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# Discipline-based academic literacy in two contexts

**A B S T R A C T** This article considers the value of discipline-based academic literacy courses in Management Studies and Science. It outlines the most important genres in these two undergraduate areas of study, before going to describe two discipline-based academic literacy courses located in these two fields. It argues that basing academic literacy courses in the disciplines that students are studying is essential in assisting students to acquire discipline-specific genres, and is likely to be far more effective than a generic course in facilitating students' access into the discourse community of their disciplines. This is in line with the idea that language use is dependent on context and needs to be developed in context.

Keywords: discipline-based language learning, academic literacy, science writing, commerce writing

## 1. Introduction

In this article we put forward the argument for basing undergraduate academic literacy courses in the discipline that students are studying. Drawing on our experience in two fields, Management Studies and Science, we consider the acquisition of academic literacy as entry into a new discourse community, where the content is intimately bound up with how to read write and speak about the discipline. Students acquire the literacy by doing – by doing research and writing it up in a lab report, or by writing and presenting a business proposal.

We consider important pedagogical genres in the fields of Management Studies and Science, comparing the findings of the literature to our own findings in small-scale surveys carried out at the University of KwaZulu-Natal (UKZN). We then give a brief description of the discipline-based courses that we have developed in the two disciplines.

## 2. Rationale for basing academic literacy in the discourse of the disciplines

Much research (e.g. Lemke 1990; Tarantino 1991; Halliday 1993; Martin 1993; Gunnarsson et

al. 1997) indicates that the discourse features of language in specialised disciplines, both at a macro and a micro level, differ significantly from the discourse features of everyday language. As these features are embedded in the language used by a discourse community, we work from the premise that students will best acquire the specialised language of their discipline by reading the writing of their discipline, and writing and getting responses to the writing they do, from initiates into the discipline. For Lemke (1990:1), for example, learning to "talk" science means "learning to communicate in the language of science and act as a member of the community of people who do so".

Furthermore engaging in the typical activities of the discourse community, as far as this is possible in a pedagogical setting, is beneficial in initiating students into the culture of the discipline and encouraging them to share the values of the discipline. An example of such typical activities in science includes doing a small experimental project where data is collected and the results are written up as a laboratory report. In Business Studies an example is a presentation of an idea for a start up business.

One reason for basing academic literacy work in the discourse of the disciplines is that relevant content, grounded in reality, motivates learners, while content perceived as irrelevant to students' field of interest is demotivating (Brinton et al. 1989; Widdowson 1979; Spanos 1987). Most importantly, discipline-based instruction focuses on contextualised use of language as well as sentence-level usage (Widdowson 1979). Depending on the course, such instruction can prepare learners for the eventual uses to which the language will be put (Brinton et al. 1989; Spanos 1987). For example, the courses described in this article focus on production of important genres in the learners' field.

We use discipline-based teaching for the following reasons:

- The materials can be authentic, involving, as far as possible, real activities that members of the discourse community engage in.
- The materials are relevant and interesting in themselves.
- The materials are capable of teaching appropriate genres, i.e. capable of providing the students with schemata in terms of form as well as content.
- Skills taught outside of the disciplines are not transferred by students to the disciplines for which the skills are needed.
- Discipline-specific practices are deeply embedded in the disciplines, so separating them out as neutral language skills undermines their function in the disciplines.

### 3. The kinds of genres produced by students in the two contexts

In this section we survey briefly the genres that are emphasised in the two contexts described in this article: undergraduate Business Studies and undergraduate Science.

#### 3.1 Important genres in Business Studies

Business-related disciplines have been included in several surveys of written and other tasks required of university students across a range of academic fields (Behrens 1978; Ostler 1980; Johns 1981; Eblen 1983; Bridgeman & Carlson 1984; Horowitz 1986). The survey by Horowitz (1986) employs an inductive methodology in which he allows the categories of written tasks to emerge from the actual written data. This study indicates that, in one US university, the tasks

set for predominantly undergraduate classes in various business departments were case studies, research papers/essays and reports. Horowitz characterises case studies as using "class learning/theory to solve a problem" with "all the necessary data [being] typically provided by the instructor" (451). Research papers or synthesis of multiple sources "[conform] most closely to the typical documented essay (library research paper) (451). Reports are described as the "connection of theory and data" with the data having to be searched for by the students themselves (450).

