



A move/step model for methods sections: Demonstrating Rigour and Credibility



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ARTICLE INFO

Article history:

Available online 31 January 2017

Keywords:

Move analysis
Methods
Social and cognitive genres
Annotated corpus
Disciplinary writing
Research article

ABSTRACT

In the tradition of Swalesian genre theory, this manuscript explores the rhetorical composition of research article Methods sections through a top-down analysis of a corpus of nine hundred texts representative of thirty academic fields. The analysis resulted in a comprehensive cross-disciplinary model, called Demonstrating Rigour and Credibility (DRaC). The model contains three moves and sixteen steps, which are defined in terms of functional and content realizations. DRaC further served as the analytic framework for corpus annotation. Manually annotated corpus data revealed the moves and steps with high distributional prominence as well as those that are not frequent but occur consistently within and across disciplines. Visualizations of individual texts in a sample of disciplines demonstrated inter-disciplinary and intra-disciplinary patterns and variation in move sequencing. Additionally, algorithmic analysis of the annotated corpus showed that soft and hard sciences form clusters based on their use of DRaC steps, providing a deeper understanding of how shared conventions of rhetorical composition distinguish cross-disciplinary similarities in Methods discourse. The findings lend themselves to application in genre writing pedagogy and, more broadly, hold implications for theories of social and cognitive genres.

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1. Introduction

As genre analysts investigate discourse embedded in the context of a communicative event, they view genres as social and cognitive phenomena. Social genres are generally characterized in terms of texts that are determined by social communicative goals (Pilegaard & Frandsen, 1996), such as service encounters, personal letters, lab reports, journal articles, etc. To accomplish the socially recognized goals of text genres, writers stage content in a conventionalized move structure, the moves being discursive units that accomplish coherent communicative goals (Swales, 1990, 2004). Each move is in turn realized by distinct rhetorical steps that convey specific functional meanings. Cognitive genres were proposed as units of discourse rendering types of a highly complex category, which refers 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

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discourse” (Bruce, 2008a, p. 39). Bruce (2005, 2008b) explains that different types of rhetorical purposes can instantiate different cognitive genres, and that social genres operate with the means of various cognitive genres. For example, scientific reports have specific rhetorical purposes, which characterize their different sections, and thus combine a range of cognitive genres (e.g., *report* in Results sections and *explanation* in Discussion sections). Therefore, the two phenomena are not mutually exclusive; on the contrary, together social and cognitive genres enhance the effectiveness of discourse. Moreover, Devitt (2015) emphasizes that theorizing and analyzing genre as both contextualized cognitive and social action can approach the often contradictory “space” between genre theories and genre pedagogies (p. 394). Cognitive genres, however, are only beginning to gain prominence in genre analysis, and studies connecting social to cognitive dimensions promise to provide a deeper and more practically applicable understanding of their relationship to social genres.

Social genres, especially those that pertain to academic and professional contexts, have been subject to copious investigation. In the domain of English for Academic Purposes (EAP),³ largely aiming to inform academic writing pedagogy, work on the research article (RA) genre and its Introduction, Methods, Results, and Discussion/Conclusion (IMRD/C) part-genres has been the most extensive. With a broad focus, this agenda inquires about structural organization, content schemata, rhetorical conventions, and related linguistic choices. Swales’ (1981) move/step analytic framework, particularly the CARS (Create a Research Space) model for Introduction sections, has been prolific in the analyses of rhetorical composition. Originally, move analysis was intended as a tool that would assist novices in developing an understanding of scientific writing conventions. Due to its investigative potential for identifying subtle textual characteristics, it has been applied to a wide range of social genres including grant proposals, legal documents, philanthropic discourse, etc.

The RA genre has been at the forefront of move analysis; however, existing studies of IMRD part-genres have not yet put forth move/step models suitable for cross-disciplinary pedagogical applications. To date, the Introduction is the only section for which the CARS model has been thoroughly described, validated through analyses of corpora in various academic fields (Loi, 2010; Ozturk, 2007; Sheldon, 2011), and applied to practice (e.g., Swales, 2011). Devitt (2015) posits that aspiring student scholars generally want and need such straightforward descriptions of discourse forms, which, as classroom practice indicates, play a significant role in their understanding and use of the genre. Another important issue is that, while Methods present novice research writers with difficult decision making about what content to include, how to organize it (Ellinger & Yang, 2011), and the level of detail expected (Smagorinsky, 2008), this section has been investigated the least compared to Results (Brett, 1994; Lim, 2011; Williams, 1999) and Discussion/Conclusions (Holmes, 1997; Parkinson, 2011; Peacock, 2002). Undoubtedly, due to heavy discipline-specific content, it is very challenging for non-specialists to analyze Methods-related discourse in various fields.

Addressing the lack of comprehensive descriptions of Methods discourse is important, as corpus-derived models representative of Methods rhetorical resources used by the disciplines may proffer tangible descriptions that would both help novice writers and would potentially enable “a notion of genre as textually grounded social actions with curricula that extend through different levels of cognitive development” (Devitt, 2015, p. 397). An example worth following is Bruce’s (2005) cognitive genre model for general discourse structures, which was applied to the analysis of two small corpora of Methods sections in social and physical sciences (2008a). Drawing on the characteristics of Biber’s (1989) four text types, Bruce operationalized Methods’ rhetorical structures as four cognitive genres (*report*, *explanation*, *discussion* and *recount*). Importantly, he conceptualized these cognitive genres as discourse units emerging in response to “human intention” and thus relating “to general rhetorical aims to represent certain types of knowledge within discourse” (p. 42). The rhetorical focus in his model, however, covers intentionality only to a certain extent, referring to ways of presenting information: non-sequential in *report*, with orientation on means in *explanation*, in relation to outcomes/conclusions/choices in *discussion*, and sequential or chronological in *recount*. If the ultimate goal is to generate a discourse model for teaching and learning purposes, this higher-order description of cognitive genres should be consolidated and perhaps enriched by a complementary analysis of Methods discourse as social part-genre. Specifically, a deeper understanding of the realizations of moves and steps should provide more specific insights about both the rhetorical purposes and the type of information used to present knowledge in Methods discourse. A dual social and cognitive approach can ultimately serve to operationalize discourse-organizing patterns and the relation between propositions and linguistic choices determined by rhetorical purposes.

This study analyzes a large multi-disciplinary corpus of RA Methods sections. Our objectives were to identify characteristic moves and steps, describe their functional and content realizations, and investigate their occurrence within and across 30 disciplines. Employing a top-down approach to corpus analysis, we developed, tested and validated a rhetorical move/step model, termed Demonstrating Rigour and Credibility (DRaC). The model was applied to corpus annotation to further examine move/step distribution and sequencing. Additionally, the corpus analysis results were triangulated with input from academics in the targeted disciplines. By comprehensively defining the conventional moves and steps of Methods discourse and delving into the patterns shaped by the disciplines, this study not only underscores the value of corpus-based move analysis, but also draws important implications for cognitive genre theory and for academic writing pedagogy.

³ Genres are studied from different perspectives of genre theory. Johns (2008) provides a comprehensive overview of genre schools including English for Specific and Academic Purposes, Systemic Functional Linguistics, and New Rhetoric.

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