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## RESEARCH ARTICLES

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### Introduction

The research article is no doubt the most studied genre in English for academic purposes (EAP). As Hyland (2009a, p. 67) states, it remains the “pre-eminent genre of the academy” and “is the principal site of knowledge-making.” Swales’ (1981, 1990) seminal work on the rhetorical organization of research articles has been followed by a large number of studies exploring the rhetorical organization of various parts of this genre, rhetorical and lexicogrammatical features characterizing this genre, and cross-disciplinary and cross-linguistic variation in the genre’s structure. As the pre-eminent genre produced in the academic community, the research article has also been the site for exploration of a number of rhetorical aspects of academic discourse such as stance, engagement, evaluation, and author presence. These studies have increased our understanding of this genre and the epistemologies of different disciplinary communities.

Because academic institutions around the world expect scholars to publish in highly-ranked peer-reviewed Anglophone journals to achieve academic success (Hyland 2009b, p. 84; Belcher, 2007), and because 90 percent and more of “top” journals in the natural and social sciences are published in English (Lillis and Curry, 2010), more and more English as an additional language (EAL) scholars are using English for the purpose of research publication, making the pedagogical applications of discourse studies of research articles valuable.

This chapter on the research article has a number of equally important foci. Because of the vast number of studies that have been conducted on the research article, only a subset will be discussed directly in this chapter. The chapter will first focus on the rhetorical organization of this genre, moving from its major sections to the moves and steps identified in each section. More recent studies have not just identified moves and steps but focused in greater detail on some particular moves in a section, such as commenting on results in discussions or how writers present their studies in the third move of the introduction, “filling the niche” (Martín and León Pérez, 2014), further enhancing our understanding of this genre. A second focus of this chapter will be studies of the construction of salient rhetorical features of academic discourse such as stance, author presence, and intertextuality in the research article, which have increasingly employed computational techniques on large electronic corpora of research articles (for example, Hyland, 2000). The chapter will also consider the pedagogical impact of research on the research article including the creation of EAP materials and evaluations of teaching practices employing genre-based instruction of the research article (e.g. Cheng, 2008b). The chapter will close with some brief research recommendations.

## **Organizational structure of research articles**

Swales' (1990) create-a-research-space (CARS) framework, postulated to account for introductions in research articles, was followed by a large number of studies applying the framework to introductions from a variety of disciplines and languages, leading to its modification 14 years later (Swales, 2004) to better capture some of the findings of these studies. Although introductions have been the most explored part-genre of research articles, abstracts have also been frequently analyzed, revealing the rhetorical work conducted by this small but important part of a research article. Sections such as discussions and methods have also been studied, beginning with the early work of Hopkins and Dudley-Evans (1988), but to a smaller extent.

### ***Major sections in research articles***

Although studies conducting a move structure analysis of research articles seem to have assumed the introduction-method-results-discussion (IMRD) structure for research articles, the absence of the hourglass-shaped rhetorical structure in research articles from astrophysics and other non-experimental disciplines was pointed out in an early study (Tarone et al., 1998). The overall rhetorical structure is stated to take the shape of a logical argument that gradually narrows in scope in these research articles. More recent studies of research articles from less explored disciplines such as mathematics and applied linguistics have identified variation in the major sections found in research articles. Mathematics research articles, according to a study by Graves, Moghaddasi, and Hashim (2013), do not include methods and discussion sections, and may even not include conclusions in pure mathematics articles. Ruiying and Allison's (2004, p. 269) analysis of primary research articles (that is, those that report on analysis of original data) from applied linguistics helpfully revealed that research article "macro-structure is not always transparent and fixed," and indicated the presence of sections which might serve the same functions of traditional IMRD sections, although with varied headings such as "experimental design" and sections that have content headings such as "L2 reading strategies." They also have tentatively proposed a macro-structure including the introduction, argumentation, and conclusion sections to account for secondary research articles, which provide critical reviews and synthesis of certain topics.