Canseco and Byrd's (1989) survey of writing tasks assigned to graduate students in a College of Business Administration at another university in the US has as its focus the tasks particular to business related subjects. Although their categories are based on terms used in faculty syllabi rather than on an examination of written assignments as such, the writers identify the same assignment types as were evident in the earlier study. Thus, after exam questions and short questions, the most frequently required assignment types were research-based papers, reports and case studies in that order. A large proportion of these assignments required group work.

A subsequent and more rigorous study by Zhu (2004) of written assignments in undergraduate and postgraduate business courses in a large US research university also identified major genre types required in student writing. Zhu's survey indicates the same generic requirements but somewhat different proportions between the types of assignment set, with case studies being the most frequent and research based writing forming a smaller proportion.

A preliminary survey of written tasks set in undergraduate courses in the Faculty of Management Studies at the University of KwaZulu-Natal (UKZN) was undertaken by the first author in 2004. The survey at this stage appears to confirm the findings of earlier studies and to indicate that in the fields represented by degree courses taken in this faculty the three most important genres required of students are the research essay, the report and the case study (see table below). Group work is an important feature of many of the assigned tasks.

| Year of study          | I  | I  | III | Total of tasks set |
|------------------------|----|----|-----|--------------------|
| Research paper/project | 9% | 9% | 25% | 43%                |
| Report                 | 9% | 3% | 18% | 30%                |
| Case study             |    | 3% | 18% | 21%                |
| Summaries of readings  |    |    | 6%  | 6%                 |

Fig. 1. Written genre types set for undergraduate students (Faculty of Management Studies, University of KwaZulu-Natal)

Thus, a similar picture emerges, across a variety of business related courses, of the frequent occurrence of two types of genre: an academic genre that is used in a range of disciplines, i.e. the research paper; and genres that are specifically connected to the discipline of management studies, i.e. reports and case studies. Zhu (2004) points out that these business genres are characterised by an orientation to problem solving and decision making and are often team projects. They function to socialise students into the business world, requiring them to assume business roles and to write for business audiences while at the same time achieving the academic purposes of demonstrating student learning. The demands made on the students, Zhu suggests,

are complex in that application, analysis and evaluation are generally required in the various assignments set. In addition, material from a variety of sources and from sources of different types has to be interpreted, integrated and synthesised. Moreover, the different disciplinary fields represented by the range of courses students take require the use of rather different types of evidence and data.

In view of the complexity of the genres required from students in business disciplines, it is of interest to note the shift in the table above in the required written tasks across the years of study in the Faculty of Management Studies at the University of KwaZulu-Natal. In the first two years, most of the work required from the students is some form of calculations, graphs and statistics or programming exercises. Where short written questions are set this is often for tutorials and is not assessed. There is a substantial increase in written work in the third year of study. One academic pointed out the difficulties senior undergraduates have in integrating statistical data and commentary into a conceptual framework and ascribed it to a lack of experience with tasks requiring writing in the earlier years of the degree.

It is to overcome such difficulties and to widen students' genre repertoires early on in their degrees that the business studies course described in this paper is offered to first year students in the Faculty of Management Studies at the University of KwaZulu-Natal.

Relevant genres introduced to the students include not only those indicated above such as reports and research papers but also workplace genres such as meetings (cf Devitt 1991) and business proposals. A simulated business context for the presentation of proposals for new small business enterprises in South Africa facilitates enculturation into the disciplinary and workplace setting, thus assisting the students to bring the influence of the context of situation to bear on their production of text (Coe 1994a; Freedman 1994; Freedman et al. 1994; Johns 1997; Kutz 1998; Coe 2001; Pang 2001; Samraj 2001).

