Important Features of Academic Research Papers in English

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【Abstract】Writing academic papers in English can be very daunting, particularly for non-native speakers. However, there are some features that can be clearly identified, and once the writer is aware of these, the task becomes less difficult. This paper focuses on how to construct an Introduction, Methods, Results, Discussion (IMRD) paper and some more general academic conventions.

【Keywords】introduction, methods, results, discussion, convention

Introduction

Writing an academic paper in English is a challenge for all but the most seasoned of native English speakers. For non-native speakers the challenge must be even more daunting. However, there are certain academic conventions and generalities, which, once understood, should enable writing to be approached with more confidence. The analysis of text patterns, known as written discourse analysis, is a growing area of research, and J.M. Swales, is the leading voice in the field of analyzing the text patterns employed in academic papers. Research papers in this field tend to focus on one particular aspect of the academic paper. This paper, by contrast, will look at the whole construction of a typical IMRD (introduction, methods, results, discussion) paper, firstly by synthesizing the combined writings of experts in the field as to common conventions, and by the individual sections of the IMRD paper. The features included in these sections are not meant to be exhaustive, but are selected for their importance and general application, regardless of the subject.

There is, of course, no one right way to write a paper, and this paper is not meant to be overly prescriptive. The imagined audience for this paper is not the linguistic expert, but the novice writer, who might feel daunted at the prospect of writing research in English. It is hoped that it will be of some benefit for those contemplating such an undertaking.

Moxley (1992, p.13) notes, “each rhetorical situation—that is, different audiences and purposes—will strongly affect how you compose.” For research papers, regardless of the discipline, the aim is to inform the audience, which is an academic one. Consequently, some generalizations can be made, and the essence of the academic writer’s approach is, as noted by Clanchy and Ballard (1992), cited in Jordan (1997, p.244),

analytical rather than impressionistic, objective rather than subjective, intellectual rather than emotional, rational rather than polemical. The academic writer’s tone is serious rather than conversational, impersonal rather than personal, formal rather than colloquial.

Deciding on the audience is a crucial decision for the writer. This paper is not aimed at academics in the field of linguistics, but instead at aspiring authors. The audience has a great bearing on the content of all papers, particularly in terms of what knowledge the author assumes the readership to possess. It also has implications as to the style of the paper. The relationship between a teacher and a student is markedly different to that between fellow academics. For example, whereas a teacher might use “you” and “I” when writing a textbook, an academic is more likely to use “one” and “the author” when addressing his/her peers. As with spoken English, academic writing is constantly evolving, albeit at a slower pace, so although there are exceptions to the following guidelines, they are best observed by the novice author.
Common Conventions in Academic Writing

The following is an amalgamated list from Swales and Feak (1994) and Jordan (1997) and the advice proffered is generally accepted in the academic community.

Avoid run-on expressions such as... and so forth etc.

Even though these expressions are perfectly acceptable in conversation, and in academic presentations, it is still felt that they should not be used in academic writing. In the future it is possible that such a convention will become less enforced, but at present it is best observed.

Avoid addressing the reader as... you

Although this is very common in spoken English, and in most written English, including textbooks, it is regarded as too casual for academic writing. One is preferred, and the reader is possible.

Do not use direct questions

The practice of using direct and rhetorical questions is a common device in newspaper articles, both in titles and in the body of the text, but it is still not generally accepted in academic writing. Recognized experts might be able to breach this convention, but for a novice, it is wise not to do so.

Place adverbs within the verb

Swales and Feak (1994) note that adverbs are more usually placed mid-position rather than in the initial or final positions in a sentence. He gives these examples.

Then, the solution can be discarded.
The solution can then be discarded.
The blood is withdrawn slowly.
The blood is slowly withdrawn.

Avoid using too many phrasal verbs

It is best not to use phrasal verbs if possible. Jordan (1997, p.245) recommends using investigate rather than look into and discover rather than find out. Some phrasal verbs can sound too casual, such as Smith brings up some interesting points. Others such as Smith points out the problem of... are becoming increasingly common, though Smith notes... would avoid the use of a phrasal verb. The key point here is to use phrasal verbs sparingly, if at all.

Avoid colloquialisms/slang/cliches

Jordan (1997) says expressions such as you know lots it's like push the boat out go the extra mile should be avoided. Although these are very common in spoken English and are very natural, they have no place in academic English.