Besides these interesting variations identified by Ruiying and Allison (2004), which would pose a challenge for cross-disciplinary comparisons of the reporting of results or discussion of findings in research articles, Lin and Evans (2012) have shown through an extensive study of research articles from 39 fields that the IMRD macro-structure is not the default organizing principle, even in articles reporting empirical research, and have identified the presence of the literature review, conclusion, and joint results and discussion sections, revealing greater variation in macro-structure than previously acknowledged, which they point out needs to inform EAP instruction.

### ***Introductions and abstracts***

Swales' (1990, 2004) important CARS model, with the three functional moves of establishing a territory, establishing a niche, and presenting the present work, captures the rhetorical work conducted in introductions of research articles where authors seek to establish the novelty of the research being reported while maintaining a connection to previous research in the field. Swales' 2004 version of the CARS model, following results from studies of this part-genre in

disciplines such as computer science (Anthony, 1999) and wildlife behavior (Samraj, 2002), includes positive justification as an optional means of creating a niche for one's research, in addition to creating a gap or adding to what is known in the second move. The revised model also includes the step "stating the value of the present research," in the third move "presenting the present work," capturing the promotionalism that can be constructed even at the end of the introduction. The revised third move also includes a larger number of optional steps such as summarizing methods and definitional clarifications.

Interest in research article introductions has led to studies focusing on just one rhetorical move from the introduction. How researchers establish niches in research article introductions has perhaps been the most explored move of introductions, in particular in introductions across different languages and disciplinary fields. These studies have indicated that explicit "indicating a gap" in order to create a niche may be eschewed in some languages such as Malay (Ahmad, 1997) and Swedish (Fredrickson and Swales, 1994), which might pose a challenge if these scholars sought publication in high-impact Anglophone journals, where explicit gap indication appears to be common.

Belcher (2009), in an interesting study exploring the presence of gap creation in applied linguistics research articles produced by authors who are female or English as an international language (EIL) speakers, found that an increasing number of such authors over a ten-year period from 1996 to 2006 corresponded to a greater presence of explicit gap statements and a decrease in implicit gap statements, contrary to her predictions (and implications from studies such as Ahmad, 1997). Explicit gap statements are those that directly mention missing information, and implicit gap statements include politeness strategies to hedge academic criticism. Although preference for explicit gap statements increased across all author categories, male, female, and EIL authors, over the decade the greatest increase was for EIL female authors and, interestingly, the overwhelming preference for explicit gap statement by EIL authors was the same in both 1996 and 2006! She suggests that an "obvious reason for the unanticipated high number of explicit gap statements could be that such statements may not be viewed as so uncomfortably adversarial" by women and EIL academic scholars as earlier research may have led us to believe (Belcher, 2009, p. 231).

The importance of the move of niche establishment in research article introductions has also led to detailed analysis of ways in which this move is constructed and the linguistic choices used to realize it. Through an analysis of a set of articles from business management, Lim (2012) showed the much greater frequency of the use of the "gap creation" step (such as "Nevertheless, given that there are no studies linking dispositions to absence attributions ..." (p. 234)) rather than the "adding to what is known" step (such as, "Our study continues in this tradition by investigating how reactions vary to ..." (p. 240)) in establishing a niche in his data set.

Detailed analysis of the third move of introductions has also shown that use of promotional strategies, namely announcing principal outcomes and stating the value of present research, can vary across languages (a greater use in English than in Spanish) and disciplines (a greater use in health sciences than in the social sciences explored) (Martín and León Pérez, 2014). Results from these later studies have continued to provide support for Swales' early work, pointing to the rhetorical work accomplished by introductions.

The abstract that accompanies the research article also performs a promotional and persuasive function, much like the introduction, although early studies characterized research article abstracts simply as a "factual summary" (Bhatia, 1993, p. 78) of the longer research articles, and proposed an IMRD structure to account for its macro-structure. Santos (1996) postulated an additional move to this IMRD structure, "situating the research," which could

state current knowledge or a problem to account for the rhetorical structure of applied linguistics abstracts. Hyland (2000), in a multi-disciplinary study, also employed a model with five moves. The introduction move in his model, similar to the first move in Santos' framework, was found to be much more frequent in soft disciplines than hard disciplines. Interestingly, his diachronic comparison of abstracts from 1980 and 1997 showed an increase in the presence of introductory and concluding moves, both of which perform important evaluative work. The introductory moves, by situating the research and providing a motivation for it, perform a communicative purpose quite similar to that of the research article introduction. In fact, in a study comparing abstracts and introductions in two sub-fields of environmental science, Samraj (2005) noted that the abstracts accompanying research articles in conservation biology, an emerging interdisciplinary field, bore a greater resemblance to article introductions (because of the presence of centrality claims in the first move in the abstracts) than those from the much more mature and established sub-discipline of wildlife behavior.