### 3.2 Important genres in undergraduate Science

The centrality of the laboratory report genre in undergraduate science is indicated in the finding by Behrens (1978), who surveyed university science teaching staff at a US university and found that 93% of the writing tasks they assigned were laboratory reports. Braine (1989) examined the writing tasks given to undergraduate science and engineering students in ten courses at a US university, and found that 85% of these were the consequence of a "specified participatory experience" and fell into the category comprehending research/experimental/laboratory reports. For the most part, the participatory experience referred to by Braine (1989) is the practical session, which appears to play a key role in literacy acquisition in science. That practical sessions are highly valued by the experimental disciplines in science is indicated by the emphasis placed upon them. Students spend half their contact study hours in practical sessions. Practical sessions are compulsory and failure to perform practical work and submit the required lab reports invariably results in students not being permitted to write the final exam for the course.

A recent survey of the Science Faculty at UKZN by Jackson et al. (2004) indicates that the genre that undergraduate science students are most commonly called upon to produce is the report, with particular emphasis on the lab report. The next most common genre is a summary of one or more readings.

|                                     |           |                                |
|-------------------------------------|-----------|--------------------------------|
| Summary of one reading              | 4 (2%)    | Total summary of readings: 16% |
| Summary of multiple readings        | 34 (14%)  |                                |
| Essay                               | 24 (10%)  |                                |
| Report on data supplied by lecturer | 26 (10%)  | Total reports: 66%             |
| Report on laboratory work           | 126 (52%) |                                |
| Report on field trip                | 10 (4%)   |                                |
| Other                               | 19 (8%)   |                                |

Fig. 2. Written genre types set for undergraduate students (Faculty of Science, University of KwaZulu-Natal)

The report genre may be distinguished from other kinds of writing that science students do in that it involves the analysis of measured data, either collected by the students themselves or supplied by their lecturers. The genre may be regarded as a species of "proto-research article" (Parkinson and Adendorff 2004), as it has the same sections as many research articles: Introduction/Theory, Method, Results, Discussion.

Reflecting this similarity in organisation, another similarity between the research article and the laboratory report is that laboratory reports have many of the same functions as research articles. Like research articles, student laboratory reports are expected to place the work done in the context of the literature, provide an account of the method used, and convince the reader that the work was accurately performed. Like research articles, student laboratory reports indicate the extent to which the work is continuous with accepted facts. A difference between student laboratory reports and research articles is that the findings of the laboratory report are not expected to be new or to extend accepted facts or to deviate from them. That findings are expected to reflect accepted facts is well recognised by students who as a result may be tempted to 'fudge' their results to make them credibly close to what is predicted in the textbook. Research articles, by contrast, must advance new knowledge claims, and must convince the reader that their deviations from accepted facts in the literature are actually advances in knowledge and the discovery of something new, rather than errors or the result of poor technique. Both genres emphasise the micro-genres of explanation, discussion, recount and exposition.

The genres most frequently assigned to undergraduate science students to read are laboratory manuals and textbooks. Laboratory manuals give instructions on what to do in the session and often provide some theoretical background or explanation to the experimental work to be undertaken in the practical session. Thus they combine the micro-genres of Procedure with Explanation. Textbooks emphasise Information Report and Explanation.

#### 4. Academic literacy courses in two contexts

In this section we outline two courses that we have developed and currently teach. These courses, Integrated Business Studies and Scientific Writing, are located in and credited within the Faculties of Management Studies and Science respectively. Academic literacy staff are also located within these faculties, facilitating their own awareness of the genres prized by academics in these faculties.

#### 4.1 Integrated Business Studies: a holistic, academic literacy course for undergraduate students

Integrated Business Studies (IBS) is a one semester accredited academic literacy course for first year students in the Faculty of Management Studies at the University of KwaZulu-Natal. It has been developed from an add-on, non-credit bearing module for commerce students from disadvantaged backgrounds. IBS became a full credit-bearing course for the first time in 2003 and was piloted with students entering B Com and B Bus Sc degree programmes. From 2006 the course will be compulsory for every student entering the Faculty.