As a general rule avoid personal pronouns

This is a contentious issue, and is perhaps a convention that is becoming less strictly observed than it once was. In the main, personal pronouns, such as I and we are avoided in IMRD papers (although in other genres, they are acceptable), but Swales and Feak (1994) have found that there are particular situations in which they are not only permissible but necessary. They found that personal pronouns are used, but only in the introduction and discussion sections of papers, as the authors position themselves within the field of study. For example, if an author has a particular explanation, which is contradictory to mainstream thought, then it is fitting to use a personal pronoun to show that it is not part of the broader consensus. Similarly, if something unexpected arises, the author might feel it is necessary to give a personal explanation of the event, rather than present it in a way which suggests it is a commonly held belief. There is also some research to suggest that well-established researchers tend to breach this etiquette, perhaps because their voice is regarded as important within the academic community but for the beginner, it is best avoided. As noted earlier, some academics (Webb, 2002; Albarran & Scholes, 2005) are now questioning this practice, and recommend the use of the personal pronoun, so checking the usage of personal pronouns in the journal that one wishes to be published in is wise. Webb (2002) notes that in a small comparative study of medical and nursing journals, the use of personal pronouns appeared in 92% of medical articles, but only in 32% of nursing ones.

Avoid vagueness in word choice

 Thing is an essential word in spoken language, as due to time pressure it is often difficult to find the precise word for a particular situation. However, in written language, we do not suffer from the same time constraints so precision should be possible.

Do not begin sentences with And or But

Although this is not mentioned by either Swales and Feak (1994), or Maher (1990), presumably because it is regarded as a basic point, it is sound advice for non-native speakers.
The Outline of an IMRD Paper

An academic paper has been described as being like an hour-glass in shape. This is because the introduction section starts by surveying the current state of knowledge in the chosen field. The author then links his or her own research to what is currently known in the field and shows how it adds to the current body of knowledge. In this respect the paper is beginning to narrow to the present research. This narrowing increases in the methods and results sections, which concentrate on that author’s individual research. Then, in the discussion section it once again broadens out, like the hour-glass to show the significance of the individual research to the wider field. Some of the more common patterns within these sections will be discussed later.

The Title

The title is the first chance to attract the interest of the reader, so it is important to make it precise. The title of a medical paper, according to Maher (1990), is not written as a complete sentence and is often completely without verbs. It should contain the key words of the paper and be as specific as possible. It is common to use colons or dashes in the title and occasionally question marks.

The use of a colon helps reduce a potentially long title into a shorter one, by introducing the broad topic before the colon mark and then specifying the aspect to be investigated. For example, 

Priorities and Challenges of Health System Chief Nursing Executives: Insights for Nursing Educators

The title is formulaic. Although Swales and Feak (1990) classify Move 1a as optional, it is rare for this not to be done in a social science paper. Just as the abstract will determine if the paper is to be read, the introduction will decide for how long the reader will persevere. Without overstating the case, the author needs to show why this research is important. Not all authors follow every stage, but some steps are essential, and others are likely to be done.

Move 1 Establishing a research territory

(a) Claiming centrality (optional)

Although Swales and Feak (1994) classify Move 1a as optional, it is rare for this not to be done in a social science paper. Just as the abstract will determine if the paper is to be read, the introduction will decide for how long the reader will persevere. Without overstating the case, the author needs to show why this research is of importance, and why it should be read. One of the most common appeals the author makes to the reader is that his or her topic is of particular importance at the time of writing. This is because the introduction is then much clearer. Similarly, Moxley (1992) advises the constant redrafting of the introduction, as it is not possible to know from the outset what shape the paper will take. In comparison with the methods and results sections, the introduction and discussion sections require more careful thought, as the other two sections are more formulaic.

Swales (1990) and Swales and Feak (1994), have conducted exhaustive research of the introduction section, has identified common components, which they term as creating a research space (CARS). In short, this is a chronological sequence that many authors use to show why their research is important. Not all authors follow every stage, but some steps are essential, and others are likely to be done.

Make an abstract. One is to write a brief summary of the paper, with approximately two sentences for each of the four sections. The other is to focus on the findings and results. The latter approach is more likely to entice readers as the most interesting parts of the research can be highlighted. In contrast, the two-sentence approach is drier and less attractive. However, it is wise to check the usual style of the journal for which the article is being written.

The Introduction

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The increasing interest in ...has heightened the need for...

Of particular interest and complexity are ...

Recently there has been a growing interest in...

The possibility of ...has generated wide interest in...

The development of ...is a classic problem in...

The development of ...has led to the hope that...

