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Kalmar Växjö

G3 Thesis

Abstract Writing
A Study of Swedish Students' Adherence to the Academic Norm

Author: Daniel Eriksson
Supervisor: Charlotte Hommerberg
Examiner: Diane Pecorari
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Abstract

The IMRD structure with its constituents Introduction, Method, Results and Discussion is acknowledged as the norm for writing abstracts by most. Researchers need to adhere to the norm in order for their abstracts to function as effective advertisements for their research articles, and students need to comply with the norm should they want their abstracts to serve as connectors to the academic world. The aim of this thesis is to examine to what extent abstracts written in English by Swedish students adhere to the IMRD norm. A total of 40 bachelor's thesis abstracts in English linguistics and physics were analyzed in terms of macro structure, the inclusion, exclusion and order of the constituent parts, and micro structure, the linguistic realization of the constituents. The results show that the English linguistics and physics abstracts fail to meet the requirements of the IMRD norm on several points. This suggests that the students are either unaware of the important function fulfilled by abstracts or need more guidance and practice. The conclusions are necessarily tentative since further research is required to provide a comprehensive picture, but still, the results suggest that Swedish students' abstract writing needs to be given higher priority.

Keywords

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1 Introduction

According to the international standard ISO 214, an abstract is "an abbreviated, accurate representation of the contents of a document", which "enables readers to identify the basic content of a document quickly and accurately, to determine its relevance to their interests, and thus to decide whether they need to read the document in its entirety" (1976:1f). A similar definition is given by the American National Standard, and both standards make a distinction between informative abstracts, indicative abstracts and informative/indicative abstracts. They recommend the inclusion of purpose, methodology, results and conclusion for the writing of informative abstracts, which are typically found in research articles, whereas for indicative abstracts, used mainly in books and review articles, the inclusion of methodology and results is not prescribed. Informative/indicative abstracts are mergers of the two types (ISO 214 1976 1ff; ANSI/NISO 1997:2ff).

Although there is some disagreement among researchers regarding the ideal structure of informative abstracts in distinct disciplines and cultures (see e.g. Martín 2003, Phuong Dzung 2008, Sauperl et al. 2008), the IMRD structure, which is in line with ISO 214 and the American National Standard, is acknowledged as the academic norm by most (Lores 2004:282). Its constituents are Introduction, Method, Results and Discussion. In other words, abstracts are supposed to mirror the structure of research articles (RAs).

The ability to write a comprehensible abstract which reflects the RA as a whole, using a limited number of words, needs to be part of every professional researcher's repertoire. A poorly written abstract may result in the RA receiving little if any attention, whereas one skillfully composed, which incorporates all the essential elements, most probably attracts more readers. Similarly, the quality of the abstract may determine whether or not the RA is published in a particular journal (Lores 2004:281).

Mastering the art of writing abstracts is not only important for professional researchers, however, but is of equal concern to university students who aspire to take part in the discourse of the academic world (Blåsjö 2004:288ff). Students' theses are often published online where they can be accessed by the national and international research communities and by fellow students, and therefore, their abstracts have the potential to serve as connectors to the academic world. Using Blåsjö's terminology, abstracts can perform the function of "mediating tools" (2004:30) [my translation]. However, to be accepted and listened to in the academic debate students must write in accordance with the recognized norm.

Ask (forthcoming) has made a valuable contribution by studying abstracts written in Swedish by Swedish students at university level in order to examine whether they conform to the IMRD norm. Still, the language constituting the best portal into the international academic world is English. Therefore, this thesis intends to investigate to what extent abstracts written in English by Swedish students adhere to the IMRD norm. To make a contribution to the debate about the need of different disciplines to adopt distinct norms, this thesis aims to scrutinize abstracts in bachelors' theses written by two groups; one whose students major in English linguistics and one whose students major in physics. In order to realize these aims, several questions need to be answered. How are the abstracts structured; what is included and what is left out and in what order are constituents positioned? How are the different constituents realized? Are there any significant discrepancies between the two groups? The results of the study provide a tentative indication of what students need to be observant of when composing abstracts.

2 Theoretical background/previous research

There is a great deal of illuminating research on the genre of abstracts. Most of the studies focus on abstracts produced by researchers, but some draw attention to the academic writing of students on various levels of the educational system (see e.g. Hyland & Tse 2005, Ren & Li 2011). From a student's perspective, however, the studies which highlight the language use of researchers are equally important, since students have to accommodate the norms and practices of the national and international research communities in order to enhance educational and professional prospects. Consequently, the following review of previous research attributes equal importance to reports pertaining to the work of researchers and reports concerning the academic writing of students.

First, points of comparison in research on abstracts are commented upon. Then, some of the most burning issues in the abstract genre are penetrated; the merits of traditional and structured abstracts, and disciplinary and cultural inclinations. Finally, students' academic writing is discussed and situated within a discourse community context before studies which pinpoint university students' abstract writing are presented.

2.1 Points of comparison

Various standards are mentioned in articles and books which present research on abstracts. The international standard ISO 214, the American National Standard and the IMRD norm are some of those most frequently referred to. As stated above, the first two distinguish between informative abstracts, indicative abstracts and fusions of the two types, and recommend the inclusion of purpose, methodology, results and conclusion for the writing of informative abstracts, whereas for indicative ones, the inclusion of methodology and results is not promoted (ISO 214 1976:1ff; ANSO/NISO 1997:2ff). Similarly, the IMRD norm prescribes a mirroring of the RA structure for informative abstracts (Lores 2004:282). Thus, since these three standards are more or less identical, it can be argued that when scrutinizing abstracts in order to see to what extent they conform to the IMRD norm, it is also determined whether they meet the requirements of ISO 214 and the American National Standard.

