

A study of Cohesion in International Postgraduate Students' Multimodal Management Accounting Texts

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Abstract

This study investigates the key multimodal academic literacy and numeracy practices of five international postgraduate students enrolled at an Australian university. Specifically, it aims to provide an account of the salient textual and the logical patterns through the analysis of cohesive devices in a key topic in the *Management Accounting* course, namely budgeting schedules. The research study employs a Systemic Functional Multimodal Discourse Analysis (SF-MDA) of texts (Alyousef, 2013, 2015; Alyousef & Mickan, forthcoming). This approach is framed by Halliday's (1985) Systemic Functional Linguistics (SFL) approach and Halliday & Hasan's (1976) cohesion analysis schemes. SFL provides powerful analytical tools for foregrounding the processes through which students construct disciplinary specific knowledge in a community through academic literacies. Lexical cohesion formed the largest percentage of use, and in particular repetition of the same lexical items, followed by reference. The findings contribute to the description of the meaning-making processes in these multimodal artefacts. They provide a potential research tool for similar multimodal investigations across a broad range of educational settings. Implications of the findings are finally presented.

Keywords: business discourse, cohesion analysis; literacies; literacy practice research; management accounting; multimodal; numeracy practices; SFL; SF-MDA; systemic functional multimodal discourse analysis

Introduction

Textual cohesion in business discourse plays a vital role in the maintenance of a text's style and in maximising students' learning experiences in the Master of Commerce Accounting program. Although some studies have explored the linguistic (Bargiela-Chiappini, 2009; Crawford Camiciottoli, 2010; Perren & Grant, 2000; Thomas, 1997) and the technical (Craig & Moores, 2005) characteristics of *Management Accounting* discourse produced by corporate writers or speakers, the academic literacy and numeracy practices of tertiary students in a *Management Accounting* course have been overlooked.

The present paper reports a case study designed to investigate the way five international postgraduate business students construct cohesive multimodal texts in the *Management Accounting* course. This course is one of the accounting courses in the Master of Commerce Accounting coursework program. It also aims to investigate Saudi students' explanations of their engagement in a key topic and their perceptions of the relevance and significance of their tertiary literacy and numeracy practices to those in workplace and in private life situations.

The research study employs an approach for the analysis of multimodal business discourse, namely a Systemic Functional Multimodal Discourse Analysis (SF-MDA) of texts (Alyousef, 2013, 2015; Alyousef & Mickan, forthcoming). This approach is primarily based on Halliday's (1985) Systemic Functional Linguistics (hereafter SFL) theory and Halliday & Hasan's (1976) and Halliday & Matthiessen's (2014) cohesion analysis schemes.

In the remainder of this paper, we present a review of the literature related to academic literacies research, in particular research studies on SF-MDA. Then we present the methodology, followed by an overview of the context by describing and analysing the academic literacy and numeracy practices students were expected to engage in to perform the assignment task sheet. This is followed by the analysis, an SF-MDA, of a key topic in the *Management Accounting* course, budgeting schedules, to reveal the salient textual and the logical patterns of this discourse. Following that is the discussion of the findings and the conclusion. We then consider the implications of the study.

Literature review

Literacy practices are multifarious, proliferating and ever changing with social contexts and cross-cultural diversity. Multisemiotic resources include the visual including the wide array of diagram genres, the written, the auditory, and the haptic. A multiliteracies model (Cazden et al., 1996; Cope & Kalantzis, 2000, 2013; Kalantzis & Cope, 2012) takes into account the multimodal social literacy practices that are contested around material acts of meaning. Perren & Grant (2000), for example, studied the development of management accounting by exploring the idiosyncratic accounting knowledge and the effects of its transmission over the history of small firms. Psycholinguistics concepts like transmission, strategies, assimilation, retention, internalisation, externalisation, and construction of knowledge often characterise this kind of research. Since the internal learning mechanisms of individual learners are unobservable, the present study is framed by the socio-cultural model of learning, which emphasise the importance of social processes.