The course introduces students to the real-life implications and complexities of the subjects they are learning theoretically, as well as developing an understanding of the interdisciplinary nature of knowledge in these fields and of appropriate discourse. It provides a vehicle for students to be involved in intensive group work, in which they have the opportunity to practise appropriate discourse through being involved in negotiation, presentation, communication, problem solving and leadership. These goals are addressed through a holistic programme involving:

- a series of lectures presented by business people and guest academics, providing particular insights into the issues and topics which are important for a wider understanding of the business world
- a tutorial programme providing opportunities for group discussions and debate around these issues and around current events
- the development and presentation of business proposals for start-up companies by the students.

The aims of IBS in its original form were three-fold and involved the empowerment of students as learners within their university courses and beyond, the development of criticality, and the promotion of personal growth and empowerment (Hesketh 2003). These three aims are crucially interlinked, the development of criticality leading to empowerment both within the academic context and beyond. Within the new version of IBS these aims continue to be held as basic. Nevertheless, the way in which the aims are achieved has been extended and strengthened by an approach to literacy that revolves around the concept of the discourse community and the important genres associated with it (Swales 1990; Hyland 2003).

Although students may not necessarily see themselves in this light (McKenna 2004), students entering the discipline of Management Studies may be viewed as moving into a new discourse community with all that this implies for the acquisition of new literacy practices. This discourse community can be seen broadly as comprising the business world, although within their studies students will be inducted into a range of disciplines from economics to management, which it will eventually be necessary for students to apply within the professional context of the business world.

Drawing on work in management theory, Pearse and Amos (2000) have shown that to a large extent the globalised context of business is characterised by change, complexity and ambiguity. They suggest that the notion of 'complicated understanding' as developed by Bartunek et al. (1983) should inform the approach to academic literacy in tertiary business curricula. Complicated understanding is "the ability to apply multiple, complimentary perspectives to describing and analysing events.... [It includes the] ability to make choices and sustain commitments in the face of ambiguity, relativism, and multiple interpretations of situations" (275). Pearse and Amos

have used the tutorial as a means of setting ill structured problems for discussion by students in an Honours level class in order to facilitate the development of complicated understanding. A similar approach may be said to underlie the approach taken with the first year students in IBS through the creation of a learning community engaged in exploration of the social practices of the business world. Because the genres associated with business involve values, attitudes, and ways of thinking and doing in a community, the acquisition of appropriate genres will enculturate students into this sort of community-based discourse and knowledge.

The social and communicative practices of a discourse community give rise to typical forms of discourse (genres) which are recognised by members of that community (Miller 1984; Swales 1990; Yates & Orlikowski 1992; Berkenkotter & Huckin 1993; Bargiela-Chiappini & Nickerson 1999). There is a reflexive and complex relationship between texts and social contexts within the learning community. Work on genre in classroom settings has indicated that writing is important for introducing students to both social roles and purposes of the discourse community and also disciplinary activities (Herrington, 1985; Freedman 1993, 1994). There have been studies (Freedman & Adam 1996; Samraj, 2001) that have explored the complexities of context and how these affect written discourse. Because of the various levels of context provided by academic literacy courses such as IBS, the exigencies of the tasks set for students have to be made clear. Some classroom genres (Hammond 1987; Christie 1993; Berkenkotter & Huckin 1995) have an academic audience and an academic purpose while others are produced in simulated contexts that are closer to those that would exist in the workplace. Acquisition of both types of genre is important for the success of students in Management Studies within their university studies and beyond. The IBS module facilitates student learning through involvement in the spoken and written genres of the workplace and also of the academy by creating exigences for rhetorical situations (Miller 1984) and at the same time suggesting generic forms and processes.

The question raised by theorists such as Coe (1994b) and Freedman and Adam (1996) is whether it is possible to teach the structure of a genre in a context in which it would not normally be produced, such as a workplace genre within an academic setting, or a disciplinary genre within an academic literacy classroom. Samraj (2001) has explored the complexities of context and how these affect academic writing. She suggests that "by learning to write in simulated contexts, students can learn at least some of the textual features that are favored in those contexts, which can facilitate acculturation into the target context (174)."