The constituents of ISO 214, the American National Standard and the IMRD norm are variably referred to as structural elements, features, components, sections and moves when used as points of comparison for the study of macro structure, that is, the overall organization of abstracts (see e.g. Lores 2004, Sauperl et al. 2008, Hartley & Betts 2009). While the first four are relatively straightforward, the term *move* merits further explanation. "Move is a functional term that refers to a defined and bounded communicative act that is designed to contribute to one main communicative objective, that of the whole text" (Lores 2004:282). That is to say, the application of the term move gives more prominence to the functions of the constituent parts. Still, it seems as if the selection of terminology is a question of taste rather than intelligibility, and therefore, and for the sake of clarity, from now on move will be used to refer to all macro-constituents.

The number of moves used as analytical tools in studies on abstracts differs slightly. For instance, Lores (2004:283) uses the four moves introduction, method, results and discussion in the part of her research which deals with informative abstracts. Phuong (2008:234), on the other hand, finds the following five moves suitable for a study of abstracts in applied linguistics and educational technology: situating the research, presenting the research, describing the methodology, summarizing the findings and discussing the research. The number and types of moves opted for should be guided by research questions. However, readers of studies on abstracts must be aware of the fact that varying analytical tools may yield different results and conclusions and highlight different facets of language use.

Besides the macro structure, many studies focus on the micro structure, as they analyze in depth the linguistic realizations of abstracts. Sometimes this is done by devising subcategories for moves and sometimes by zeroing in on certain linguistic features. Van Bonn and Swales' (2007:97) categorization of the ways in which researchers justify their studies in English, French and bilingual research journals exemplifies the former strategy, whereas Hyland and Tse's study of "'evaluative *that*-clauses'", which "project the writer's attitudes or ideas" (Hyland & Tse 2005:124), demonstrates the latter.

2.2 Traditional vs. structured abstracts

Traditional abstracts do not make use of subheadings, whereas structured versions do. As implied by the name, traditional abstracts have a longer history, and the fact that most of the research on this genre carried out today is devoted to them, suggests that they still outnumber their structured cousins. Structured abstracts entered the competition in the middle of the 1980s in the field of medicine, and later spread to other disciplines (Hartley & Betts 2009:2011).

Hartley and Betts are some of the most ardent proponents of structured abstracts. In one study, they had three groups, university students, academics and researchers, and information scientists, rate the readability of a number of traditional and structured abstracts to see whether there were any differences of opinion. They also checked for the impact on comprehension of inclusion and exclusion of titles. It was found that inclusion and exclusion of titles did not have an effect, but more interestingly, that the university students and the information scientists ranked structured abstracts higher than traditional ones (Hartley & Betts 2007:2335ff).

Hartley and Betts (2009:2010ff) also provide evidence of shortcomings in traditional abstracts in the social sciences as regards their informative function. They argue that pivotal information is missing in most of the 100 abstracts in their sample, and offer several solutions to the problem, the most important of which recommends authors to submit structured abstracts, or at least to write structured abstracts before removing the subheadings prior to publication. If this advice is adhered to, they claim, the end-product will not be deficient.

The arguments put forth by Hartley and Betts are convincing, especially the suggested technique involving the removal of subheadings ahead of publication. It provides a loophole for researchers who have to appease publishers that do not allow the use of subheadings. Furthermore, the technique can potentially aid both researchers and students in incorporating

all the vital elements of an excellent abstract, since it can be argued that it is not subheadings per se which improve readability but the fact that no important information is left out (Hartley & Betts 2009:2016).

Yet, the fact that traditional abstracts have been the norm for a long time and that the force of habit is strong leads one to predict that if structured abstracts are to take over the position held by traditional ones, it will hardly happen overnight. Another factor working against structured abstracts is that they tend to take up more space than traditional ones (Hartley & Betts 2009:2016).

2.3 Disciplinary inclinations

The debate about the need for researchers and students in different disciplines to adopt distinct norms is related to the question of traditional and structured abstracts, since the latter are more associated with certain disciplines than others (Hartley & Betts 2009:2011). However, the debate's principal concern is the macro structure and linguistic realizations of traditional abstracts.

Sauperl et al. (2008:1420ff) investigated to what extent traditional RA abstracts in pharmacology, sociology and Slovenian language and literature adhere to Tibbo's (1993) interpretation of ISO 214, which requires the inclusion of background, purpose, hypothesis, method, results, conclusion and discussion. They discovered that all three disciplines deviate from the standard. For instance, several pharmacology abstracts omit purpose and conclusion, a large number of sociology abstracts lack hypothesis and discussion, and numerous abstracts from the Slovenian language and literature journals do not include any of the specified moves of ISO 214. Hence, they arrive at the conclusion that a universal standard may not be a plausible or even preferable alternative.

The general findings of the study appear to be credible, but at the same time, there are weaknesses which the authors are aware of that need to be highlighted, as they give the study an impression of inconsistency. First, the pharmacology abstracts are a mixture of informative and indicative types. Second, some of the sociology abstracts present theoretical work and personal viewpoints rather than empirical research, and finally, in contrast to pharmacology and sociology, no international equivalents of the Slovenian language and literature abstracts are included in the study. These limitations make the abstracts poorly fitted for comparisons between the disciplines, but still, the study indicates that a single standard may not be an option.

