

# An exploratory account of the register of nursing textbooks

## Can you nurse from them?

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Given the pressing issues that affect nursing education (e.g. higher attrition and plagiarism rates), this study aims to obtain initial insight on whether nursing textbooks meet the demands of their context of situation. These demands could be listed as: construing biomedical knowledge, establishing a pattern of evidence-based nursing practice and promoting the values of person-centred care. For this analysis, I draw on aspects of parameters of context developed by Hasan (2004), Butt (2004) and Matthiessen (2015), and relate them to their semantic and lexicogrammatical realisation across different metafunctions using corpus-based techniques and detailed manual analysis of short extracts. The results may suggest that nursing textbooks may be meeting the demands of nursing as a research-based discipline but failing to model empathetic communication.

**Keywords:** nursing textbooks, context of situation, register, generic structure, technicality, a research-based discipline, empathetic communication, construal of knowledge, epistemological stance, narrative

### 1. Introduction

While undergraduate textbooks may be an undervalued register as compared to other scholarly registers (e.g. journal articles), they play a crucial role in building different types of disciplinary knowledge. To begin with, textbooks are a repository of well-established facts or theories of a discipline. This does not necessarily preclude them (or at least it should not) from introducing students to the discipline's epistemological stance, its ways of knowing and its attitude towards the construal of new knowledge. There is already some evidence of textbooks introducing knowledge as contested and evolving (Hyland 2000; Love 2014). Furthermore, and perhaps of more interest to the linguist, textbooks model the different

types of texts used in the discipline to disseminate knowledge. In a nutshell, textbooks introduce students to what is known, how it is known and how this knowledge is talked about in their discipline.

Linguistic analysis of textbooks from an SFL perspective has identified a set of lexicogrammatical features that are generalisable to a number of disciplines. Moreover, it has been able to explain how these emerged from the contextual pressure to construe new knowledge (Halliday 2003). Instead of labelling the use of technical terms as “unnecessary jargon” or rejecting the use of abstraction, systemicists have elucidated how the technical lexical forms serve to create “uncommonsense” taxonomies of the world and grammatical metaphor as a valuable resource for textual development (Halliday & Martin 1993). Much of this research, which has spanned decades, stems from projects on academic literacy in Australian primary and secondary schools led by the University of Sydney (Martin 1986, 1991, 1993; Martin & Rose 2008; Shea 1988; Taylor 1979; Wignell et al. 1989). Research into tertiary textbooks has confirmed these findings (Yang 2017) and extended its focus to aspects such as knowledge attribution (Moore 2002; Freddi 2005) and disciplinary variation in epistemological stance (Parodi 2014). While these studies cover a wide range of disciplines, to the best of my knowledge, with the exception of one corpus study on word frequency (Mukundan & Jin 2012; Fairus Nor Mohamad & Jin 2013) and a number of studies from a critical discourse analysis perspective (Bond 2012; Price-Glynn & Missari 2017), there are no studies on the language of nursing textbooks to date.

Selecting a previously neglected discipline would have merit in itself as a way to expand what Matthiessen (2015) calls the “registerial cartography” of disciplinary English. In this case, however, there are a number of highly consequential issues that warrant study of the disciplinary registers of nursing education: among them, higher attrition rates amid a global shortage of nursing staff, and higher rates of plagiarism, suggesting an increased inability to cope with academic workload. These will be discussed in the following section. In order to gain some understanding that may contribute to the solution of these issues from the perspective of the tertiary education sector, I will focus on what Halliday (2003: 279) suggests as the higher goal of linguistic analysis of text: to determine to what extent a text “achieves what its context of situation demands (e.g. if it’s a recipe, can you cook from it?)” – hence the title of this paper. Thus, to determine what the context of situation demands from nursing textbooks, it is necessary to discuss the unique features of the discipline of nursing. Drawing on the initial discussion of the role of textbooks in tertiary education, I will attempt to establish the type(s) of knowledge and the epistemological stance that nursing textbooks should aim to construe.

To address this question, I will present initial results of analysis of two widely used nursing textbooks in Australia: *Lewis's medical-surgical nursing* (Brown et al. 2016) and *Developing practical nursing skills* (Baillie 2009). For an analysis of context of situation, I will draw on aspects of parameters of context developed by Hasan (2004), Butt (2004) and Matthiessen (2015) and relate them to their semantic and lexicogrammatical realisation across different metafunctions. Using corpus based techniques and detailed manual analysis, I will explore aspects such as the level of technicality deployed to construe content knowledge, choices in the system of mood and modality to express epistemological stance, and the suitability of particular genres to introduce students to different aspects of the culture of the discipline.

## 2. Why focus on nursing?

Studying the language of nursing is warranted by its crucial role in healthcare systems and the global shortage of nursing staff (Watson 2005). Nurses make up the lion's share of healthcare staff. In Australia, they outnumber medical practitioners by three to one. Yet, factors such as lower enrolments in nursing programmes, higher attrition rates, higher rates of turnover and an ageing workforce seriously threaten an adequate supply. There is ample evidence of the grave consequences of nurse understaffing, which include significantly higher mortality rates. The situation is worsened by the migration of nurses from regions where they are most needed to more affluent urban areas (Buchan & Calman 2004). While solving the nursing staff shortage requires a concerted effort from different levels of government, tertiary education can also make a significant contribution to its solution.

While complex and multifactorial in nature, attrition from nursing programs, whose rates greatly exceed those of other undergraduate courses (Eick et al. 2012), can be at least partially alleviated through targeted academic support. Academic difficulties have been reported as a reason for leaving in up to 20% of cases (Glossop 2001). Among students with English as an additional language, inability to cope with the academic workload is even more likely to lead to attrition (Choi 2005). Students experiencing financial hardship are also more likely to drop out. This can be explained by the need to spend more hours in paid work (Dante et al. 2016), but it may also be due to the fact that coming from a disadvantaged background generally means a lower level of familiarity with scientific discourses. As Halliday and Martin point out (1993: 4), students may find scientific English “alienating”, especially if the expectation about nursing was that it was just “commonsense” or “women's work” in the most pejorative sense, a perception shared by a substantial percentage of new entrants to the discipline (Brodie et al. 2004). One tangible measure of the

academic difficulties faced by nursing students is their higher rates of plagiarism as compared to those of their counterparts from other disciplines (Lynch et al. 2017). Identifying the features of the language of nursing is a necessary first step in designing an academic support strategy for these students.