The abstract has also undergone cross-linguistic investigation. An interesting study by Melander, Swales, and Fredrickson (1997) indicated that cross-linguistic or cross-national variation can be less prevalent in some disciplines such as biology but more obvious in others such as linguistics, pointing to the need for analysis of a greater number of sub-categories of genre exemplars before concluding about disciplinary and linguistic variation in genre structure.

The studies of introductions and abstracts of research articles discussed above are a subset of the many published works on these part-genres but reveal key features about these part-genres, especially of particular rhetorical moves. Over the last two decades, these studies have also emphasized a cross-disciplinary and cross-linguistic perspective.

### ***Methods, results, discussions, and conclusions***

Although most of the work on research articles has tended to focus on introductions and abstracts, genre analyses in the last 15 years have attended more to the rhetorical organization of the relatively unexplored sections of methods, results, discussion, and conclusion, building on some crucial early work on these part-genres conducted by scholars such as Hopkins and Dudley-Evans (1988), Holmes (1997), and Posteguillo (1999).

The methods section of research articles, said to show significant disciplinary variation in Swales (1990), is probably the least studied of the various research article sections. Swales (2004) makes the useful distinction between clipped (fast) and elaborated (slow) methods sections, with elaborated methods descriptions characterizing social science research articles, and clipped methods sections generally being found in physical science articles (Brett, 1994; Bruce, 2008). Although it might seem that methods sections might be more straightforward and include less persuasion than other more complex sections such as discussions and introductions, a detailed analysis of methods sections from management research articles identified the presence of three sets of justification for research procedures (Lim, 2006). A step providing justification was found in each of three moves identified: "describing data collection procedure/s," "delineating procedure/s for measuring variables," and "elucidating data analysis procedure/s."

Both Yang and Allison (2003) and Lin and Evans (2012) have pointed to the complexity in organization of sections following the methods section. As noted above, Lin and Evans (2012) have shown that many research articles contain joint results and discussion sections instead of individual sections. Yang and Allison (2003, p.3 66) indicate that a number of studies have been conducted on discussion sections but they tend to treat discussion sections

as an independent entity and fail to consider the influence of adjacent sections, even when the study focuses on the complete research article, such as Nwogu (1997). Yang and Allison's study used a two-level analysis, including both moves and steps, instead of the one-level move analysis that characterized earlier analyses of discussion sections (Posteguillo, 1999), and identified complex ways in which the sections that follow the methods section are related to one another.

Based on a detailed and nuanced analysis of 20 research articles reporting empirical research in applied linguistics, Yang and Allison (2003) showed great overlap in communicative function but differences in emphasis between the results and discussion sections. They state that the results section focuses on "reporting results" while the discussion section deals with "commenting on results." This is shown not just by the presence of unique moves in the different sections but, more interestingly, by the greater frequency of one move, the greater development of a particular move, and cyclicity of a move in one section rather than another. For example, "commenting on results" is obligatory in discussion sections but not in results sections, where it is less frequent. On the other hand, the "reporting results" move is highly cyclical in the results sections. The same move might also vary in its constituent steps in different sections, and the relative frequencies of two moves might differ across related sections. Although the use of a small number of texts in the study of research articles such as Yang and Allison (2003) has been criticized by those employing large corpora (Kanoksilapatham, 2015), this intensive, qualitative analysis has made significant contributions to our understanding of some complex and related sections of the research article and shown that adjacent sections might "differ more in emphasis than in kind" (Yang and Allison, 2003, p. 380).