The same can be said about Samraj's (2005:141ff) contrastive analysis of Conservation Biology and Wildlife Behavior, two closely related fields. While they are very similar when it comes to the inclusion and omission of the macro structure moves purpose, method, results and conclusion, one notable difference is the way in which they justify their research projects. Writers of Conservation Biology abstracts are more prone to make use of centrality claims, which are "appeals to the discourse community whereby members are asked to accept that the research about to be reported is part of a lively, significant or well-established research area" (Swales 1990:144). The author suggests that the reason for their frequent use of this promotional feature is that the field of Conservation Biology is relatively new and is yet to establish a firm framework (Samraj 2005:152).

Another study where the most salient differences between disciplines were not found in the macro structure has been carried out by Stotesbury (2003:327ff). He challenged the presumption of objectivity by enquiring into the use of explicit evaluation and modality in RA abstracts in the humanities, the social sciences and the natural sciences, and learned that explicit evaluation is much more common in the first two fields, whereas the use of modality is relatively even, but differs a great deal between the background, results and conclusion moves. Differences were also found between subdisciplines within the three umbrella categories of the humanities, the social sciences and the natural sciences. Stotesbury classifies his findings as "tendencies rather than highly conspicuous differences" (2003:339), but they are still tentative manifestations of varying needs and writing traditions.

Not all studies arrive at the same conclusions as the above three, though. Milas-Bracovic (1987:51ff), for instance, sees no reason to recommend divergence from ISO 214, based on the fact that in her examination of 45 abstracts from several disciplines, only small contrasts were identified. Thus, there are no clear answers as regards the need to adopt specific disciplinary conventions, but instead, an ongoing debate and uncertain tendencies concerning both macro and micro structure.

2.4 Cultural inclinations

The varying needs and traditions of disciplines are not the only factors which may warrant divergent abstract ideals. Cultural dissimilarities are also claimed to play an important role. Martín (2003:29ff) argues that English and Spanish journal abstracts in experimental phonetics and psychology differ on three main points. The English abstracts include the results move to a larger extent, and more often justify the research carried out. Furthermore,

they are more tentative as they use a larger number of hedges. Martín comments his findings as follows:

> We could account for these differences on the basis of several socio-cultural factors: different intellectual styles and cultural patterns, the influence (or lack) of academic writing instruction, or political and historical circumstances. But a major source of rhetorical variation, as we have already pointed out, may lie in the relationship between the writer and the discourse community s/he addresses, which is different both in terms of numbers and expectations (Martín 2003:42).

In other words, there are numerous cultural factors which can account for the detected differences, but the most important explanation is the characteristics of the discourse community, a sociological rather than cultural influence (Van Bonn & Swales 2007:105).

The same conclusion is reached by Van Bonn and Swales (2007:93ff) in their examination of English and French journal abstracts in language science. Their macro structure is very similar, but the French abstracts contain shorter sentences, more second person pronouns, fewer passive constructions as well as promotional features, and tend to use a different set of transition words, expressing addition/enumeration rather than contrast/concession. Van Bonn and Swales claim that the promotional features, which are used to justify the research, and the transition words, are dependent on the size and constitution of the English and French discourse communities. Since the competition in the English community is fiercer, its researchers have to rely on self-advertisement to a larger extent and set themselves apart from others. As for the differences in sentence-length and use of passives, Van Bonn and Swales attribute those to "stylistic conventions and linguistic resources", whereas the preference for second person pronouns is ascribed to "cultural expectations" (2007:104).

A methodological flaw needs to be pointed out, however. While Martín compares equally prestigious English and Spanish journals, Van Bonn and Swales juxtapose the more distinguished English *Journal of Linguistics* with the less reputable French *Bulletin* (Martín 2003:27f; Van Bonn & Swales 2007:105). Hence, some of the differences discussed above may have appeared due to faulty points of comparison.

With the exception of the Spanish writers' propensity to omit results, no significant variation in the macro structure is identified in Martín's and Van Bonn and Swales' studies, but instead, contrasts in micro structure. Similarly, Melander et al. (1997:265f) show that

abstracts produced by Swedes and Americans in the field of linguistics are alike in terms of overall structural organization, but display cultural preferences when it comes to "metatextual references" (1997:265), comments on one's own text, which are more commonly used by the Swedes. In addition, they claim that the situating of the research seems to be of greater importance in the American context.

Consequently, it may be admitted that culture, language as an extension of culture, and discourse community features are influencing factors, but at the same time, the macro structure of abstracts does not appear to be open for much alteration.

2.5 Students as discourse community members

As argued in the introduction, students' abstracts are potential mediating tools, which can function as links to the academic world provided that they comply with a particular norm (Blåsjö 2004:288ff). This argument is based not only on online accessibility, but also on the underlying notion that academic writing is "a collective social practice" (Hyland 2004:1), which implies that writing determines "who will be regarded as members, who will gain success and what will count as knowledge" (Hyland 2004:5). That is to say, participants in this social practice are in a sense both empowered and dependent; the former because they shape the discourse community together with the other members, and the latter since they cannot by definition act outside of the discourse. Thus, while it can be argued that students are somewhat constrained, it can also be contended that they together with researchers determine norms and conventions.

Such a view on specifically students' academic writing provides a strong argument against those who express worries about socialization because the view entails that students are not simply forced to adapt to prevailing conventions, but are contributors to the collective social practice. Certainly, it can be argued that they are peripheral players compared to researchers, but they are not insignificant.