Another equally important reason for focusing on the language of nursing is the concern about the quality of nurses' communication skills due to lack of adequate training and/or a focus on patient-centred communication (Bowles et al. 2001; Chant et al. 2002; Lai 2016). During placement training, a major source of stress for students is interacting with patients. Negative experiences during placement have also been identified as an important cause of attrition (Edwards et al. 2010). But even more concerning is miscommunication in a professional setting, where it has been established as the cause of over 30% of hospital incidents leading to serious harm or death of patients in the US (CRICO Strategies 2015).

Having established the importance of the issue and the need to understand the registers of nursing education, I now turn to discuss the nature of the discipline of nursing in order to determine what types of knowledge and what attitudes towards knowledge nursing textbooks should aim to construe.

### 3. What is this discipline called nursing?

Nursing is not only a relatively new field, emerging in the 1850's, but also its status as a discipline and its very nature have been highly contested. The first definition of nursing is provided by Florence Nightingale in what is considered the first nursing textbook (albeit not by Nightingale herself) *Notes on nursing: what it is and what it's not*: "Nursing is putting the patient in the best condition for nature to act" (Nightingale 2012 [1860]:164). Most of these conditions, which serve as chapter headings, are external to the patient and include aspects such as ventilation, bedding, noise and room cleanliness. While these aspects might seem just "commonsense" knowledge, the issues addressed by Nightingale are a direct response to the dismal conditions of the context of health care provision in Europe in the 19th century. An illustrative fact is that maternal and infant mortality were significantly higher in hospital childbirths when compared to home births. As Nightingale indicated, "...perhaps in no one single thing is so little commonsense shown, in all ranks, as in nursing" (p.35). *Notes on nursing*, along with Nightingale's prolific body of work, not only met the demands of its context but also inspired the changes in practice that set the foundation for the institutional domain that we recognise today as nursing, including its evidence-based nature:

The most important practical lesson that can be given to nurses is to teach them what to observe – how to observe – what symptoms indicate improvement – what the reverse – which are of importance – which are not – which are the evidence of neglect – and of what kind of neglect. (Nightingale 2012 [1860]:105)

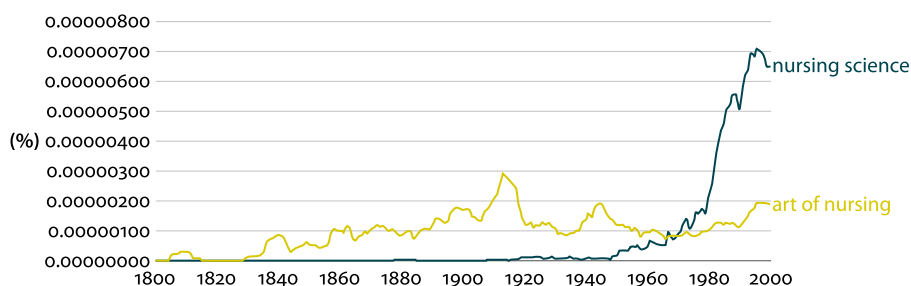
The changes in public health inspired by Nightingale's work are also a concrete example of Hasan's (2009:169–170) argument that "...anything new entering the system of culture will enter only through variation in the properties associated with some context of situation, i.e. cultures change through human social practices."

With major medical breakthroughs in the first half of the 20th century, nursing started to take shape as a research-based discipline. The formalisation of nursing education, as opposed to the previous apprenticeship model, required the establishment of a unique body of nursing knowledge that extended beyond "commonsense". A debate arose as to whether that knowledge had to be created exclusively by nursing scholars or it could be "borrowed" from other disciplines at the risk of threatening the uniqueness of nursing. Donaldson and Crowley (1978) argued that knowledge from other areas could be used as long as this was not expected to replace research carried out from the nursing perspective. Bluhm (2014) takes this idea one step forward suggesting that knowledge is not the property of specific disciplines and can be adapted to particular contexts relevant to nursing practice. For instance, wound management requires knowledge of the pathophysiology of wounds and the biological process of healing. The nurse will use this knowledge to design interventions that would promote healing. Deciding what specific intervention to implement (e.g. keeping the wound moist or dry; washing it with saline or tap water) requires resorting to empirical knowledge obtained from nursing research. This is now a key aspect of the conceptualisation of nursing referred to as evidence-based practice (Leufer & Cleary-Holdforth 2009).

But nurses require more than biological and empirical knowledge to provide effective health care. In her seminal paper *Fundamental patterns of knowing in nursing*, Carper (1978) outlined four types of knowing: empirical, aesthetic, personal and ethical. By aesthetic knowledge, or what is referred to as the "art of nursing", Carper refers to caring, the ability to develop empathy for patients and attend not only to their physical but also to their psychosocial needs. The problem with this type of knowledge is that, at the time, it was considered ineffable. According to Langer (cited in Carper 1978:16), art "resists projection into the discursive form of language". But without language, this aesthetic experience cannot be transformed into meaning that can later be shared and learned. After all, as Halliday (2016:90) points out that "all learning is a linguistic process". This body

of unarticulated knowledge cannot then, in Carter and Langer's view, be part of curricula or recorded in practice settings.

