence has been the subject of a number of inquiries (Bachman, 1990; Kasper & Blum-Kulka, 1993; Kasper, 1997; Rose & Kasper, 2001, Taguchi, 2009 and others). Pragmatic competence is defined as the ability to produce and interpret language appropriately in different contexts (Kasper & Bulm-Kulka, 1993.). Put another way, pragmatically competent speakers know not only how to express their intention with respect to a given situation but also how to grasp what people want to perform by their utterances (ibid.). By choosing appropriate words and talking in a certain way, a speaker is sending a message across, that is, performing acts. It is the concern of pragmatics to explain what one is doing *via* saying.

Research in pragmatics has focused on how acts are performed in different discourses such as politics, sports, business, science, etc. In fact, special attention is shed on scientific context (Widdowson, 1979; Johns, 1991; Parkinson, 2013). Many papers are interested in describing features of scientific discourse (Johns, 1991). On these premises, Widdowson (1979) explains that scientists usually need to define, explain and describe phenomena and that this discourse is not a separate variety of English but a special way of using language. This implies that scientific discourse is mainly the performance of functions in a conventional way.

Following the same line, MacKay and Mountford (1978) claimed that examining scientific discourse in terms of function is a productive area of research as functions such as classifying, explaining, defining, etc. are needed in any scientific context (cited in Flowerdew, 2013). Other researchers followed this research direction. Zimmerman (1989), for instance, searches for the main speech acts that can be performed in scientific genre. She (ibid.) provides twelve functions that

characterize this discourse and how they are employed by scientists. According to her (1989), scientific discourse consists basically of twelve functions namely *classifying, comparing, cause and effect, hypothesizing, defining, exemplifying, giving evidence, experimenting, calculating, reporting, describing and predicting*. Similarly, Hyland (1998) describes the linguistic devices that are brought into play to soften acts, that is, hedging process in scientific writing. He (ibid.) reports that scientific writing makes use of particular hedging devices which help in expressing writer's intention and assigning an active role for the reader. For instance, the use of modal verbs enables the writer to encode the degree of certainty s/he intends and motivates the reader to read profoundly, searching for the goal behind this use (Hyland, 1998).

In a narrower view, Flowerdew (1992) focuses on the act of 'defining' in scientific lectures (cited in Flowerdew, 2013). For him, there are lexical signs which indicate the act of 'defining'. These lexical signs can be either explicit such as 'x is defined as y' or reflexive, for example, 'x be known as y' or 'x be referred to as' (ibid.). Flowerdew (1992) also clarifies that lexical signs have a role in determining the function of an utterance but taking into consideration the context. More clearly, the lexical signs of, say, 'defining' can issue another act in a particular context. For instance the utterance 'x is defined as y' refers to the act of 'defining' while in the utterance 'C *et al.* defines x as y' the lexical sign presents the act of 'reporting' (ibid.).

In fact, the findings of such studies provide a great benefit to scientific community mainly in scientific writing (Hyland, 1998). It is worth making the obvious point that writing is a 'contextualized activity' where situational factors such as degree of imposition, power, social distance, etc. as well as the writer's intention are unclear (Usó-Juan *et al.*, 2006). Moreover, writing is an activity which requires from the reader to depend on context for full understanding of writer's intention (ibid.). Therefore, the provision of necessary devices that show the intended message and aid the reader to set the text in a context falls on the responsibility of the writer. That is, the writer needs to master how to exploit, say, hedging devices, lexical signs, etc. to encode his/her intention and to help the reader in the contextualization process, hence to bring the most appropriate interpretation. Thanks to these studies that report the way functions can be performed in scientific context, writers can use these findings to write a sound abstract.

Results And Interpretation

Based on Zimmerman categorization, we examined the functions that characterize research article abstracts in the field of agriculture. We have investigated the functions performed in the abstracts of 30 articles selected from different scientific magazines and journals. Most of them published between 2012 and 2014. The criterion that was applied to identify the functions is the one presented in Zimmerman's work. For example, the act of 'classifying' can be achieved by the use of verbs such as classified, be made of, be composed of, be categorized as, include, be made up, be compound of, combine with, etc.

The main work was to analyze each abstract and to set the occurrence frequency of functions in it. As a result, we have classified acts on the basis of their frequency in the abstracts as it is shown in Table and Figure 1 below:

Functions	Frequency	Percentage
1- Describing	83	32.29
2- Classifying	37	14.39
3- Reporting	35	13.61
4- Cause & effect	32	12.45
5- Comparing	20	7.78
6- Calculating	13	5.05
7- Hypothesizing	09	3.50
8- Exemplifying	08	3.11
9- Defining	07	2.72
10-Giving reasons	04	1.55
11-Predicting	04	1.55
12-Experimenting	01	0.38

Table 1: The frequency of functions in abstracts of agricultural research articles.