2.6 Students' abstracts

As mentioned, most research explores the features of RA abstracts, but there are exceptions. Ren and Li (2011:162ff) compared abstracts of Chinese students' English master's theses to RA abstracts in applied linguistics, and discovered that the former put more emphasis on the informative function and the latter on the persuasive function, as indicated by the RA abstract

writers' selective use of moves. They let purpose determine the selection of moves, as opposed to the students, who are careful not to deviate from a mirroring of their whole theses. The students were also found to include additional moves, which Ren and Li label structure, promotion and limitation. The first refers to a description of the macro structure, the second "overly states the strength of the paper" (Ren & Li 2011:165), and the third draws attention to a thesis' limitations. The authors claim that the incorporation of structure descriptions may be connected with the length of the abstracts, since the longer thesis abstracts give the students a chance to provide an outline of their papers. Moreover, they argue that the application of the promotion and limitation moves, in concert with an overemphasis on background information and excessive repetition, make the students' abstracts come across as insecure.

In similar vein, Hyland and Tse conclude that the L2 students' master's and doctoral abstracts in their study on 'evaluative *that*' "seem overstated and perhaps rather anxiously persuasive" (2005:137). Although using fewer 'evaluative *that*-constructions' than authors of RA abstracts, the students often express a higher degree of certainty, and also aim to sound as objective as possible. The authors deduce that awareness as regards the elaborate uses of the construction needs to be raised among students, in order to make it a useful tool in their abstract writing (Hyland & Tse 2005:123ff).

These two studies indicate that there is a vital need for students to be informed about different aspects of abstract writing, so that their abstracts can effectively perform the function of mediating tools. They should be aware of the effects of decisions relating to both macro and micro structure. This is where this study aims to make a contribution, as it intends to raise Swedish students' cognizance.

As described in the Method and Material section below, the current study uses a slightly modified version of the method that Ask (forthcoming) used in her analysis of Swedish students' abstract writing in Swedish. Thus, a presentation of the results of Ask's study may be expected in this section. However, since the article that will be the end product of her work is yet to be published, curious readers will have to wait for her assessment of Swedish students' performance.

3 Method and material

As the review above illustrates, there is some controversy as to whether identical macro and micro structures are suitable for informative abstracts in all academic disciplines and cultures, and for students, there is also the question of socialization (Blåsjö 2004:288). Should students

be forced to pick up the practices of researchers without questioning the bases on which they are established in order to be accepted in the academic world? The debates on these issues will surely continue. One solution to the socialization problem, as argued above, is to embrace the view of writing as a collective social practice. Also, it is fair to argue that, at the moment, the best yardstick available to any undergraduate student who is writing the abstract of their bachelor's thesis and whose aim is to partake in the academic debate is the IMRD norm. It mirrors the structure of the whole thesis, is in keeping with both ISO 214 and the American National Standard, and is recognized as the norm by most (Lores 2004:282). In addition, studies show that divergence from the IMRD norm has a negative effect on comprehension (Martín 2003:30), and there are no clear answers regarding researchers' and students' need to adopt discipline-and culture specific conventions. Therefore, the IMRD norm, as interpreted by Ask[1] (forthcoming), is used as a point of comparison in this thesis albeit in a version which has been slightly modified to fit the purpose of the present study.

The abstracts are analyzed by means of Ask's (forthcoming) five moves, which are constituents of the IMRD structure. Each move has two or more subcategories, most of which are adopted from Ask. Only the subcategories of move 1 and 2 have been altered. Move 1 is Background. Here a division is made depending on whether the writer links the research to a certain research question, a phenomenon in society, teaching, personal interest and/or experience, or a combination of any of these categories. Move 2 is Purpose, and together with move 1 it constitutes the Introduction of the IMRD structure. Here a distinction is made between those who explicitly state the purpose by means of phrases such as *this thesis aims to* and *the purpose of this thesis is*, and those who implicitly present the aim of the research. Move 3, Method, is also divided into two subcategories, specific and vague. The author of the abstract describes the method in detail by stating what has been studied and how it has been studied, or accounts for the method in vague terms. Move 4 is Results, which are either stated explicitly by the use of phrases such as *the results show* and *it was found*, or expressed implicitly. Finally, move 5, Conclusion and Discussion, is classified as consisting of only conclusion, only discussion or a combination of both. A conclusion is based directly on the results of an analysis, whereas a discussion brings up the limitations or wider implications of a study, or suggests areas for further research.

The advantages of utilizing these particular moves and their respective subcategories in the analysis of the abstracts are manifold. The method allows for a close examination of the

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[1] The information about Ask's interpretation of the IMRD norm is taken from a PowerPoint presentation.

macro structure, the inclusion, exclusion and order of moves, and the micro structure, the linguistic realization of moves. What is more, it enables comparisons between the two groups of students.

When determining to what extent the abstracts adhere to the IMRD norm, it is important to examine both the macro and micro structures, as they both reveal much about the degree of adherence, and consequently, the quality of the abstracts. As for the macro structure, the model abstract includes all five moves, Background, Purpose, Method, Results, Conclusion and Discussion. The reason that the ideal Introduction of the IMRD norm is interpreted as consisting of Background and Purpose, and that Conclusion and Discussion is used as a point of comparison instead of only Discussion, is that an abstract which includes all of Ask's moves in the above order coherently informs readers about the most vital aspects of the research that has been carried out. Certainly, other interpretations as to what constitutes the Introduction move can also be made, and other modifications can be argued for, but as long as the reason for a certain choice is stated, it is not a question of great concern. Different interpretations are also possible regarding the ideal micro structure of the IMRD norm. This thesis adopts the standpoint that in the background move, a higher validity and compliance with the norm can be achieved by situating the study within a research, societal or teaching context than by referring to personal interest and/or experience. As for the other four moves, it is assumed that an explicitly stated purpose, a method described in detail, explicitly presented results and the inclusion of both conclusion and discussion aid comprehension and readability and signal a high degree of adherence to the IMRD norm.