Some insight into the evolution of the conceptualisation of nursing from art to science can be obtained by searching the Google Books Corpus, a 200-billion-word corpus of books published in English. The Ngram viewer interface produces historical charts of the frequency of the use of the search terms in the corpus since 1800. Figure 1 is the graph produced for the search terms "art of nursing" and "nursing science". The decline of the expression "art of nursing", as opposed to "nursing science", which took over in the 1960's, may indicate not only a fall into disuse but also the precedence of a biomedical model over the psychosocial aspects of the discipline. This does not mean that nurses no longer perform their jobs empathetically, but that that aspect of their profession, which is probably the most rewarding, tends to be limited only to private discussions among nursing staff. In her study on nurses' communication, Björnsdóttir (2001) found that this "private discourse", the one used to discuss the knowledge of the patient at personal level, including the specific impact of an illness on a patient's life, was excluded from the institutional contexts where crucial decisions about treatment were being made.



**Figure 1.** The "art of nursing" vs. "nursing science" in Google books

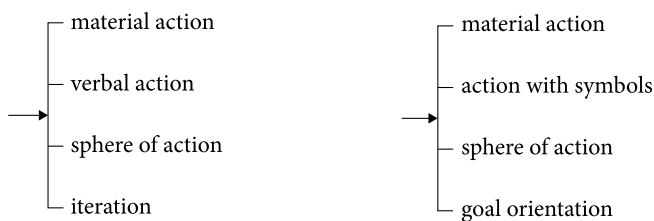
Current definitions of nursing encompass these multifaceted roles. The one provided by the Australian Nursing Federation describes the roles of nurses as follows:

Nurses provide professional and holistic care, working to promote good health, prevent illness, and provide care for the ill, disabled and dying. Nurses also work in nonclinical roles to educate undergraduate and newly graduated nurses, conduct research into nursing and health-related issues; and participate in developing health policy and systems of healthcare management. (ANF 2012: 1)

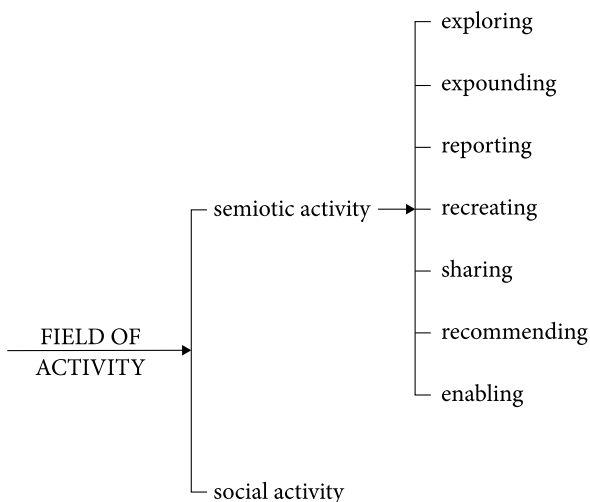
To summarise, the provision of holistic care requires knowledge of biological processes of health and illness, an inquisitive attitude to select the best evidence-based practice, and knowledge of psychosocial aspects of care including the ability (and willingness) to connect to patients at a personal level to adapt health care interventions to their particular situation and preferences. In fact, all of these aspects, including the 3 Cs (care, compassion and communication) are *sine qua non* requirements for nursing registration in the UK, New Zealand and Australia (Bloomfield & Pegram 2015). The question is now whether nursing textbooks contribute to the construal of these types of knowledge and attitudes.

#### 4. A note on the modelling of context in SFL

Despite the relevance of context in SFL, modelling of the variables of field, tenor and mode remains probably one of the most underdeveloped aspects of the theory. As Hasan (2009:182) states, “to actually create a substantial contextualization system network of all three parameters with realization statements that reach lexicogrammatical choices via the semantic ones is a huge enterprise requiring a lifetime of work”. Thus, attempting to extend or perfect the model is beyond the scope of this paper. What I will do is apply the existing models available (Butt 2004; Hasan 2004, 2009; Matthiessen 2015) to relate the specific configurations to their semantic and lexicogrammatical realization. While there are theoretical differences between these models, I will focus on the common denominators and the aspects of the model that are more developed in delicacy. Figure 2 shows simplified networks for Hasan and Butt’s model, and Figure 3 for Matthiessen’s.



**Figure 2.** Paradigmatic descriptions of field of discourse from Hasan (2004) (left) and Butt (2004) (right) [Display as in the original documents]



**Figure 3.** Matthiessen’s (2015) field-based map of registerial range represented typologically

5. The construal of biomedical knowledge in nursing textbooks

In broad terms, what is going on in nursing textbooks is the teaching of nursing knowledge. As discussed above, one of the types of knowledge is biomedical, relevant to the physiological processes of health and illness. Hence, within [sphere of action], the selection is [specialised], as textbooks are written to be read in the context of tertiary education. A general sense of the field of activity can be obtained from frequency lists generated by concordancing software.<sup>1</sup> Table 1 shows the top fifteen lexical items in each of the textbooks under analysis. To illustrate the change in focus in the field of nursing, I have also included results for Nightingale’s *Notes on nursing*. Notice how, other than reference to the human participants involved (patients, nurses and people), the focus shifts from concrete elements (e.g. room, things, food, air) in Nightingale’s book to more abstract concepts realized as nominalizations (e.g. health, care, nursing, management, treatment) in Baillie’s and Lewis’s textbooks. This change in the level of abstraction is an initial indication of the evolution of nursing discourses from “commonsense” towards more scientific knowledge.

In addition to abstraction, another feature of scientific discourse is technicality. As Halliday (2016:76) points out, “through technicality, a discipline

1. I used CasualConc by Yasu Imao, freely available at <https://sites.google.com/site/casualconc>.



**Table 1.** Top 15 lexical items in three nursing textbooks with abstract terms in italics

	Nightingale	Baillie	Lewis
1	patient	<i>care</i>	<i>pain</i>
2	sick	people	patient
3	air	patient	<i>nursing</i>
4	room	<i>pain</i>	<i>health</i>
5	nurse	<i>nursing</i>	<i>care</i>
6	bed	wound	use
7	things	person	nurses
8	house	<i>learning</i>	<i>practice</i>
9	people	nurse	<i>disease</i>
10	know	use	people
11	<i>observation</i>	<i>pressure</i>	clinical
12	think	<i>health</i>	<i>management</i>
13	food	<i>infection</i>	drugs
14	tea	blood	cells
15	time	<i>practice</i>	<i>treatment</i>

establishes the inventory of what it can talk about, and the terms in which it can talk about them”.