Although some studies have explored the linguistic (Bargiela-Chiappini, 2009; Crawford Camiciottoli, 2010; Perren & Grant, 2000; Thomas, 1997) and the technical (Craig & Moores, 2005) characteristics of *Management Accounting* discourse produced by corporate writers or speakers, the academic literacy and numeracy practices of tertiary students in this business course have been overlooked. SFL-based research in multimodal communication and representation has been confined to school and workplace contexts. In her book *The Handbook of Business Discourse*, Bargiela-Chiappini (2009) reviews a range of business discourse studies in workplace settings. Thomas (1997), for example, investigated the linguistic structures in a series of management messages in the annual reports of a company, employing Halliday's (1985) systems of TRANSITIVITY, thematic structure, cohesion and condensations. The transitivity analysis showed the prevalence of relational process types (37.80%) which often suggest objectivity and a predictable increase in passive constructions as the profits decrease. Camiciottoli (2010) found that discourse conjunctive devices in financial disclosure texts were more frequent in the earnings presentations than in the earnings releases, suggesting their pragmatic use influences the interpretation of the message. Whereas multimodal communication research has been conducted across the fields of mathematics (de Oliveira & Cheng, 2011; Guo, 2004; O'Halloran, 1996, 1999a, 1999b, 2000, 2004, 2005, 2008; 2009), science and computing (AlHuthali, 2007; Drury, O' Carroll, & Langrish, 2006; Jones, 2006; Wake, 2006), and nursing (Okawa, 2008), tertiary business discourse has not been fully explored. Applications of SFL in the study of tertiary business discourse are, to the best of our knowledge, limited but include two studies by Alyousef (2012, 2015), who investigated, respectively, the system of TRANSITIVITY in tertiary finance texts and the systems of Theme and Information Structure in tertiary management accounting texts. He employed a multidimensional approach to describe the epistemologies of two business courses, including the experiential and the textual meanings in the multimodal texts.

As Garzone (2009, p. 156) points out that "so far, contributions from linguists specifically dealing with multimodality in business discourse have been relatively few". Given that most international ESL/EFL students in Australia and elsewhere are enrolled in business and commerce programs (Alyousef & Picard, 2011), it is necessary to explore and analyse their multimodal literacy and numeracy social practices. Although the participants in this study cannot be claimed to be a representative sample, the findings may offer insights for students and tutors. Lea & Street (2006) argue that multimodal analysis reveals the range of meanings expressed in learners' activities and genres. As they put it, multimodal analysis aids in theorizing "the multimodal nature of literacy, and thus of different genres, that students needed to master in order to represent different types of curriculum content for different purposes, and therefore to participate in different activities" (Lea & Street, 2006, p. 373). Similarly, Pauwels (2012, p. 250) argues "multimodal analysis not only takes different modes into account but also has a strong focus on the effects of their interplay" between images and texts.

The literature review suggests a lack of studies investigating the textual and the logical meanings in *Management Accounting* numerical tables and their use as conventionalised multimodal Business artefacts.

Methodology

This study is framed by the socio-cultural model of learning which emphasises the importance of social processes in multimodal meaning-making. Literacy practices' knowledge is conceived as

the product of the ongoing situated and multimodal social literacy practices that are contested around acts of meaning. As the *Management Accounting* texts comprised multimodal data, we used the nomenclature Systemic Functional Multimodal Discourse Analysis (SF-MDA) (Alyousef, 2013, 2015; Alyousef & Mickan, forthcoming) to explore the peculiar aspects related to the organisation of meaning. The multimodal meaning resources in this course are mainly comprised of multimodal texts that include visual and numeral semiotic resources. Numeracy practices are conceived as “literacy practices involving 'numerate' texts” (Barwell, 2004, p. 21), a sub-set of literacy practice, since they are social processes of making meaning with numerate texts. The importance of examining the use of cohesive devices becomes pertinent since they play a vital role in maximising the participants’ rich and broad learning accounting experiences.

This approach is primarily based on Halliday’s (1985) Systemic Functional Linguistics (SFL) theory and Halliday & Hasan’s (1976) and Halliday & Matthiessen’s (2014) cohesion analysis schemes. Halliday’s (1978, 1985) social semiotic theory of language, SFL, views language as a social semiotic resource for making meaning and constructing knowledge within social contexts. SFL suits the context of the present study as it takes into account the functions of language in social interaction. It provides a wide range of linguistics resources for handling and interpreting multimodal socio-cultural literacy events which are mediated by written texts. The core of these resources is the lexico-grammatical stratum of language which is used to explore the three language metafunctions that construe meaning *ideationally*, by representing and ordering our experience, perceptions, consciousness, and the basic logical relations (oriented towards the field of discourse), *interpersonally*, by enacting certain social relationships (oriented towards the tenor of discourse), and *textually*, by weaving ideational and interpersonal meanings into a textual whole (oriented towards the mode of discourse). These metafunctions correlate respectively with three register semiotic variables: FIELD (what is talked about?), TENOR (how social roles and identities are constructed?), and MODE (How are the meanings organised). Due to space constraints we investigate here only the salient textual and the logical patterns of the *Management Accounting* discourse, through the analysis of cohesive devices.