Two disadvantages with respect to the application of moves deserve mentioning. The identification of moves and their subcategories always involves a certain amount of subjective, personal evaluation, which cannot be avoided no matter the precision of the rules of categorization (Lores 2004:282f). In addition, the identification runs the risk of becoming incoherent if it is not decided whether linguistic signals, that is certain words or phrases, or content should guide choices (Phuong Dzung 2008:233). Admittedly, the problem concerning personal evaluation should not be underestimated, but by providing illustrative examples of interpretations in the results section, it can be partly solved. Moreover, Phuong Dzung's advice as regards identification of moves is followed. Phuong Dzung argues that when a particular move is to be identified, function and context should be considered before studying the linguistic realization of the move (2008:233).

To further facilitate the understanding of the method utilized in this thesis, it is here applied to the abstract of the current study:

The IMRD structure with its constituents Introduction, Method, Results and Discussion is acknowledged as the norm for writing abstracts by most. Researchers need to adhere to the norm in order for their abstracts to function as effective advertisements for their research articles, and students need to comply with the norm should they want their abstracts to serve as connectors to the academic world (*background*). The aim of this thesis is to examine to what extent abstracts written in English by Swedish students adhere to the IMRD norm (*purpose*). A total of 40 bachelor's thesis abstracts in English linguistics and physics were analyzed in terms of macro structure, the inclusion, exclusion and order of the constituent parts, and micro structure, the linguistic realization of the constituents (*method*). The results show that the English linguistics and physics abstracts fail to meet the requirements of the IMRD norm on several points (*results*). This suggests that the students are either unaware of the important function fulfilled by abstracts or need more guidance and practice (*conclusion*). The conclusions are necessarily tentative since further research is required to provide a comprehensive picture, but still, the results suggest that Swedish students' abstract writing needs to be given higher priority (*discussion*).

First, the background move situates the thesis within a research/teaching context, by highlighting the importance of the IMRD norm for both researchers and students. Second, an explicit purpose statement, *the aim of this thesis*, is used to present the aim of the study. Third, the method move expounds what was studied, 40 bachelor's thesis abstracts in English linguistics and physics, and how they were studied, by examining their macro and micro structures. Hence, the method description is classified as specific. Fourth, the results are set forth by means of the explicit expression *the results show*, and finally, there is both a conclusion based on the results and a discussion which touches on the limitations and wider implications of the study.

The abstracts analyzed in this thesis were obtained through a search in the National Library of Sweden, which contains, among other publications, bachelor's theses written by students at universities in Sweden. The first 20 theses written in English listed under English linguistics and physics were selected to make a total of 40 abstracts, all of which were published between 2009 and 2012. The reason why the disciplines English linguistics and physics were selected for comparison is that they can be viewed as opposites on a scale. Since they deal with very different subjects, the chances for any discipline-specific inclinations to surface are significant.

Here, as in the discussion about moves, a few limitations need to be mentioned. As in Ask's (forthcoming) study, any specific writing guidelines presented to the students, the degree to which the abstracts reflect the content of the theses and language errors are not taken into account. Also, even though the students' names suggest that most of them are native speakers of Swedish, there is no way of telling if a particular abstract was written by a Swedish student or by a student of other origin. Notwithstanding these limitations and the difficulty of generalizing from a relatively small sample, the study provides a valuable indication of Swedish students' ability to write abstracts in English which comply with the IMRD norm.

4 Results

Part 4 presents the results of the analysis. Section 4.1 deals with the macro structure, and section 4.2 presents the micro structure findings. Throughout the text, illustrative examples are provided to make the analysis as transparent as possible and to clarify the consequences of different writing strategies.

4.1 Macro structure

4.1.1 Inclusion/exclusion of moves

The English linguistics abstracts contain a total of 3682 words, whereas the physics abstracts consist of 2812 words, meaning that the latter's average length is considerably shorter (see Table 4.1). This difference is also reflected in markedly varying numbers of words in the shortest abstracts; 136 for English linguistics and 77 for physics. It may be argued that the average number of words of both groups allows for the inclusion of all five moves, but it is likely that the very short length of some of the physics abstracts affects their level of adherence to the IMRD norm negatively. Still, when scrutinizing the constitution of the abstracts, it is reasonable to assume that all of the students were free to use a large enough number of words to be able to avoid omitting moves.

Table 4.1 Abstract length

Abstract length	English Linguistics	Physics
Total number of words	3682	2812
Words/abstract	184	141

However, as Table 4.2 shows, Swedish students' abstracts in both English linguistics and physics fail to meet the macro structure requirements of the IMRD norm on several points. They all implicitly or explicitly express the purpose of the thesis, and all but a few include the method move, but when it comes to background, results and above all conclusion and discussion, there is a lot more to ask. In fact, only two English linguistics abstracts and three physics abstracts include all five moves. It is evident, though, that overall the English linguistics abstracts comply with the IMRD norm to a larger degree than the physics abstracts.

Table 4.2 Inclusion of the IMRD norm moves in 20 abstracts in English linguistics and physics.

Moves	English Linguistics	Physics
Background	14	12
Purpose	20	20
Method	18	17
Results	14	9
Conclusion/Discussion	7	4

Besides the moves of the IMRD norm, just as the Chinese students in Ren and Li's (2011:165) study, the Swedish students use moves which can be labeled promotion and structure. A few students also draw attention to limitations, but in the present study limitations are classified as part of the discussion move, whereas in Ren and Li's study, they are coded as a separate move.