In order to get a glimpse of the technicality in these textbooks through corpus data, it is necessary to focus on individual chapters. In a sense, each chapter can be considered a text in its own right, as they are structured around a particular health issue and do not depend on information provided in previous chapters. Moreover, each chapter is written and/or adapted by a different author or group of authors. Thus, for the remainder of the paper, I will focus on Lewis’s Chapter 8 “Inflammation and wound management” written by Sharon Lewis and adapted by Kathleen Finlayson, and Baillie’s Chapter 7 “Principles of wound care” written by Janine Ashton. Instead of looking at individual words, I have used the cluster feature, which shows frequently repeated groups of words. I have used the word “wound” as a search term as it is the most frequent lexical word in both chapters and eliminated the results that are not nominal groups. The results were separated according to the position of the search term (to the left or the right of the cluster). This allows us to identify whether the search term functions as a Classifier or a Thing in the nominal groups. Tables 2 and 3 group each set of results semantically.

Unpacking these nominal groups can further illuminate their level of technicality (cf. Halliday 1998). Where *wound* is Thing, Classifiers create different taxonomies through grammatical metaphor. A *pressure wound* is agnate to a *wound*

**Table 2.** Wound as Classifier: most frequent clusters in Lewis’s Chapter 7 and Baillie’s Chapter 8

Parts of the wound – meronyms	Processes of health and illness	Nursing interventions	Nursing tools
wound bed	wound pain	wound assessment	wound dressing
wound edges	wound closure	wound care	wound assessment
wound surface	wound infection	wound management	tool/chart
wound bed tissue	wound healing	negative-pressure wound therapy wound bed preparation	

**Table 3.** Wound as Thing: most frequent clusters in Lewis’s Chapter 7 and Baillie’s Chapter 8

Types of wound according to cause	Types of wound according to location	Types of wound according to condition
pressure wound	abdominal wound	healing wound
surgical wound	sacral wound	chronic wound
traumatic wound		

that is caused by pressure, but both *cause* and *pressure* are grammatical metaphors as well. Cause is the verbalisation of the logical relation *so* and *pressure* is the nominalisation of *to press*. Thus, a more congruent form would be: *something presses against the skin, so a wound appears*. Where *wound* is Classifier, the grammatical relation with the unpacked nominalisation creates two different semantic groups. The agnate to *wound closure* is *the wound closes*, where wound is Actor; whereas *wound assessment* is agnate to *the nurse assesses the wound*, where it has the role of Goal. These expressions can be considered technical terms because they no longer need to be unpacked: in Halliday’s terms (1998:169), they have become “systemic”. Interestingly, the pathway from instantial to systemic is closely related to the conceptualisation of the discipline. When the role of nurses was limited to *setting the conditions for nature to act*, grammatical metaphors with *wound* as Actor start to become systemic. By the 1960’s, when the role of nurses shifted to actively prevent and manage illness, metaphors with *wound* as a Goal became increasingly more frequent as Figure 4 illustrates.

Technicality can then be traced phylogenetically, as language evolves in time, and also ontogenetically, in the individual. The ability to comprehend grammatical metaphor in texts develops as the child, in an appropriate educational context, matures. Given the changes in the discipline of nursing in the past century, possible questions that arise from these considerations are the extent to which nursing has evolved in regards to its level of technicality, whether its discourse displays the level of “maturity” of comparable disciplines and whether this can be measured at

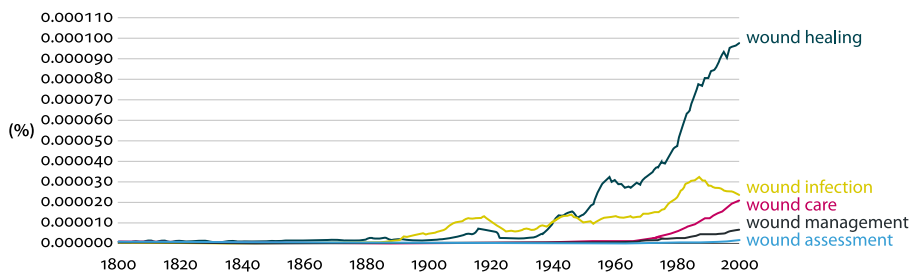


Figure 4. Google Ngram viewer for “wound” + Thing

all. To illustrate these points, I have selected an approximately 500-word excerpt from each of the chapters mentioned above and another excerpt from Nightingale’s *Notes on nursing*. While Nightingale’s book does not contain a section on wounds, the excerpt was selected from Chapter 8 “Bed and bedding” as it deals with fever, infection and bed sores (pressure wounds). A shorter excerpt from each of the texts is reproduced as follows with technical terms (i.e. discipline-specific) in *italics*.

Text 1.

From Lewis’s Chapter 8

#### *Inflammatory response*

1. The *inflammatory* response is a sequential reaction to *cell injury* (e.g. cut, burn).
2. It neutralises and dilutes the *inflammatory* agent, || removes *necrotic* materials, || and establishes an environment suitable for *healing* and *repair*.
3. The term *inflammation* is used often, but incorrectly, as a synonym for the term *infection*.
4. *Inflammation* is always present with *infection*, || but *infection* is not always present with *inflammation*.
5. An *infection* involves invasion of *tissues* or *cells* by *microorganisms* such as *bacteria*, *fungi* and *viruses*.
6. In contrast, *inflammation* can also be caused by heat, radiation, *trauma*, chemicals, *allergens* and an *autoimmune* reaction.
7. The mechanism of *inflammation* is basically the same regardless of the injuring agent.