Yang and Allison's (2003) study has been followed by studies attending to not just the discussion sections in research articles from particular disciplines (for example, Basturkmen, 2012) but also studies focusing on the construction of just one move either in the results or discussion sections (for example, Lim, 2011). Basturkmen's (2012, p. 142) study on discussion sections in dentistry research articles revealed that the argument structure differs from that identified in applied linguistics discussion sections (Basturkmen, 2009) due to choices at the step level for the "commenting on results" move. Comparisons of results with the literature and evaluation of the results serve far more frequently as steps for this move in dentistry than in applied linguistics research articles, leading to the conclusion that "disciplinary differences may be located in step level choices" (Basturkmen, 2012, p. 142).

Lim (2010), arguing that the writing of results sections, particularly commenting on results, can be challenging to novices, studied the use of this move in research articles from two disciplines, education and applied linguistics, and articles that used different methodologies: quantitative, qualitative, and mixed-methods. Education results are said to be "comment-stripped" (p. 291) because of the uncommonness of the comment move in results sections. Interestingly, this study also showed that the research methods employed in the study being reported exerted no bearing on the presence of this move.

These studies following early work on research articles such as Hopkins and Dudley-Evans (1988) and Swales (1990) have vastly extended our knowledge of the rhetorical organization of the main sections of the research article, and provided evidence for the persuasion and argumentation that characterize this genre. The growing research has not only pointed to disciplinary variation but also sub-disciplinary variation in genre structure; for example, in environmental science (Samraj, 2005). In addition, these studies have also deepened our understanding of specific moves in these part-genres, such as "commenting on results" in discussion sections and "creating a niche" in introductions.

## **Rhetorical and lexico-grammatical features of research articles**

Research on academic writing in the last few decades has also explored rhetorical features such as evaluation and stance, and lexico-grammatical features such as the use of the first person pronoun in research articles to understand textual practices in disciplinary communities, because of this genre's prominence among academic genres. Early interest in variation across registers included studies of the scientific register in comparison to other "general" English registers (Tarone et al., 1998), and recent studies employing corpus techniques can be viewed as studies pursuing similar research questions informed by a growing understanding of the nature of genres within scientific discourse in general. These later studies are also more likely to employ ethnographic methodologies, including the views of disciplinary experts together with the use of large corpora analyzed electronically. In addition, some of the studies focusing on lexico-grammatical choices in research articles have also partly aimed to challenge advice found in handbooks regarding the writing of academic discourse (for example, Swales et al., 1998). Because of the large number of studies focusing on rhetorical and lexico-grammatical features of research articles, this section will only highlight some of the key findings in the overview provided. It should also be noted that several studies have compared the frequency and functions of discursive features across different genres such as research articles, textbooks, and student reports (Hyland, 2002), although these comparisons will not be focused on here. This chapter will also not include discussions of cross-linguistic explorations of discursive features in research articles in the interest of space.

Because the claims made in research articles are situated within previous knowledge, explicit reference to previous research has been an important feature of published research articles over the course of its history (Berkenkotter and Huckin, 1995) and has been the focus of numerous studies. Hyland (1999) performed a variety of analyses, including identification of the forms of citation (integral versus non-integral) and ways in which citations are incorporated in the text (as quotation, summary, or generalization from more than one source), and a categorization of reporting verbs, on 80 research articles from eight disciplines. The findings from this study, which also drew on insider knowledge through interviews with subject specialists, revealed that reference to previous research was more overt in the humanities in contrast to the backgrounding of human agency in physics and engineering research articles through fewer uses of integral citations. Additionally, the categorization of reporting verbs revealed the important role of reasoning and argumentation in disciplines such as applied linguistics and philosophy through their preference for use of discourse activity reporting verbs, such as "discuss" and "hypothesize." In contrast, the high frequency of research-type verbs, such as "observed" and "developed," in science and engineering articles was seen to support the value of "laboratory work as impersonal, cumulative and inductive" in scientific ideology (Hyland, 1999, p. 360).

Further work on attribution in academic discourse has focused in greater detail on the functions fulfilled by the use of citations based on the views of the authors themselves. A study by Harwood (2009) based entirely on interviews of authors from two disciplines, sociology and computer science, points to some overlap and variation in the reasons authors provide for their use of citations in research articles. For instance, sociologists described more of their citations as having the function labeled as "engaging," which refers to citations used when authors enter in critical dialogue with their sources, while computer scientists used a greater amount of "signposting" citations, which direct readers to other sources.