As mentioned, the structure move delivers a description of the macro structure and the promotion move "overly states the strength of the paper" (Ren & Li 2011:165). This is further illustrated by the following two examples from the current study:

(1) …and the analysis and conclusions presented can clearly contribute to the already existing literature on negation in Japanese… (*promotion*).

(2) Suggestions for improvements, additional tests and future applications of the method are presented (*structure*).

The promotion move is found in two abstracts, one from each group, and the structure move is present in three English linguistics abstracts and eleven physics abstracts. Despite the fact that in most abstracts the structure move is not very long, as it does not provide an outline of

the entire thesis but instead informs readers about the structure of one or a few sections, it can be argued that rather than enhancing the quality of the abstract, it takes up space that should be allocated to other moves. The same can be said about the promotion move, as it cannot compete with a well-written background move.

4.1.2 The order of moves

Disregarding the omission of moves and the moves that are not part of the IMRD norm, the majority of the students position the moves in the ideal order of Background, Purpose, Method, Results, Conclusion and Discussion. However, there are a few exceptions. The purpose move is placed before the background move in two English linguistics abstracts. As illustrated by example (3), this placement is illogical since essential background information is a prerequisite for a good understanding of the purpose:

(3) This study aims to contribute to the understanding of ideology conveyed by lexical items and framing of texts (*purpose*). Since ideology is embedded in language the frames used in newspapers construct a narrow ideological perspective for the readers to interpret subjects and events through (*background*).

Furthermore, one English linguistics abstract first presents the purpose, then provides information about the theory underlying the method, and subsequently states the purpose once more after the method move, albeit in more specific terms:

(4) This essay investigates transitivity in extracts from Kate Chopin's novel The Awakening (*purpose*). The system of transitivity belongs within systemic functional linguistics and is used for analyzing experiential meaning in language, that is, the way in which we talk of our experiences. The method can be used for analyzing literary texts (*method*). The aim of the essay is to investigate how the transitivity in the extracts reflects the process that the main character Edna goes through, and if it reflects the subject of conflict between human nature and culture (*purpose*).

The initial implicit purpose statement in example (4) is superfluous. The name of the author and the novel in the first sentence can be incorporated in the final sentence, which should be positioned before the description of the method-related theory in order to avoid confusion.

The last exception from the ideal move order involves an overlap of the purpose and method moves, an overlap which is found in three English linguistics abstracts and seven physics abstracts. In contrast to the two exceptions discussed above, this overlap does not necessarily have a negative effect on the quality of the abstracts. Example (5) illustrates the point:

(5) In order to measure the thickness of a protein layer on a structured surface of silicon rubber, we have used ellipsometry and Fourier transform infrared (FTIR)-spectroscopy.

Here the purpose move is smoothly combined with the method move. Readability is not negatively affected, and thus, the overlap may be considered a valid space-saving device. Still, it can be argued that combining an explicit purpose statement with the method move is an even better alternative.

4.1.3 Macro structure – Exclusion, addition and repositioning of moves

In conclusion, the macro structure analysis has shown that many abstracts fail to comply with the IMRD norm, especially when it comes to the incorporation of background, results, conclusion and discussion. Thus, the findings of Ren and Li's (2011:162ff) study, which say that students emphasize the informative function of abstracts by making sure to include all moves, were not confirmed, but some abstracts in both studies include the moves promotion and structure. It has also been shown that the physics abstracts display greater deviation from the norm than the English linguistics abstracts, and that there are abstracts in both groups which diverge from the ideal move order, sometimes influencing readability and comprehension in an unfavourable manner.

4.2 Micro structure

4.2.1 Background

More than half of the abstracts of both groups provide background information in order to justify the thesis, as Table 4.3 shows, mostly by making reference to a certain research question. Hence, the disciplinary differences as regards the situating of the research which were found in Samraj's (2005:141ff) study of Conservation Biology and Wildlife Behaviour, are not present here.

Table 4.3 Subjects of reference in the background move.

Background	English Linguistics	Physics
Research	6	11
Society	2	-
Teaching	1	1
Personal interest	-	-
Personal experience	-	-
Combinations (research/society/teaching)	5	-
Missing	6	8

Example (6) demonstrates the use of the most frequent background reference as it situates the study in a research context by bringing up a recurring problem in experiments with radioactive beams:

(6) When conducting experiments with radioactive beams, a recurring problem is to identify the ions occurring in the beam. The identification process makes use of different detectors, which must be calibrated prior to usage - a process often requiring beam.

References are also made to societal importance, teaching and combinations of some of the categories in Table 4.3 as illustrated by examples (7) - (9):

(7) The issues of body shape and living up to an ideal is a topic not only commonly discussed in the media but also a subject occupying many peoples' minds on an everyday basis. Eating disorders are common and obesity is an increasing topic for discussion. The media shows images of tall and increasingly slim models while statistics indicate that the average person is gaining weight over time. Dictionaries state that being skinny is a negative term describing a person that is too thin and who needs to eat more (Cambridge Dictionary 2011). At the same time people around the world dream about becoming slimmer (*society*).

(8) The sentence-final particle wa is something that has predominately been taught as a female particle in the teaching of Japanese as a foreign language (*teaching*).