Text 2.

From Baillie’s Chapter 7

#### *The inflammatory phase*

1. This twofold phase prepares the *tissue* for *repair*.

2. After *wounding*, || *blood* loss is controlled by a complex series of events, || known as *haemostasis*.
3. This protective mechanism aims to minimise *injury*, || whilst initiating the *healing* response through the release of *growth factors*, || which then attract the migration of *neutrophils*, *monocytes* and *macrophages* to the *wound* bed.
4. The *cellular* aspect of this phase occurs within hours of *wounding*.
5. The primary function of these *cells* is [[to attract *phagocytes* to the *inflamed* area || to kill *bacteria* || and remove debris from dead and dying *cells* within the *tissue* spaces]].
6. This process is known as *phagocytosis*.

Text 3.

From Nightingale's Chapter 8

**Air your dirty sheets, not only your clean ones**

1. If you consider the || prior to the that an adult in *health* *exhales* by the *lungs* and *skin* in the twenty-four hours three pints at least of moisture, || loaded with *organic matter* [[ready [[to enter into putrefaction]]]; || that in sickness the quantity is often greatly increased, || the quality is always more noxious || – just ask yourself next || where does all this moisture go to?
2. Chiefly into the bedding, || because it cannot go anywhere else.
3. And it stays there; || because, except perhaps a weekly change of sheets, scarcely any other airing is attempted.

In this section, online and corpus-based tools have been used to complement detailed clause analysis of the technicality of the texts. A possible approach to measure technicality is through online readability tests.<sup>2</sup> These calculate the number of years of education an individual requires to understand any given text based mainly on word and sentence length. Another approach is to analyse texts for both academic words, defined as those highly frequent in a large multidisciplinary academic corpus but not in a general one, and technical words, those that are discipline-specific. In addition to the automation of the analysis through a freely available online interface (Davies 2012), the results obtained offer a high degree of reliability as they are based on the Academic Vocabulary List (AVL) (Gardner & Davies 2013), derived from a 120-million-word academic subcorpus and the 425-million-word general Corpus of Contemporary American English (COCA). These data provide us with a more nuanced measure of lexical density, as they exclude general lexical items (e.g. *bed*, *sheets*) and differentiate between academic

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2. Readability scores were obtained using the Readability Test Tool available at <https://www.webpagefx.com/tools/read-able>.

words (e.g. *response*, *establish*) and technical terms (e.g. *inflammatory*, *autoimmune*). For grammatical intricacy, the number of clauses, clause complexes and clause simplexes were obtained through manual analysis. Table 4 summarises the results.

**Table 4.** Results for lexical and grammatical analysis

	Nightingale – bed and bedding	Lewis's Chapter 8 – inflammation	Baillie Chapter 7 – wound care
Readability Score	10	13	13
Words in AVL	6%	18%	18%
Technical words	6%	25%	17%
Aver. words per sentence	21	14	17
Clauses	45	48	43
Sentences	20	36	27
Clause simplex	9	27	17
Clause simplex%	45%	75%	63%

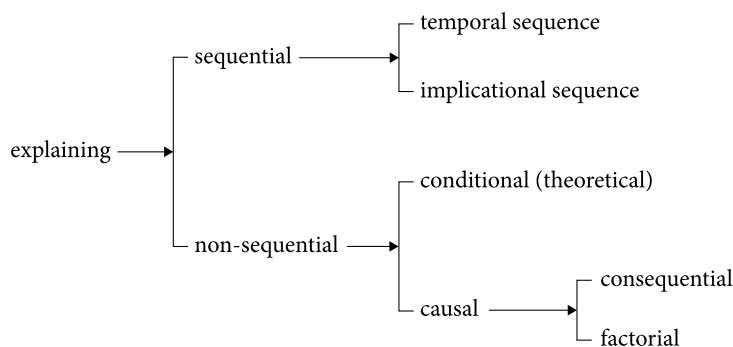
We can observe a notable difference between the results for Nightingale's text and those of the two contemporary textbooks, which show a great degree of consistency between them. The readability score indicates that an individual would require three more years of education to comprehend these texts than to read Nightingale's. Taken at face value, this immediately poses a problem for initial nursing education programmes that require only year 10 completion for admission (e.g. Diplomas of Nursing in countries such as Singapore). The differences in lexis and grammar are both statistically significant ( $p < 0.0001$ ).<sup>3</sup> Regarding lexis, the textbooks contain at least three times as many academic and technical terms as Nightingale's manuscript. Regarding clause analysis, it is noticeable that despite the similar number of clauses, these are distributed differently. While in the modern textbooks clause simplexes make up between two thirds and three quarters of the sentences, in *Notes on nursing*, they are less than half, indicating higher grammatical intricacy in the latter. For an illustration of these phenomena, compare the first sentence of each of the texts above.

3. Significance measures were obtained using the Log Likelihood and effect size calculator available at <http://ucrel.lancs.ac.uk/llwizard.html>. According to this tool, the critical value for  $p < 0.0001$  is 15.13. The value obtained from the comparison of academic and technical vocabulary between Nightingale's and Lewis's text was 468.39. The value for the difference between the number of clause simplexes was 23.56. The comparison between Lewis's and Baillie's text did not reach the minimum critical value for significance.

The analysis so far has explored lexicogrammatical realizations of the parameter of “sphere of action” as described by Butt (2004). To capture technicality at the semantic stratum, I will refer to Matthiessen’s (2015) modelling of field of activity. In the nursing textbooks samples, the choice activated is [expounding] “our experience of classes of phenomena according to a general theory”...including “uncommonsense scientific theories” (2015:8). This option is extended in delicacy by including the choices [categorizing] and [explaining]. Here, the variables intersect. Unlike biology, nursing is more concerned with processes of health and illness rather than with the description and categorisation of living beings. However, these processes are susceptible to classification as well, as illustrated by the example below which follows from Text 1 above.