As can be seen in these examples, the author is telling the reader why his or her research is of importance, and why it is valuable.
Swales and Feak (1994) also note how most of the above examples use the present perfect tense, and suggests that this might be a feature of claiming centrality.

b) Reviewing previous research (obligatory)

Reviewing previous research is compulsory in academic texts. Usually, this is done chronologically, charting the key research papers that have been published in the field. This helps orientate the reader to the developments that have been made and, by using the more famous papers, the reader will be able to connect the author's research to his or her own knowledge of the field. The more famous papers are also those that have contributed most to the current state of knowledge within the field. Another unspoken function is to show the reader that the author is aware of what has been done and is an expert within the field. Equally, failure to note previous significant research may suggest that the author's knowledge is not as broad as it might be.

It does make a difference as to whom the writer perceives to be the audience. If the article is aimed at other experts within a narrow field then it is less likely to dwell on the history of the topic, as this will be shared common knowledge, but will focus on more recent research or on commonly known problems within the field. If the journal covers many topics and is not so specialised, then the author may need to cover more background than would be the case if the readership were more specialised. The topic will also have an influence. If it is topical or much written about, less background knowledge will be required. However, if it is not so well known, the author will need to provide more background knowledge so that it connects with the readership. The use of citations is how the author builds this shared knowledge with the reader.

Citations can be written in a variety of tenses and in a variety of styles; a good writer will vary this to make the article more interesting to the reader. Variety is an important factor in good writing. As can be seen by reading articles, authors will not, for example, use only one reporting verb for the duration of an article. The desire to avoid repetition is strong. There are many different verbs used to cite authors, and some of the more common ones are: X shows that Y reports that X states that Y found that Y noted that Z believes that Y This list is by not exhaustive, and a quick perusal of any article will show different ways of reporting what authors have said. Similarly, there is a choice as to where the names of cited authors appear within a sentence.

The following example is perhaps most typical and is an example from a nursing journal.

Leape and colleagues (1995) reported that RNs intercept the majority (85%) of potential medication errors.

Alternatively, the names of the authors can occur at the end, as in the next example.

Furthermore, between 44,000 and 98,000 patients die each year as a result of preventable medical errors, exceeding the annual mortality rates attributable to motor vehicle accidents, breast cancer, and acquired immunodeficiency syndrome (Berenholtz, Dorman & Pronovost, 2003).

It might be the case that more than one researcher has investigated a particular area, in which case it can be helpful to use multiple citations to save space. The following truncated example is taken from Moxley (1992, p.34),

‘A number of researchers (Bellack, Kliebard, Hyman & Smith 1996; Cazden, John & Hymes, 1972; Barnes, 1969; Flanders, 1979; Sinclair & Coalthard, 1978) have analyzed the language of classrooms and have come to the conclusion that...’

Quotations in academic papers are less common than in student essays and are used sparingly. Moxley (1992) cautions that they detract from the voice of the author if overused.

Move 2 Establishing a niche

a) Indicating a knowledge gap (obligatory)

Having reviewed the previous literature, the author then needs to inform the reader why his or her research adds to the current body of research. This is typically done by indicating an existing knowledge gap in the field, which the author’s work seeks to fill.

Pointing to this knowledge gap can be done in a variety of ways, but typically the author will show that there is a lack of knowledge or an existing problem that needs solving, and the research of the author will address those problems. There are many ways in which this is done. For a full range of indicators consult Swales and Feak (1994, pp.186–191). Verbs which indicate the limitations of previous research include;

concentrated on... disregarded... failed to consider... ignored... been limited to...

The second group show some of the more common adjectives used that fulfil the function of criticizing what has previously been written. It is unlikely that a novice writer would criticize previous researchers, but more experienced ones might do so. The adjectives include;

incomplete... inconclusive... questionable... unconvincing... unsatisfactory...

It would seem the best choice for a novice writer is not to
comment on previous authors’ limitations, but instead to focus on the limited or restricted scope previous research.

- little information
- little research
- few studies
- few investigations

Some authors, Swales and Feak (1994) found, prefer to use comparatives to highlight a knowledge gap. The research has tended to focus on..., rather than on...
The studies have emphasized..., as opposed to...
Although considerable research has been devoted to..., rather less attention has been paid to...

These are particularly useful for topics that are not as fashionable as others, and consequently have been less explored.

**Move 3 Occupying the niche**

(a) outlining purposes or stating the nature of the present research (obligatory)

Having identified a weakness in the current knowledge of the topic the author then needs to explain how this void is to be filled.

Swales and Feak (1994) list the following standard ways of outlining the purpose of the research.

- The aim of the present paper is to give...
- This paper reports on the results obtained...
- In this paper we give a preliminary summary...
- The main purpose of the experiment reported here was to...
- This study was designed to evaluate...

