

# Cognitive genre structures in Methods sections of research articles: A corpus study

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## Abstract

This paper reports a corpus investigation of the Methods sections of research-reporting articles in academic journals. In published pedagogic materials, Swales and Feak [Swales, J. M., & Feak, C. (1994). *Academic writing for graduate students*. Ann Arbor: University of Michigan Press; Swales, J. M., & Feak, C. (2000). *English in today's research world*. Ann Arbor: University of Michigan Press.], while not offering a generic structure, discuss the tendencies for Methods sections reporting research in the social sciences to be *slow* (or *extended*), and those in the physical sciences, such as medicine and engineering, to be *fast* (or *compressed*) – the metaphors of speed or density relating to the degree of elaboration employed in describing and justifying the research design and process. The aim of this study is to examine the differences between fast and slow tendencies in Methods sections in terms of their internal, cognitive discourse organization. Two small corpora, each consisting of thirty Methods sections (one for each of the two groups of subjects), are analyzed in two ways. First the corpora are rater-analyzed for their use of the organizational features of a *cognitive genre* model for textual structures (see Bruce, I. J. (2005). *Syllabus design for general EAP courses: a cognitive approach*. *Journal of English for Academic Purposes*, 4(3), 239–256.) and secondly by the use of corpus software for linguistic features that characterize the model. The findings of the study suggest that 'fast' Methods sections that report research in the physical sciences generally employ a *means-focused* discourse structure, and 'slow' Methods sections in social science reports tend to employ a combination of *chronological* and *non-sequential* descriptive structures. The study concludes that learner writers may benefit from access to the types of general, *procedural* knowledge that these discursive structures employ. © 2008 Elsevier Ltd. All rights reserved.

**Keywords:** Methods sections; Genre; Text type; Procedural knowledge; Cognitive genre; English for academic purposes

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## 1. Introduction

First this article presents the social genre/cognitive genre approach to discourse classification of Bruce (2005). This is followed by a review of existing analyses of Methods sections of research articles, the review leading to a proposal that Methods sections may be examined in terms of their use of general rhetorical structures, operationalized here by cognitive genres. The survey analyses of two corpora of Methods sections (fast and slow) are then presented. Finally the findings of the study are then discussed in relation to the types of knowledge that it yields for teaching the writing of Methods sections and also in relation to the need for a dual approach to analyzing genres in academic discourse.

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### 1.1. Social genres and cognitive genres

There is currently a multiplicity of approaches to the classification of discourse, which means that terminology, including the words genre and text-type themselves, is used in very different ways by different theorists and researchers. This is not simply a terminological problem, but rather arises out of disagreement about the very nature of the object of enquiry. For some, genre is largely a social phenomenon, seen as reflected in the conventionally recognized functions and conscious organizational structures of whole texts; for others, genre is a communicatively motivated, cognitive phenomenon — a phenomenon that is reflected only indirectly, if at all, in the social function and overall structure of texts. As a basis for analyzing Methods sections corpora, the study draws on a proposal for two types or levels of genre — *social genre* and *cognitive genre* (see Bruce, 2005).

Social genre refers to socially recognized constructs according to which *whole* texts (or conventionally recognized sections of texts, such as Methods sections in research articles) are classified in terms of their overall social purpose and function. Thus, for example, personal letters, editorials, novels and academic articles are examples of different social genres, which are created to fulfill different types of socially recognized and understood purpose. Purpose here is taken to mean the intention to consciously communicate a body of knowledge related to a certain context to a certain target audience. In fulfilling this type of purpose, social genres may draw upon knowledge relating to context, discipline-specific content, epistemology, writer stance and the related textual conventions employed in the selection and functionally-related staging of content — variously termed *generic structure* (Hasan, 1989) or *moves and steps* (Swales, 1990), all of which to some extent influence linguistic choices.

The term cognitive genre is used here to refer to the overall cognitive orientation and internal organization of a segment of writing that realizes a single, more general rhetorical purpose to represent one type of information within discourse. Examples of types of general rhetorical purpose relating to cognitive genres are: to recount sequenced events, to explain a process, to argue a point of view, each of which will employ a different cognitive genre. The rhetorical purpose will influence the local discursual organization of the text, relations between propositions and linguistic choices related to cohesion and coherence. A particular example of a social genre (e.g., a personal letter) may draw upon a range of different cognitive genres in relation to the rhetorical purposes that characterize the different sections of the overall message as it unfolds (e.g., presenting an argument; providing an explanation, recounting a series of events).

### 1.2. Review of genre analyses of Methods sections

Existing research that has examined research-reporting texts has largely been carried out within the *English for Specific Purposes* (hereafter ESP) approach to textual analysis. One approach by ESP researchers has been to characterize certain categories of texts as social genres by investigating their operation within a context in terms of “sets of communicative purposes” (Askehave & Swales, 2001, p. 210). To date, ESP genre analysis has focused on a range of (social) genres from academic and professional domains, sometimes confining their analysis to one or more sections of texts belonging to these genres (such as the Introductions of research articles). The organizational structuring proposed is in terms of the staging of content (content schemata), identified in terms of *moves* and *steps*. Dudley-Evans (1994) suggests that “decisions about the classification of the moves are made on the basis of linguistic evidence, comprehension of the text and understanding of the expectations that both the general academic community and the particular discourse community have of the text” (p. 226). The moves and steps structures are then related to linguistic features that are commonly employed in their realization.

Within the ESP approach to genre, Methods sections of research reports have been described in some way by Bloor (1998), Brett (1994), Nwogu (1991) and Swales (1990), but to date only Lim (2006) appears to have attempted to provide a detailed move-and-step analysis linked to linguistic features, following the ESP approach to genre. Also, Swales and Feak (1994, 2000) also offer pedagogic advice to learner writers on the characteristics of types of Methods sections.

Swales (1990) does not provide an analysis of the content schemata of Methods section of research articles in terms of moves and steps. However, in reviewing the findings of investigations by sociologists (Gilbert & Mulkay, 1984; Myers, 1985) and linguists (Bruce, 1983; Weissberg, 1984), he notes general disciplinary differences between Methods sections in research reports in the physical sciences and those in social science or interdisciplinary fields, such as Applied Linguistics. In the former category, Methods sections showed a highly elliptical reporting where

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