The inflammatory response *can be divided into* a vascular response, a cellular response, formation of exudate and healing.

As shown by the words in italics, the sentence above introduces a taxonomy (elements of the inflammatory response) that structures the text, but instead of a Thing, each element is a process elaborated through explanations. Figure 5 illustrates the extension in delicacy for the option [explaining]. Explanations can be [sequential] or [non-sequential]. As the logical connection between the processes described is that of cause and effect, rather than just a succession of events in time, Wignell et al. (1989) coined the term “implication sequence”. When the causes are multiple and varied, the activated choices are [causal; factorial] (cf. Martin & Rose 2008). Text 4 from Lewis’s Chapter 8 is an example of a factorial explanation, while Text 5 from the same chapter illustrates an implication sequence.



**Figure 5.** Systemic organisation of types of [explaining]: three steps in delicacy from Matthiessen (2015:11)

Text 4.

Factorial explanation from Lewis's Chapter 8: rewordings in bold and italics

### Vascular response

1. After cell injury, local arterioles briefly undergo transient vasoconstriction.
2. After release of histamine and other chemicals by the injured cells, **the vessels dilate**. (Factor 1)
3. Chemical mediators cause *increased capillary permeability* || and *facilitate fluid movement from capillaries into tissue spaces*. (Factor 2)
4. Initially composed of serous fluid, ||this inflammatory exudate later contains plasma proteins, primarily albumin.
5. These proteins exert oncotic pressure [[*that further draws fluid from blood vessels*.]]
6. Both **vasodilation** (F1) and *increased capillary permeability* (F2) are responsible for redness, heat and swelling at the site of injury. (Phenomenon)

Text 5.

Implication sequence from Lewis's Chapter 8

### Neutrophils

1. Neutrophils are the first leucocytes [[to arrive at the injury site (usually within 6 to 12 hours)]]]. (Phase 1)
2. *They phagocytose (engulf) bacteria*, other foreign material and damaged cells. (Phase 2)
3. With their short life span (24 to 48 hours), dead neutrophils soon accumulate. (Phase 3)
4. In time a mixture of dead neutrophils (Ph. 3), *digested bacteria* (Ph. 2) and other cell debris (Ph. 2) accumulates as *a creamy substance termed pus*. (Phenomenon identification)

In both extracts, the causes precede the phenomena, which are observable symptoms that nurses need to identify. Thus, nurses are not only required to know that redness and swelling are a sign of injury, which is commonsense knowledge, but also to understand the precise biological mechanisms that trigger that reaction. An additional level of difficulty is posed by some of the lexicogrammatical choices. Notice, for example, that grammatical metaphors are not always preceded by the unpacked version. In Text 4, sentence 1 (4:1), *vasoconstriction* is introduced as a given, while vasodilation is first presented in congruent form as *vessels dilate*. *Increased capillary permeability* in (4:3), on the other hand, is only unpacked four clauses later (4:5). Furthermore, the use of *and* in (4:3) may be confusing to the student as it indicates extension rather than elaboration. Likewise, there is inconsistency in the elaboration of technical terms. While *phagocytose* is elaborated on

at group level with *engulf*, *neutrophils* are categorised as *leucocytes*, but neither concept is further elaborated on. A search of the whole book showed that neither term had been introduced earlier. These are issues that may unnecessarily increase the level of difficulty of these instructional texts.

Even if the content does not always facilitate comprehension, learning is a key aspect of nursing textbooks. As mentioned at the beginning of this section, the [sphere of action] of nursing textbooks is not limited to the business of *nursing*, but also to that of *learning about nursing*. This aspect can be better grasped by the parameter of [goal orientation].<sup>4</sup> Figure 6 illustrates this domain in detail as shown in Butt (2004:35). The first activated choice is [longitudinal], as training to become a nurse is a process that takes at least three years and [variable] as the audience of nursing textbooks includes not only students at different stages of their training process, but also lecturers, practicing nurses and other participants such as linguists with an interest in nursing education. Nursing textbooks also make the statement of their goals [overt] and [offered in coded form] [from outset], as it is currently standard practice in formal pedagogic discourses to state the learning outcomes explicitly at the beginning of the exchange. This may not always take place in spoken pedagogic discourse, but it is frequent in written forms.

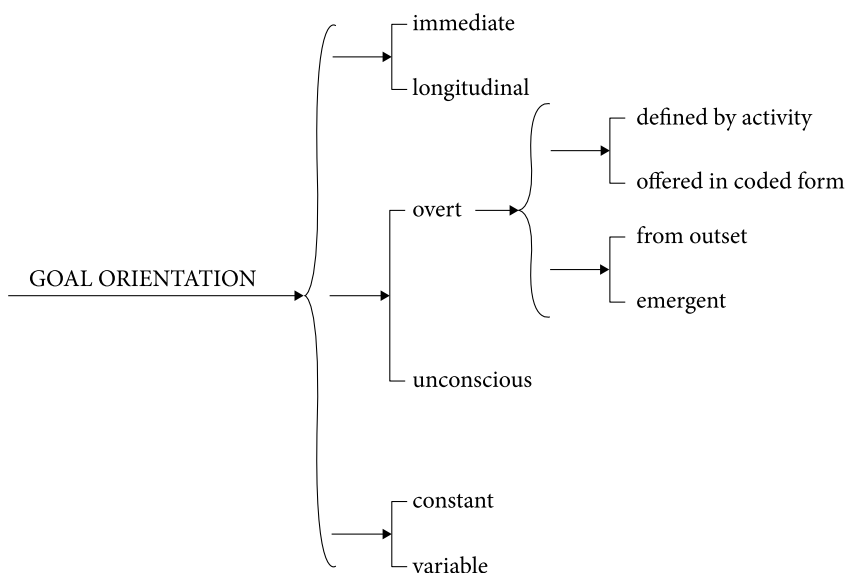


Figure 6. [Goal orientation] in Butt (2004)

4. Editorial note: see the related discussion by Butt in this issue.



These contextual selections are realized semantically as the generic element that we will call “Learning Outcomes” (LO<sup>^</sup>). This can be presented in two ways, either in one block at the beginning of the chapter, or in groups of two or three followed by the relevant content. Their lexicogrammatical realization follows the pattern Verbal Process + Verbiage, where Verbiage often consists of one or more extended nominal groups, as seen in Table 5.