When telling the reader the aim of the paper there is a choice as to which tense is employed. Swales and Feak (1994) favour the use of the present tense when there is a choice as it makes the research seem fresher. Furthermore, if one starts with the aim of this paper was to... there is a suggestion that the aim has since changed. He notes that when the author refers to his or her own paper, the present tense must be used, but if the type of investigation is referred to then there is a choice between the present and past tenses. To summarise, using the present tense would seem the better choice.

(b) announcing principal findings (optional)

Although this is a possibility, it would not seem to be so common in the social sciences. The principal findings will be fully discussed later in the paper, and if they have also been highlighted in the abstract, there is a danger of being overly repetitive.

c) indicating the structure of the research paper (optional)

This would be most appropriate if the paper is in some way atypical and is different to how the reader might anticipate it to be. This is optional, and unless there is a pressing reason to tell the reader about a novel structure in advance it is probably unnecessary.

**Methods**

In comparison with the introduction, the methods section is relatively straightforward to write, and most native speakers will find that one draft is often sufficient. As it is concerned with reporting how the research was conducted, there is usually little need for in depth analysis, unless the choice of method is unusual or novel in some aspect. The two most striking features of this section are the overwhelming use of the past tense and the abnormally high percentage of the passive voice. One study found that the simple past tense accounted for 94% of all verbs in both the methods and results sections, but for only 35% in introductions and 39% in discussion sections. The high use of the past tense is because the methods section details procedures which have been finished.

Although instances of the passive voice occur throughout research papers, research has shown it occurred in more than 80% of verbs in the methods section, which was more than twice as frequent as in any other section. Other researchers state that as the passive is used for human actions, all actions performed by researchers fall into this category. As it is obvious from the nature of a research paper that the researchers have done the actions, it is unnecessary for them to be named. In non-academic English, using the passive is not so common, and indeed, on software packages for computers, the use of the passive is often highlighted in the spell-check and grammar section, as if the writer had made a mistake. In other forms of writing, using the active is felt to be far more engaging for the reader, so writers generally use the passive sparingly.

By contrast, in academic writing, the main aim is not to entertain but to inform, and, the passive voice is one way in which the author can avoid using personal pronouns. It is interesting to note that the use of the passive is mainly limited to the methods section, and does not occur as frequently in the remaining sections as many writers would believe. Even within the methods section, writers do like to occasionally choose the active voice to break the monotony of the passive.

Some of the more common uses of the passive voice in medical papers according to Maher (1990) are listed below.

- Questionnaires were sent...
- Patients were interviewed...
- Interviews were recorded...
- The data was analysed... (British English)
- The data were analyzed... (American English)
Results

The results section is primarily concerned with presenting the data. Not all data will be written about in the body of the article. Large amounts will appear in tables, graphs or other pictorial forms, and only those results that are of particular interest will be commented on. When doing so the writer will use different ways of relating this information, such as fractions, comparisons, percentages and multiples in order to keep the writing style fresh. The following examples are taken from a single nursing paper.

- Approximately 33% of...
- Almost one quarter (24.1%) of...
- Just under one fifth (19%) of...
- Half of the participants were...
- Intercepted the majority of potential errors...
- Account for an even higher percentage...
- Similarly, just over half of the near errors...

Depending on the amount of results generated by the research, it will be necessary for the author to decide which results merit comment as opposed to merely being recorded in the appendix. Any important tables or graphs should be presented in the body of the results section, not in the appendices, as the reader should not need to be constantly referring to the end of the article. The order in which one presents the results requires carefully consideration. Unless a clear framework was decided upon before conducting the research, it is unlikely that the order in which the statistical analysis was done will be the best way to present the results. The author needs to consider whether the most interesting results should be discussed first, or, if some results link with others and can be grouped together. Anomalies in the results also need to be commented upon, as the author needs to anticipate questions that the readership might have and this will include any results that might not be consistent with what was expected or that are controversial in some way.

The second area of interest is the degree of claim that is made when interpreting results. This is an essential part of an academic writer’s role, and maintaining a measured approach is vital. If the author is too emphatic as to what the results show, the readers may feel that such an injudicious approach undermines the author’s role, and maintaining a measured approach is vital. If the author is too timid in the claim made, the editor of the journal may feel that nothing of interest has been revealed and the paper does not warrant publication. The following examples are taken from one nursing paper by Balas, et al. (2004).

These findings suggest a number of factors...

In this example, the use of suggest allows for the possibility of another explanation. If had been used, no other explanation is being permitted by the author.

- ...heavy workloads can result in stressed and fatigued workers...