The research article has also been the site for explorations of discursive practices that construct the author's presentation of self and relationship with readers. Hyland (2009a,



p. 74) has clearly shown through his various studies that research article writers use choices from the systems of stance and engagement “to offer a credible representation of themselves and their work by claiming solidarity with readers, evaluating their material and acknowledging alternative views in appropriate ways.” The use of various features of stance, such as hedges, boosters, and self-mention, and engagement, such as reader pronouns, directives, and questions, in research articles from different disciplines has been the subject of numerous EAP studies. In an overview paper where he lays out a model for exploring stance and engagement in academic writing, Hyland (2005) points out the importance of expressions of stance and engagement in research articles using results from analysis of a research article corpus, including articles from several “soft” and “hard” disciplines. The “soft” disciplines such as philosophy, sociology, and linguistics exhibit more explicit markers of evaluation of claims and interactions with readers than the “hard” disciplines of science and engineering. Continuing interest in stance and engagement or evaluation in academic discourse has led to studies focusing on specific disciplines, such as pure mathematics. McGrath and Kuteeva (2012) explored stance in the under-studied pure mathematics research article, where reported research is not experimental in design. This study revealed that pure mathematics research reports exhibit values for stance and engagement that show similarity to both philosophy (due to the high number of shared knowledge references) and physics (due to the low number of hedges), establishing the distinctive nature of the epistemology of this discipline and how it influences writing norms.

In-depth studies of just one discursive feature, such as the use of the first person pronoun and imperatives, have also characterized EAP studies of the research article and a few such studies will be discussed here. The first person pronoun in published research articles has been studied by a number of researchers (Kuo, 1999; Hyland, 2001), who have captured the range of functions served by its use. One key finding has been the greater usage of the first person pronoun in the soft disciplines where its use has been related to authors’ desire to “both strongly identify oneself with a particular argument and to gain credit for one’s individual perspective or research decisions” (Hyland, 2001, p. 217).

Harwood (2005) considered both inclusive and exclusive uses of the pronouns in a range of disciplinary writing, and revealed that switches between the inclusive and exclusive use could help the author convey the novelty of his or her own work. The qualitative analyses of the results of the corpus study showed that the inclusive use of “we,” where the pronoun refers to both the author and audience, could construct positive politeness as its use can communicate the author’s belief of the audience being competent enough to follow his or her arguments and interpretations of data. Solidarity between writer and audience is also created as the inclusive “we” is used to provide critiques of the discipline and suggestions for future research. The identification of the functions of inclusive and exclusive pronoun use in published research articles is followed by a discussion of the presentation of pronoun use in a number of popular EAP textbooks, which revealed a lack of overlap between advice given in such handbooks and the findings from the corpus study of authentic academic writing, leading to specific pedagogical suggestions.

Imperatives, which at the outset seem to contradict discourse norms in academic writing that seek to maintain “a harmonious reader–writer relationship” (Swales et al., 1998, p. 98), have also been explored for their use and rhetorical functions in research articles across disciplines. Swales et al. (1998) not only analyzed the frequency of imperative use across disciplines but identified common lexico-syntactic patterns for frequently occurring imperative verbs such as “see,” “consider,” and “suppose.” Using close textual analysis, this study detailed particular rhetorical uses of specific imperatives and lexico-syntactic structures

such as the use of “Now/Next/First/Second + consider + noun phrase” to begin a (sub) topic in linguistics and statistics. The results of this empirical study are used to show that textbooks and manuals for EAL writers (even those written by the first author himself, such as Swales and Feak, 1994) may not reflect actual practice.