**Table 5.** “Learning outcomes” (LO<sup>^</sup>) in Lewis’s Chapter 8

- 
- |    |  |
|----|--|
| 1. | Describe the inflammatory response, including vascular and cellular responses and exudate formation. |
| 2. | Explain local and systemic manifestations of inflammation and their physiological bases.             |
| 3. | Describe the drug therapy, nutrition therapy and nursing management of inflammation.                 |
- 

The choice of Verbal Processes is a clear indication of the contemporary educational context. Mental Processes would not be measurable, as instructors cannot verify what a student “understands” without linguistic output, especially in a material situational setting removed from the elements being discussed. A clinical placement where students demonstrate knowledge by “doing” rather than just “saying” is a later stage in the training process for which achieving the stated learning outcomes is a prerequisite. A closer analysis of the Verbiage shows a pattern in content development that provides an explanation of a health issue, lists the symptoms that would allow a diagnosis, details the recommended nursing intervention or management and, in line with the pedagogical purpose of the exchange, asks a number of questions for assessment. These were identified as elements of the generic structure of nursing textbook chapters. Thus, a tentative statement for the actual generic structure (AGS) (Hasan 2009) of Lewis’s Chapter 8 would be LO<sup>^</sup>Diagnosis<sup>^</sup>Intervention<sup>^</sup>Assessment. Determining the generic structure potential (GSP) (Hasan 1985), that is a statement of obligatory and optional elements that would accurately describe any text within the register of nursing textbook chapters, would require examining a more representative corpus.

In the following section, I will focus on the element of nursing interventions and whether knowledge is presented as contested or static.

## 6. Epistemological stance in nursing textbooks

Knowledge about biological processes of health and illness in the nursing domain is largely considered scientific fact. This is evident in the lexicogrammatical realization of the generic element <sup>^</sup>Diagnosis in both transitivity and the systems of mood and modality. Regarding transitivity, most processes are either Relational:

identifying (e.g. *a creamy substance termed pus*) or Material (*they phagocytose bacteria*). Regarding mood, all sentences are in declarative mood and the finite indicates present tense. That is, the world is categorised and the happenings are presented as immutable.

Analysis of the ^Intervention element, however, will show a different picture. I will start the analysis by re-entering Matthiessen's typology for field of activity at the point of [enabling] "people to undertake some activity, thus very likely foreshadowing a doing" (2015:8). The next activated choice is [instructing], as opposed to [regulating], which leads to the semantic realization of procedures described by Martin and Rose (2008). Yet, to account for all the relevant features of context, I will refer now to Butt's (2004) parameter of [material action], as illustrated in Figure 7.

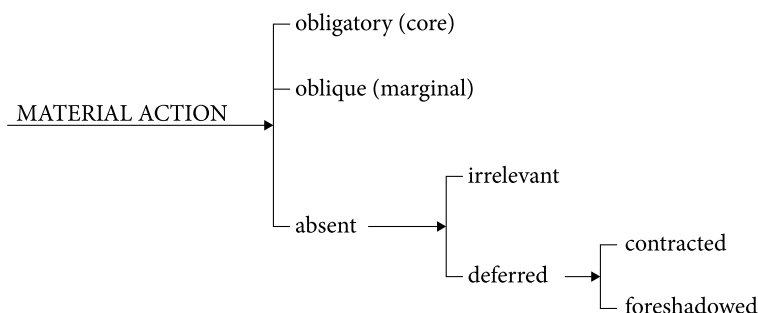


Figure 7. [Material action] in Butt (2004)

The activated choices in this dimension are [absent]:[deferred]:[foreshadowed], as students are expected to conduct nursing implementations as part of their clinical placements, but there is no contractual or moral obligation to do so. What this means is that the instruction will be carried out in the not immediate future. The author then needs to account for the possibility that evidence for a more effective intervention emerges and replaces the instructions provided. Students should not only consider the possibility of recommended treatments changing, but should also seek and be able to find evidence for the best course of action. I argue that this attitude towards knowledge of nursing interventions is a contextual pressure for the lexicogrammatical realizations of commands in the textbook samples. Table 6 summarises these patterns from more to less congruent forms.

It would seem that the imperative, the most congruent form to express commands, is selected by the author when a course of action is unlikely to change. Whatever advances technology may bring, nurses will have to continue to observe and record the characteristics of wounds. Other nursing interventions are presented as common or possible practice with either Modal Adjuncts of usuality

**Table 6.** Mood and modality choices for commands

Mood	Subject	Finite	Modal adjunct	Residue
Imp.				Observe and record the characteristics of the wound including size, depth and location
Dec	you	need to	continually	assess for complications associated with healing
Dec	Antipyretics	should		be given around the clock to prevent acute swings in temperature.
Dec	A high fluid intake	is		needed
Dec	Adequate nutrition	is		essential
Dec	Antihistamine drugs	may		also be used to inhibit the action of histamine.
Dec	Steps	are	frequently	taken to lower body temperature to relieve the anxiety of the patient and health care professionals.
Dec	Drugs	are		used to decrease the inflammatory response and lower the body temperature
Dec	Compression	3rd presing		counters the vasodilation effects and development of oedema

(e.g. *frequently, commonly*) or Modal verbs (Finites) expressing strong to moderate obligation (e.g. *should, may*). A frequent pattern is an intervention with an evaluative attribute relative to appreciation (e.g. *important, essential* and *crucial*). Another strategy is directly stating the positive (or negative) outcome of a particular intervention as in the final example on Table 6. These strategies can be reinforced by explicitly stating the imperative to identify interventions based on empirical evidence, as Baillie does at the beginning of the chapter as reproduced in Text 6:

#### Text 6.

Wound management is a vast topic with an ever-expanding and developing knowledge base, to which whole books and journals are dedicated. Therefore, while this chapter provides a foundation, further reading will be necessary, and you need to continually update your knowledge base. The Cochrane Library and the National Institute for Health and Clinical Excellence (NICE) – discussed in Chapter 1 – are good sources. When in the practice setting, there are specialist nurses (e.g. tissue viability, vascular and dermatology nurses) and other members of the multidisciplinary team (e.g. podiatrists) who will be valuable resources for your learning.