Using can in the above makes the claim less comprehensive, and shows that heavy work loads do not always result in stressed and fatigued workers. Similarly in the following example, using all limits the claim made.

- ...it is impossible for RN’s to avoid all distractions

The use of impossible is a very strong claim but by using all before distractions it allows the possibility that nurses can avoid some distractions, or even most but not all. Making a realistic claim is extremely important; as if the author exaggerates it will make the reader unsure as to what extent the author is to be relied on. If a claim is clearly injudicious, not only will the reader doubt the particular claim made, but most probably he or she will become less confident about the whole article.

The Discussion Section

The discussion section is less formulaic than the introduction, and the choice as to what to include is freer. The main aim is to highlight the key points (rather than facts) from the writer’s own study and then show how they relate to the field. This is the bottom end of the hour glass figure mentioned before. The findings of the study once discussed are then assessed in terms of how they advance the state of knowledge within the whole field, and often point to which further studies are necessary to continue building the knowledge base. Swales and Feak’s (1994) research found a greater variety of ways of writing the discussion section, but identified the following moves as being the more common features of research articles.

Move 1 Points to consolidate the research space (obligatory)

Swales and Feak (1994) found that 40% of authors started by highlighting what they felt to be the most significant points of their research. The very fact that the author chooses certain findings to use in the discussion clarifies to the reader as to what the author regards as being the most interesting revelations of the research. According to Swales and Feak (1994), phrases of generality is a particular linguistic feature of the discussion...
section. These include such expressions as:

- **On the whole,**
- **Overall,**
- **In the main,**
- **With certain exceptions,**

These are not restricted to this section, but they are most likely to occur in summation.

### Move 2 Points to indicate the limitations of the study (optional but common)

As was mentioned in the results section, the writer will be anticipating readers' possible questions that anomalies in the data may pose. The author will also hedge as not to overstate what the study means. Likewise, the author will qualify, if necessary, how much weight can be attached to it the findings. This is not meant to detract from one's own work, but to be a detached assessment of how significant the work is. For example, if the study were a questionnaire which produced strong results, but was conducted on a relatively small number of subjects, this would be acknowledged by the author. If there are significant areas that were not included in the research design, these too should be acknowledged. Swales and Feak (1994) divide the types of limitations into two categories, firstly the research scope and secondly the findings. Typical examples of a limited research scope include:

- *It should be noted that this study has examined only...*
- *This analysis has concentrated on...*
- *The findings of this study are restricted to...*
- *This study has addressed only the question of...*
- *The limitations of this study are clear:...*
- *We would like to point out that we have not...*
- *Some examples of limitations in research findings include;*
- *However the findings do not imply...*
- *The results of this study cannot be taken as evidence for...*
- *Unfortunately, we are unable to determine from this data:...*
- *The lack of... means that we cannot be certain...*

### Move 3 Points to identify useful areas of further research (optional and only common in some areas)

Having done the research the author will be in a strong position to know the next logical step in terms of the research necessary to further understanding of the topic under investigation. The research may have found an area that has yet to be explored, or a problem might have presented itself that needs to be resolved before further progress can be made.

## Conclusion

Getting published in English language journals is exceedingly difficult in some disciplines, with one study revealing that between 80–95% of all manuscripts in the Arts and Humanities are rejected. Of course, if the research is not of great significance, then no matter how well-written it is it will not be published. However, papers that are outside the mainstream, in terms of following certain conventions, need to be of exceptional brilliance to be accepted. It is hoped that this paper will arm novice and indeed more experienced ones with a better understanding of the IMRD genre. For example, many native speakers and experienced non-native speakers have a habit of overusing the passive voice when in fact it is mainly prevalent in the methods section. The features that have been concentrated on in this paper are those that the author feels are of particular interest and are ones on which there is a consensus in the academic community. There are many other features of academic writing that have not been covered here as the field is still in its infancy, and a consensus is yet to emerge on all aspects.

There have been many textbooks written for graduate students and for teachers, not only with advice on how to write, but also with exercises that build the necessary skills to do so, such as those by Coffin, et al. (2003); Rose and Kiniry (1998); Spencer and Arbon (1996); and Leki (1998). However, there is one book that I would strongly recommend which is Academic Writing for Graduate Students by Swales and Feak (1994). Whilst most books of this nature are based upon an author's intuitive understanding of academic writing, this book is based on research of actual published papers. Despite this recommendation it is important to see their advice as a guiding framework, and not as a definitive plan that must be followed. Although there are conventions which are best adhered to, the advice on how to construct an introduction or discussion section should serve only as advice as to how these sections might be formulated.

### References