One of several discourse studies motivated by comparisons of manual and textbook instructions regarding academic writing and expert practice is Chang and Swales’ (1999) study on the use of informal elements in published research articles. An analysis of 40 style manuals for commonly stated general rules yielded a number of features associated with an informal spoken style, which were then analyzed in research articles from three disciplines: philosophy, linguistics, and statistics. Research articles from the three disciplines vary in their usage of these informal features, with philosophy research articles containing more of such features than research articles from the other two disciplines. This study differs from others exploring discursive features in research articles in its inclusion of views of L2 writers towards informal features in scholarly writing. The views of advanced EAP students regarding a subset of the informal features studied, including the use of direct questions, first person pronoun, and sentence fragments, in scholarly writing point to the challenges posed by the acceptability of these features in academic writing.

Corpus-based studies of general language use have identified lexical bundles in different registers, and these studies have been followed by more focused explorations of the kinds of lexical bundles (that is, combinations of three or more words that frequently occur in a register) that characterize particular genres or disciplines. Hyland’s (2008) study of lexical bundles in research articles, doctoral dissertations, and master’s theses from the contrasting disciplines of electrical engineering, biology, business studies, and applied linguistics revealed significant disciplinary differences in use of lexical bundles, with electrical engineering texts containing the greatest range and density of bundles, pointing to a greater reliance on formulaic expressions in this field. Employing both a structural and functional categorization (including research-oriented, text-oriented, and participant-oriented bundles) of the lexical bundles found in the different genres from the four disciplines, Hyland (2008) showed that different sorts of bundles characterize different disciplines, such as the presence of participant-oriented bundles, specifically stance bundles (for example, “it is possible that”) in social science research articles. These findings underscore disciplinary variation revealed by other analyses.

Some other studies have sought to identify lexical bundles in a specific part of the research article such as the introduction. Cortes (2013) identified a list of bundles in research article introductions using texts from a variety of disciplines, and sought to relate bundles to particular rhetorical moves and steps in introductions. However, the results did not always show meaningful correlations between bundles and rhetorical moves and steps unless the bundles were longer than four words. More significantly, four-word bundles that are only found in one particular step, for the most part, do not seem functionally related to the steps, such as the bundles, “a function of the” or “in terms of the.” They are shown to be only found in the second step of Move 1, “making topic generalizations,” perhaps indicating limits to the usefulness of studies of lexical bundles in part-genres.

The studies of lexico-grammatical and discourse features characterizing research articles, especially in the last two decades, has undoubtedly increased our understanding of the social situatedness of academic writing, by revealing varying discursive conventions in the research article across a number of disciplines. Among other things, these studies have elucidated how academic writers construct relationships with their readers and structure arguments through the use of a number of rhetorical features, and have shown how disciplinary writing



conventions are related to the knowledge-making practices of discourse communities. The analyses of discursive features have led to implications regarding the teaching of EAP, with some researchers proposing specific ways to include corpus-based activities that would raise students' awareness of use of such features in their target disciplines in the genres that they need to produce (for example, Harwood, 2005).

### Research articles and EAP instruction

Many of the studies of the genre structure of research articles have been motivated by the hope that the results could be used in EAP instruction. This section will briefly mention some EAP textbooks that have employed the findings from analyses of research articles. Studies evaluating the use of findings from genre analyses in the teaching of academic writing will also be considered in this section.

Many of the results of analyses of both the macro-organization of research articles and the lexico-grammatical and rhetorical features of research articles have been employed in textbooks published in the last 20 years, the best example probably being Swales and Feak's (1994) *Academic Writing for Graduate Students: Essential Tasks and Skills*, which is in its third edition and has sold more than 100,000 copies (Swales, personal communication). This volume and others (for example, Feak and Swales, 2009, Swales and Feak, 2000, 2009) include carefully crafted pedagogical materials based on recent findings intended to raise students' awareness of disciplinary variation in the research article. These textbooks also include activities where students revise drafts of texts and evaluate exemplars of parts of the research article. In addition, other researchers, such as Hyland (2009b), in outlining instructional practices based on the results of genre analyses, have also pointed to the need to encourage students to reflect on the goals and readership of journals they seek to be published in and to familiarize EAL students with the publication process.