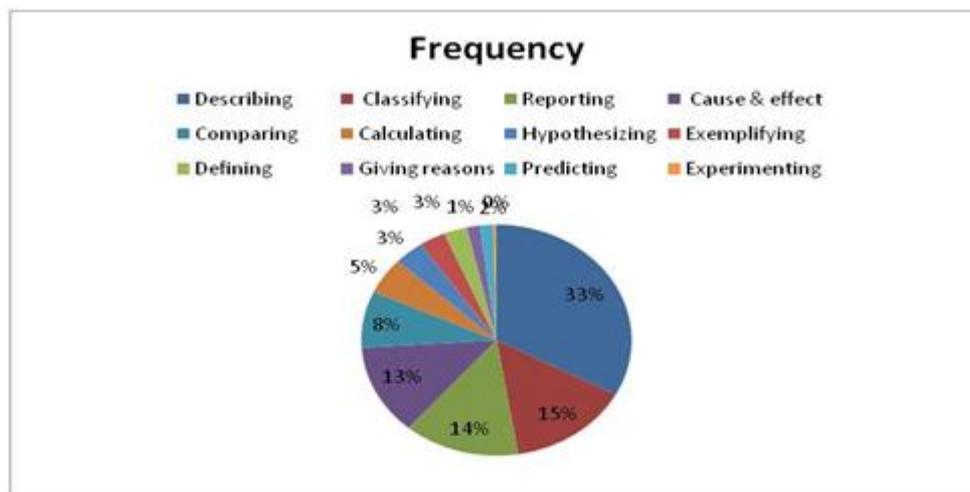


Figure 1: The frequency of functions in abstract of agricultural research articles.

The obtained results show that acts vary in the rate of their occurrence in abstracts. The most performed functions are namely *describing*, *classifying*, *reporting*, *cause and effect* and *comparing*. They are found nearly in each article. ‘Describing’, for example, registers high occurrence as writers need to describe their purpose, the previous studies and methods used. The same can be said about ‘classifying’ which is employed in explaining the methods used in study as in “*the mixture that was used in our analysis is composed of ...supplied with different dosage to each sample*”. By presenting their results and explaining the reasons that lead to it, writers have issued the act of ‘reporting’ and expressed ‘cause and effect’ relationship. A similar use to the act of ‘comparing’ has been noticed mainly in summarizing findings as is the case in the following segment “*Salinity of groundwater proved to be less important to rooting of the date palm compared to the level of the groundwater*”. The other remaining seven functions have recorded low rate of occurrence. This result seems logical as the two acts of ‘experimenting and defining’ cannot be found in the abstract.

As a second step, we choose the most common act in abstracts, i.e. ‘describing’ and provide for its felicity conditions. Following Searle’s (1969) classification ‘describing’, for example, is a ‘representative’ speech act as the speaker presents what s/he thinks the described item or process is like. That is, it is a representation of speaker’s thought. Further, describing can be performed by meeting four conditions (Searle, 1969).

1/ Propositional conditions: the act proposes that the described item or process has a number of features that characterize it (Toulamin, 1952). In the case of ‘describing’ in the abstract, the described item has the feature of being already treated in different ways. For instance, the act of describing the previous studies about pragmatics in scientific discourse in the present article presupposes that this subject is characterized by the certain features such as its importance, its old analysis.

2/ Preparatory conditions: there are conditions that lead to the performance of the act. For this, it should be appropriate to the circumstance that:

- The hearer ignores or cannot imagine the picture or steps of the described item or process
- The description is relevant and beneficial to the course of events. As an illustration, the description of the purpose of study is needed in the summarized part of the study.

3/ Sincerity conditions: the act implies that the speaker wants to inform and give more details to the hearer about the described item (the speaker's real intention).

4/ Essential conditions: the act should be reflected in the utterance which counts as an attempt to mention some features of a given process or item. It is marked by the use of some devices such as adjectives, superlative case, compound nouns, modifiers, etc. (Zimmerman, 1989).

Here, we can suggest that the agricultural discourse community has a purpose behind the specific choice of acts mainly in the starting part of a research article abstract.

CONCLUSION

Since scientific discourse is basically a set of particular functions chosen by users of a discourse community for particular purposes, knowledge of how to perform these functions is an important skill for scientists as a discourse community. Studies in this field are growing and gaining more and more interest. This paper has brought to light that abstracts in agricultural settings have a certain use and structure in terms of function. In other words, the results point out that some functions are more performed in writing abstracts than others.

This finding can be useful to ESP teachers. Listing the functions that characterize the abstracts of agricultural articles can benefit teachers in determining the learners' needs in terms of function, directing the teaching focus towards the neglected area, i.e. speech acts, and making ESP teachers save time by defining the functions needed in writing abstract. It is important to note that further research can analyze the functions in other scientific fields so as to see whether abstracts in these fields have similar or different functional use.

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