Having explored the construal of knowledge and the status of knowledge within the discipline, I will move on to the final section of the paper: the promotion of whole-person care in nursing textbooks.

## 7. Care, compassion and communication

In the early discussion about the evolution of nursing, it was mentioned that the ability to apply psychosocial knowledge to individual patients was considered an art, a skill (or gift) acquirable through practice, but impossible to be articulated. The consequences of keeping this knowledge silent are detrimental to both patients and nurses. The question is whether textbooks promote (or are able to promote) an empathetic attitude, the ability to see the person as a whole, (not “the appendectomy in room 3”), and take into account their situation and preferences to provide the best care possible. The reason for this approach is not based on sentimentalism, but on sufficient evidence showing that depression, anxiety and isolation have a negative impact on human physiology, which can be exacerbated when conflated with other illnesses or conditions (Tarrier et al. 2005; House 2015). For this discussion, I will refer to sample assessment tasks of each chapter reproduced below:

Text 7.

Lewis’s Chapter 8

Greg Narla, a 42-year-old man, was admitted to the hospital emergency department with partial-thickness burns that involved his face, neck and upper trunk. He also had a lacerated right leg. His injuries occurred about 36 hours earlier when he fell out of a tree onto his gas barbecue (which was lit) while trying to get his cat.

1. What signs and symptoms of inflammation did Greg Narla exhibit, and what are their pathophysiological mechanisms?
2. What type of exudate formation did he develop?
- ...
6. What risk factors does Greg Narla have to develop a pressure injury?
7. *Priority decision:* Based on the assessment data provided, what are the priority nursing interventions required? Are there any collaborative problems?

Text 8.

Baillie’s Chapter 7

Susan is 32 years old and has a moderate learning disability. She lives in a small group home and was recently in hospital having her acutely inflamed appendix

removed. She has been discharged home and has a small abdominal wound, which seems to be healing well. However, Susan is concerned about the wound and is worried about getting it wet when she showers, and drying and dressing afterwards in case she harms the wound. She is due to have her sutures removed by the practice nurse. The community nurse for learning disability, who is Susan's health facilitator, is visiting regularly to give some support in this situation. *Consider how the community nurse for learning disabilities might reduce Susan's anxiety about her wound, and prepare her for suture removal.*

The same contextual selections for [goal orientation] should be activated for these elements of the structure. Both chapters state as a Learning Outcome to describe/explore the range of factors that affect wound healing. However, in Lewis's content, there is no explicit reference to holistic or person-centred care, deactivating the [overt] selection. Baillie's, on the other hand, lists depression, stress and anxiety, in addition to other physiological and life style factors, that affect wound healing. The neglect for psychosocial issues is also evident in the absence of expressions realizing Affect to describe Mr. Narla, especially when facial injuries are a known stressor affecting a person's self-esteem (Hoogewerf et al. 2011). In Susan's case, even though it is a much less serious situation, students have access to not only biomedical data, but also to the patient's cognitive ability and her emotional reaction towards caring for her wound, which will definitely have an impact on her health outcomes.

I would argue that given the longitudinal goal of developing an empathetic attitude and a whole person approach to care, including a narrative element could be an effective strategy. The use of narratives in textbooks has been criticised for not having evolved to construe "uncommonsense" knowledge and hindering students' acculturation into scientific discourse (Halliday & Martin 1993). However, by presenting case scenarios where patients are reduced to symptoms and lab test results, students run the risk of not being able to see the patient's humanity out of habit. Furthermore, narratives are increasingly used in scholarly publications in the discipline of nursing, precisely to illustrate issues related to the 3Cs (care, compassion and communication). For illustration purposes, I will transcribe an excerpt from Benner's (1982) seminal paper *From novice to expert*, where she recounts the experience of being confronted by the son of a terminally ill patient:

... I told him the gratification, the thing that kept me here, was in knowing that maybe somehow, I had made this particular rocky road a little smoother for those who had to travel it. With that, he hugged me, said thank you, and turned away nodding his head with tears in his eyes. There were tears in my eyes too.

(Benner 1982: 407)

## 8. Conclusion

With the serious issues affecting nursing education and the potentially devastating consequences of an exacerbated global shortage of nursing staff, analysis of the registers of the discipline is warranted. Textbooks, as crucial technologies in the construal of disciplinary knowledge and epistemological and literacy models, are a suitable starting point for this exploration.

In a sample of two widely used textbooks in nursing education in Australia, I sought initial evidence for the status of nursing as a discipline, as evidenced in the level of technicality deployed. The results from this sample clearly show that nursing has evolved from commonsense knowledge to a highly technical discipline displaying the features of scientific discourse common to all disciplines: high lexical density, low grammatical intricacy at clause rank and systemic grammatical metaphor. A second aspect was whether nursing textbooks presented knowledge as canon or as contested. It was evident from the analysis that authors resort to a wide range of lexicogrammatical resources to instruct about nursing interventions in a way that makes the need for continued research salient. A final aspect was whether nursing textbooks promoted the values of holistic, patient-centred care. Initial analysis showed that only one of the textbooks made an effort to describe not only biomedical but also psychosocial aspects of the patients in case scenarios for assessment. I argue for the inclusion of narrative elements as a way to contribute to the development of empathy, especially when these are being increasingly used in scholarly publications in the field.

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