(9) In today's society there is an obsession with finding happiness. According to the coca-cola company, all you need to do is open happiness, but why stop with a can of coke when you can find your happiness on a dating site. It even seems to come in edible form in your local shop. But what exactly is happiness? (*society*) De Saussure spoke of "the arbitrary nature of the sign" as a two part model; "the signified" and "the signifier". The sign itself is a result of these two parts and can take form as words, sounds, images, smells and more (Saussure 1983:67). "The signified" represents the concept, almost like a mental picture, and "the signifier" represents the form, that is the actual word. Hence, to understand the full concept of happiness not only the words needs [*sic*] to be analyzed but also the mental picture associated with the word (*research*).

It is a positive sign that the majority of the students who include the background move refer to a particular research question, sometimes in combination with a phenomenon in society and/or teaching. Furthermore, the fact that none of the students try to justify their thesis by mentioning personal interest and/or experience suggests that such a justification is not seen as valid.

However, there is also a worrying tendency. The very long background moves in examples (7) and (9) are illustrative of what seems to be a general phenomenon of overly lengthy background descriptions. Even though no calculations have been made regarding the length of the background move in relation to the other moves, it is obvious that in six English linguistics abstracts and three physics abstracts, the background moves are unnecessarily exhaustive. These findings agree with the results presented by Ren and Li (2011:165) regarding overemphasis on background information, and together with the observations concerning the moves promotion and structure, they indicate that students may have to develop better distributional skills. Given the space constraints, if too many words are used in a single move or if moves which are not part of the IMRD norm are added, the clarity of the other moves may suffer or moves may even have to be omitted.

4.2.2 Purpose

As previously mentioned, the ultimate realization of the purpose move involves the use of explicit terminology as it aids comprehension and readability. Table 4.4 reveals that all students include the purpose move, but that relatively few students state the purpose in explicit terms, and the numbers are especially low for the physics students.

Table 4.4 Expression of purpose.

Purpose	English Linguistics	Physics
Explicit	9	3
Implicit	11	17
Missing	-	-

To further clarify the distinction between the strategies of explicitly and implicitly expressing the purpose, four examples are provided:

(10) *The purpose of this study* was to analyze texts from four English textbook series for Swedish school years 7-9 as regards their readability and to investigate whether the text difficulty progresses within series with grade level and with each assigned difficulty level (*explicit*).

(11) *The goal of this Bachelor thesis* has been to construct a setup for dispersion measurements of semiconductor multilayer mirrors, and to perform analysis to determine the dispersion (*explicit*).

(12) ATR harmony is examined in this paper as manifested across morpheme boundaries within nouns in a Surmic language of Ethiopia called Bale (*implicit*).

(13) In this thesis the oscillation probability between two ultra relativistic Dirac/Majorana neutrinos in vacuum with a narrow spread in momentum is calculated (*implicit*).

In examples (10) and (11), the expressions *the purpose of this study* and *the goal of this Bachelor thesis* facilitate easy understanding of the purpose of the studies, whereas in examples (12) and (13), owing to the lack of explicitness, more is demanded of the readers.

4.2.3 Method

No matter what kind of study is carried out, there is always a method involved which needs to be described in a clear and informative manner by answering two questions: what is investigated and how is it investigated? As stated, the abstracts in this study whose method description provides the answer to both questions are labeled *specific*, whereas those whose method description is lacking in some way are labeled *vague*. As seen in Table 4.5, the majority of the abstracts of both groups deliver specific descriptions, but since there are six

abstracts which do not satisfactorily describe the method and five abstracts which do not offer any information about the method, it is evident that some students' method move needs to be improved.

Table 4.5 Description of method.

Method	English Linguistics	Physics
Specific	16	13
Vague	2	4
Missing	2	3

To illustrate the importance of a clear method description, a comparison can be made between an example labeled *specific* and an example labeled *vague*:

(14) The readability formulas Flesch Reading Ease and Flesch-Kincaid in Microsoft Word 2007 was used for calculation of the readability grade levels of a selection of 231 texts from the series *Good Stuff*, *Happy*, *Time* and *Wings* (*specific*).

(15) A scalar field theory is constructed on the star graph and its properties are investigated (*vague*).

In (14), it is clear that the readability of 231 texts from the series *Good Stuff, Happy, Time* and *Wings* was studied by means of two readability formulas. In (15), on the other hand, it is not disclosed how the properties of the scalar field theory were investigated. That is to say, in the latter example the question of how remain unanswered.

4.2.4 Results

Table 4.6 shows that the results move is missing in almost half of the 40 abstracts, but that most of the abstracts that do include this move explicitly express the results. It is also evident that the English linguistics abstracts show greater adherence to the IMRD norm than the physics abstracts.

Table 4.6 Presentation of results.

Results	English Linguistics	Physics
Explicit	11	5
Implicit	3	4
Missing	6	11

Similar to the contrast between an explicit and implicit purpose move, an implicit presentation of results places greater demands on the readers as illustrated by the difference between the use of the explicit expressions *the results show* and *it was found* in (16) and (17) and the use of an implicit presentation of results in (18) and (19):

(16) *The results show* that Edna's representation in the transitivity changes as she develops. They also show differences in sentence structures between the parts of the extracts that describe Edna's feelings and those which describe her actions. When it comes to her feelings they are repeatedly cast as forces, filling the doer-role of subject in the sentences. In the sections which describe Edna's actions, on the other hand, Edna is often an agent, and a medium-initiator (*explicit*).

(17) *It was found* that using sufficiently low beam intensities, the detector could successfully identify most of the 17C ions in a beam composed of several different nuclides with mass and charge in the vicinity of those of 17C (*explicit*).