One aspect of IBS is the involvement of the students in a simulated business setting in which they prepare a presentation of an idea for a start up business. This involves them in using workplace genres and developing appropriate discourse practices as they hold and document regular meetings, pitch new concepts, prepare a written business proposal and give a presentation of their proposals. The requirements of such literacy practices are made explicit and clearly linked with the social purposes that they achieve.

Other written genres that are focused on in IBS include the report. This is a genre that is appropriate within a range of commerce disciplines and business contexts, requiring the student to link theoretical frameworks with practice, often as a means of addressing a particular problem (Horowitz 1986; Zhu 2004). One report written by all students in the 2004 course consisted of a comparative analysis of two websites in relation to the brand identity projected by two

companies, one American based and one local, as part of their marketing strategies. The local enterprise was also the subject of an in-depth case study that entailed presentations to the students by senior management and finance personnel.

A classroom genre which is one option for the longer 'project' halfway through the IBS course is the research paper, which requires synthesis of a variety of sources and the development of a line of argument. In order to facilitate the acquisition of the type of discourse required in the research paper and in class tests, students are involved in weekly e-mail discussions with their tutors where they comment on concepts covered in lectures and on their reading of current and business affairs. These 'e-journals' provide a more individualised social context for trying out meaning within the larger learning community, i.e. they provide the collaborative, consensual relationship described by Belcher (1994). The e-journals facilitate growth in development in critical and analytical thinking through what Freedman and Pringle (1989:78) see as "writers wrestling with notions just beyond their easy grasp ... stretching upwards along the abstractive continuum." Students are regularly challenged by tutors to stretch their thinking and to write in acceptable ways in the discourse community, as in the following extract from a tutor response:

Which of your two proposed solutions do you think is best (and why, of course!)? Answering this would entail considering where the onus of responsibility of citizen/employee health and productivity lies. ... If it is both, are they equal? Does wealth become a factor?

Student evaluations at the end of the course and later in the students' academic career indicate that they found IBS to be a relevant and dynamic course. For example, students commented:

- I know I am a different person (socially and academically) because of ... tasks that were introduced to me in this course. What I like about myself is my new ability to think logically... This is the result of writing [essays], having debates in class and working with other people.
- Being exposed to several issues and tasks enabled me to adopt the mindset of a businesswoman and make decisions that are essential in running a business.

It is the discipline-based nature of the course that engages the students and enables the development of literacy practices and critical thought.

#### 4.2 A discipline and genre-based course for undergraduate science students

This section of the article describes an academic literacy course for undergraduate science students. The course is a stand-alone, accredited level 1 course that is embedded in the content of science, and foregrounds the genres that are expected of undergraduate science students, the most important of which is the laboratory report (Braine 1989; Jackson et al. 2004).

The course is designed primarily for students who are second language speakers and who are from an educationally disadvantaged background. Such students, admitted to tertiary study in an attempt to redress apartheid injustices, are 'under-prepared' for degree study to the extent that, having attended under-resourced schools, which often have under-qualified teachers (Arnott & Kubekha 1996; Bernstein et al. 2004), they enter university knowing less about science and mathematics than is usually considered necessary. They take a reduced load of first year science courses (such as Chemistry and Mathematics) and get about twice the normal load of tuition in the first year courses they do take in order to increase their



chances of success. Although under-prepared students who are second language speakers of English form the majority of students in the course, the course is open to all students in the faculty, and, we believe, is of benefit to all students, as it stresses factual writing which is neglected even in well-resourced schools.

Although part of primary and all secondary education in South African schools is nominally through the medium of English, much classroom interaction is actually in the local African language (Adendorff, 1993), particularly in rural areas. This means that many students entering English-medium universities are not as proficient in English as they need to be. Thus part of the purpose of the course is to improve proficiency in English while at the same time giving students experience in reading science texts (textbooks and simple research articles) as well as writing texts such as lab reports, essays and syntheses of readings.

The course is a stand-alone course because, by contrast with Management Studies, there is no common science course taken by all students into which literacy work could be embedded. The course is thus based in science content drawn from a number of disciplines to allow it to be of value to science students in a range of disciplines.