Although many genre studies on the research article have been motivated at least to a certain degree by applications to EAP instruction, not many studies have taken on the task of evaluating the use of genre-based pedagogy employing the results of analyses of the research article. An early study by Hyon (2002) of a reading course that used the genre approach in teaching the research article (in addition to other genres) indicated that such an approach could help some students recognize instances of the genres in new texts, improve reading speed, and even increase enjoyment of reading, according to interview data from students who had completed the course. A follow-up study (Hyon, 2001) using eight of the original 11 students revealed long-term learning, although in some cases students overgeneralized from their newly acquired genre knowledge, which was not always beneficial.

An interesting set of case studies explored the writing development of graduate students resulting from the use of genre-based instruction that included explicit instruction of the move structure of research articles, as well as some discussion of rhetorical features and their functions such as the use of reporting verbs (Cheng, 2007, 2008a, 2008b). Using detailed analyses of student writing, interview transcripts, student annotations on their writing, and student analysis of research article samples, these studies traced students' learning of the research article. Cheng (2007, 2008a, 2008b) shows that students not only learned genre features such as move structure but also developed an understanding of disciplinary influences on academic writing and the interaction of reader, writer, and purpose in academic writing. They were then able to employ this understanding in their own writing. Based on four students' analyses of research article excerpts from their individual disciplines, Cheng (2011, p. 80) argues that a genre-based approach to teaching academic writing does more

than make students aware of a group of textual features, and that his students' attention "moved beyond these [non-prototypical] textual features themselves and ... reached issues such as genre as social actions, as discipline-specific actions, and as rhetorical responses," leading to a greater understanding of context.

There has been a growing attempt to apply research findings to the teaching of EAP and this has resulted in some outstanding examples of transformations of research into pedagogy (for example, Swales and Feak, 2012). A handful of studies have evaluated the efficacy of genre-based instruction incorporating the results of discourse research, and these studies provide strong evidence for the value of such practice.

### **Conclusion and suggestions for future directions.**

This chapter has described the large amount of research on the organizational structure, and rhetorical and lexico-grammatical features that characterize the research article, a key genre in academic writing. These studies have established the breadth of variation in discourse norms across disciplines, and provided evidence for the social situatedness of these discursive practices. Looking to the future, perhaps, we can point to areas that might already be well studied and not in need of further studies, and areas where more research would be desirable.

Given previous research, it appears that further studies on how a specific move or step in a research article varies across disciplines might not be particularly urgent. The studies discussed in this chapter have provided us with an understanding of the range of variation across this genre in overall organization, and research-informed textbooks and instructors encourage students to be ethnographers of writing norms in their own disciplines (Swales and Feak, 2009, for example). It is not clear that further findings about particular disciplines would necessarily enhance EAP instruction of the research article. However, there is still a need for genre studies that add to our understanding of disciplinary epistemologies and the social-constructionist perspective on academic writing, especially those that might challenge or problematize current dichotomies such as "hard" and "soft" disciplines. Further studies that compare the discursive features found in research articles with other academic genres such as textbooks (such as Hyland, 2002) would also add to our understanding of academic discourse.

In addition, there is need for longitudinal studies exploring the acculturation of EAL writers into different disciplines with a focus on their use of discursive features that construct writer stance, engagement with readers, and argumentation structure in advanced academic writing that lead to the production of the research article. Studies that have compared advanced student writing to research articles in particular disciplines have tended to focus on finished products such as PhD dissertations. Conducting close textual analyses of drafts of graduate student or junior scholar writing in disciplinary contexts (similar to studies conducted in EAP course settings, such as Cheng, 2008a) using the analytical frameworks employed in studies of research articles can shed important light on novices' struggles with mastering the discursive practices of their own disciplines, especially if such textual analyses are also embedded within an ethnographic methodology. Gaining access to student texts and disciplinary practices in such contexts might prove challenging but the results from such studies would be valuable in informing EAP instruction. Further studies evaluating genre-based pedagogies in both EAP reading and writing instruction are also needed. The field of EAP would also benefit from studies of the long-term effects (including transfer) of genre-based learning. Although the findings from analyses of research articles have informed writing pedagogy, these findings could also be employed in EAP reading pedagogy.

## Further reading

Hyland & Guinda (2012); Swales (2004)

## Related chapters

16 Corpus studies in EAP

38 English for professional academic purposes

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