(18) The vowel system in Bale displays a nine vowel inventory with a feature dominance of [+ATR] vowels which spread their feature both leftward and rightward to recessive [−ATR] vowels. The [+ATR] dominance is also present as a floating feature without any phonological material. The vowel /a/ is analysed as a neutral vowel, co-occuring with both [+ATR] and [−ATR] vowels within roots (*implicit*).

(19) The photoluminescence measurements indicated that the intensity of the emitted photons varied across the samples, but did not indicate any shift in peak wavelength between samples or any time-dependence of the luminescence. The peak wavelength was in the order of 600 to 620 nm, corresponding to a band gap of 2.0 to 2.1 eV and a physical size of approximately 3 nm. The AFM scans revealed densely packed quantum dots, where few single objects could be distinguished (*implicit*).

However, even though an implicit presentation of results has a somewhat negative effect on readability, what is most important is to not omit the results move.

4.2.5 Conclusion and Discussion

Table 4.7 shows that few students include the last move of the IMRD norm, and that only one student managed to incorporate both conclusion and discussion. It is also shown that the English linguistics students perform better than the physics students, but the difference is small.

Table 4.7 Inclusion of conclusion and discussion.

Conclusion/Discussion	English Linguistics	Physics
Conclusion	4	1
Discussion	2	3
Conclusion and Discussion	1	-
Missing	13	16

In order to highlight the salience of including both conclusion and discussion, one example of each writing strategy is provided:

(20) Because of their ideological differences the newspapers construct a reality where the subject, Obama, is presented in very different ways (*conclusion*).

(21) The time of the identification was 13 hours, which is about one order of magnitude too long compared to what would be desirable in real-world experiments. Whether it is possible to further improve the design, and thereby increase the efficiency, will have to be concluded by further studies (*discussion*).

(22) The research suggests that the Swedish students have a weaker grasp of prototypical frequency of usage than native speakers, which may result from native language transfer (*conclusion*). It is argued that it would be beneficial for Swedish learners of English, and by extension other L2 learners, to improve awareness of constructing effective contrastive relationships (*discussion*).

While examples (20) and (21) include either conclusion or discussion, example (22) includes both, and thereby contributes to a deeper understanding of the study. Still, as with the question of different options regarding the results move, it should be emphasized that making use of the two strategies displayed in examples (20) and (21) is much better than excluding the final move.

4.2.6 Micro structure – Both positive and negative findings

To sum up, the micro structure analysis has revealed both positive and negative aspects of the students' abstract writing. The frequent referral to previous research in the background move, the many specific methods descriptions and the rather large proportion of results moves that make use of explicit terminology improve the overall impression of the abstracts and signal a relatively high level of adherence to the IMRD norm. On the other hand, too extensive background descriptions, the lack of explicit purpose statements and the paucity of a combination of conclusion and discussion have an opposite effect.

5 Conclusion and discussion

This thesis has argued that since students' abstracts are published online and thereby made available to the national and international research communities and to fellow students, they have the potential to serve as mediating tools which link students to the academic world. This is especially true of abstracts written in English. However, the function of mediating tools can only be fulfilled as long as students conform to the established standard for writing abstracts, the IMRD norm.

The analysis carried out here has shown that abstracts written in English by Swedish students of English linguistics and physics fail to meet the requirements of the IMRD norm on several points. As regards the macro structure, there is a tendency to omit moves, particularly the background, results, conclusion and discussion moves, and in some abstracts divergence from the ideal move order has a negative impact on comprehension and readability. Moreover, some students add moves that are not part of the IMRD norm. As for the micro structure, the adherence to the norm is low in the purpose, conclusion and discussion moves.

There are, however, some positive findings. The compliance to the norm is relatively high as regards the linguistic realization of the background, method and results moves, and higher

in the English linguistics abstracts than the physics abstracts concerning both macro and micro structure.

Still, on the whole the results are not encouraging. They suggest that the students are either unaware of the important function fulfilled by abstracts or need better guidance and more practice. Thus, to tackle the problem of deficient abstracts, students need to be informed about the potential of abstracts to serve as mediating tools, they need to study the structure of well-written abstracts, and their awareness needs to be raised concerning common mistakes such as those highlighted in this thesis. In addition, they need to practice writing abstracts of their own, perhaps by using the technique suggested by Hartley and Betts (2009:2010ff), that is, they can write structured abstracts and later remove the subheadings.

Judging from the overall impression of the students' writing and the very small differences between the English linguistics and physics abstracts regarding the macro structure and the linguistic realization of the background move, there is little indication that students of the two disciplines should adhere to different ideals. Possibly, it can be argued that there is a greater need for students of English linguistics to situate their theses within multiple contexts.

What can be said with more certainty, however, is that the quality of the physics abstracts is inferior. Whether this lower standard has to do with the students' level of English proficiency or any of the causes discussed above is difficult to determine, but it is safe to say that some of the physics abstracts would benefit from using a larger number of words.

The conclusions of this thesis are necessarily tentative since further research is required to provide a comprehensive picture. Also, the fact that any writing guidelines presented to the students are not taken into account is somewhat problematic. Nevertheless, the results of the analysis suggest that Swedish students' abstract writing needs to be given higher priority.

Future studies can apply the method used in this thesis to other material to see whether the conclusions drawn here are confirmed, or they can focus on Swedish students' use of particular linguistic features in order to broaden the knowledge of their abstract writing. It would also be interesting to make further comparisons between different disciplines, and also different nationalities, and to conduct interviews or surveys to find out what knowledge students possess about the abstract genre.

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