The stress on content serves to allow access into the 'disciplinary conversation' (Freedman 1993) of the various disciplines students are studying. In Freedman's study, students gradually acquired the target genre (the law essay) in spite of the fact that no explicit teaching of the staged elements of the genre, nor indeed any examples of the target form, were provided. Freedman therefore argues against explicit teaching of genre. In this recommendation she differs from the recommendations of researchers in the English for Specific Purposes tradition (e.g. Swales 1984; Dudley-Evans 1995) and researchers in the Australian tradition (e.g. Veal 1997), which emphasise the benefits of teaching genre explicitly.

The course for undergraduate science students described here, called Scientific Writing, has been more fully described elsewhere (Parkinson 2000). It aims to familiarise students with the factual genres needed for science study, and to give them extensive practise in writing these genres. The course is therefore discipline-based, the content often being drawn from the other first level courses the students are taking or science topics at an equivalent level. Examples of topics, together with the literacies it aims to teach in them, are found in the table below. The genres that are the focus of the course are the lab/research report and the essay (with stress on the information report and explanation genres). In addition, the course gives students opportunities to produce posters (these are most commonly in the form of lab/research report) and oral presentations. Both of these are a feature of most disciplines in the Faculty at second, third or honours level.

As can be seen from Table 1 (following page), an important element of the course is reading of texts from which students can extract content knowledge. The course uses texts from first year textbooks, and in some cases, research articles that are conceptually simple enough for students. However, about half the reading given to students in the course is from popular science journals such as Scientific American, New Scientist, and Technology Review.

A fair proportion of students who take the course are very slow readers, and students benefit from pre-reading anticipation of content and organisation of texts as well as post-reading small group work making notes and summaries of what has been read. The approach taken in teaching writing is a process approach to the extent that multiple drafts are marked by tutors, with

Table 1: Examples of topics in Scientific Writing course (adapted from Parkinson 2000)

| Topic  | Input   | Literacies   | Production by students                                    |
|--|---|--|---|
| Waste water treatment                                      | Popular and textbook readings<br>Visit to waste water plant                               | Translate experience of an industrial process into written form: flow diagram or essay<br>Anticipate visit by reading about process<br>Integrate experience of process, with written sources<br>Organise information into coherent form  | Flow diagram or essay (procedure genre)                   |
| Ozone hole   | Popular & textbook readings<br>real data – measurements of ozone in Antarctica and Durban | Read and take notes from scientific texts<br>Take notes from lecture<br>Integrate information from written sources<br>Analyse graphical data<br>Plan & and produce lab report genre<br>Use of sources: citing references etc.  | Lab report (research article genre)                       |
| Physics of the children's playground e.g. a swing or slide | Textbook, lecture notes,<br>Visit to local playground                                     | Draw links between concepts learnt in physics and the observed world<br>Plan own investigation of mechanics of e.g. swing, roundabout<br>Collect data, and represent it in tables and graphically, and analyse data<br>Explain anomalous findings<br>Plan and revise own writing<br>Produce lab report genre | Lab report on own collected data (research article genre) |

emphasis in marking the drafts on organisation and content rather than on grammatical errors. Students need guidance in making notes from text in order to avoid copying verbatim.

The course has had some success to the extent that according to course evaluations students view it as useful and enjoyable. This we interpret as a function of the discipline basis of the course. We have yet to study the extent to which the discourse features of the students' writing more closely approximates that of the target genres after doing the course than it did before students did the course.

## 5. Conclusion

This article has argued that basing undergraduate literacy courses in the content of the disciplines studied is invaluable in admitting students into the discourse community of the field that they are studying. Academic literacy is always discipline specific. Generic courses are usually not generic at all. Instead they help students to acquire the academic literacy with which those teaching the course are most familiar: usually that of Humanities. As this article indicates, the discursive academic essay which puts forward and develops an argument, is not the most prominent pedagogical genre in either Management Studies or Science. Instead case studies and research papers are important in Management Studies, while in Science lab reports are the pre-eminent pedagogical genre. Discipline-based teaching thus greatly enhances the relevance of academic literacy courses to students.

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