A cohesive relation is defined by Halliday & Hasan (1976) as “the semantic relation between an element in the text and some other element that is crucial to the interpretation of it”. Halliday & Hasan (1985) state that coherence exists in a text when ‘meaning relations’ are realised by cohesive ties or chains (or the lexical and the grammatical patterns) that allow sentence sequence to be understood as connected discourse. Cohesion consists in the continuity of lexico-grammatical meaning and semantic connection with a preceding text. Halliday & Hasan (1976, p. 26) argue that cohesion “does not concern what a text means; it concerns how the text is constructed as a semantic edifice”. They list five types of cohesion: reference, substitution, ellipsis, conjunction, and lexical cohesion.

While the first three types are expressed through the grammar, lexical cohesion is expressed through the lexis, and conjunction is “mainly grammatical, but with a lexical component in it” (Halliday & Hasan, 1976, p. 6), i.e. it contains ties that are both grammatical and lexical. Halliday & Matthiessen (2014, p. 579) argue that “structural and cohesive resources work together in the marking of textual transitions and in the marking of textual statuses” as shown below.

Table 1. Textual resources.

	Structural	Cohesive
Textual transitions [‘organic’]	(clause complex=>logical)	CONJUNCTION
		LEXICAL COHESION
Textual statuses [‘componential’]	THEME: Theme ^ Rheme; INFORMATION: Given + New	REFERENCE; ELLIPSIS/ SUBSTITUTION

(Adapted from Halliday & Matthiessen, 2014, p. 579)

Halliday (1985, p. 38) defines Theme as the constituent which serves as “the point of departure for the message”. It is the element which comes in first position in the clause. Typically, a Theme is *backgrounded* since it refers to something that has gone before, while Rheme refers to new information which is *foregrounded* because it triggers the subsequent Themes. Unlike THEME/RHEME, cohesion is a non-structural system since it links “elements that are structurally unrelated to one another” (Halliday & Hasan, 1976, p. 27) to create a unified, coherent text. Whereas conjunctions are concerned with textual transitions that form logical relations of clause complexing, the other cohesive resources (THEME, INFORMATION structure, reference, ellipsis, and substitution) are concerned with textual statuses that form textual cohesion between Theme and Information. Due to space constraints we investigate here only the five types of cohesion. Unlike reference and ellipsis, lexical cohesion does not only include components of messages, but also creates relations between whole messages, as do conjunctions. Conjunctive textual cohesion is captured through two types of logical-semantic relations that guide the rhetorical development of a text: expansion and projection. The projection relation is formed out when the secondary clause projects through the primary clause, thereby instantiating it as a locution (wording) or an idea (meaning). Expansion is formed out when the secondary clause expands the primary clause through the use of one of the three main sub-types of expansion: elaboration, extension, and enhancement (Halliday & Matthiessen, 2014). It is formed out of a mixture of paratactic (equal status) or hypotactic (unequal status) interdependency nexus. A paratactic relation is set up when two or more independent clauses are connected by conjunctive devices, while a hypotactic relation is set up when a dependent clause is connected to an independent (dominant) clause by a conjunctive device. Reference includes three types: personal, demonstrative and comparative. Endophoric reference, unlike homophoric and exophoric reference, is retrievable from within the text (Eggins, 2007). It can be of three kinds: anaphoric, cataphoric, or esphoric. Anaphoric reference occurs when the referent precedes the cohesive device. Whereas the referent follows the cohesive device in another sentence in cataphoric reference, it follows the cohesive device within the same nominal group/noun phrase in esphoric reference.

What follows is an overview of the context by briefly describing and analyzing the academic literacy and numeracy practices students were expected to engage in to perform the assignment task sheet.

An overview of the context

In this section we investigate the requirements and the documented aims of the group assignment task sheet by briefly describing the rhetorical structure of the expected text types or discourses.

This assignment aims to measure students' competency in constructing 'budgeting' schedules. A task sheet defines the requirements students need to achieve in order to complete the assignment. Generally speaking, assignment task sheets usually include detailed instructions on what the two groups were expected to do. The participants were given the pseudonyms: Abdulrahman, Abdullah and Steve (Group 1), Omar and Peter (Group 2). The task sheets did not constrain students in terms of space. The two groups' assignment task sheets were similar. The task sheet consisted of four pages, excluding the task's guidelines which included notes such as the submission date, the importance of performing this task within a group of no more than three students, and signing the acknowledgement of the university's policy on plagiarism. The literacy requirements were clearly stated in the four pages in terms of three numerical tables, seven paragraphs, and ten requirements. The three tables provided information for working out the budgets. In addition to the textbook, these tables represent the *Management Accounting* multimodal tools students needed to employ in order to successfully accomplish the 10 requirements: i.e. formulating budgets in order to eventually compile a 'Budgeted Balance Sheet' (requirement 10). The conceptual knowledge in these tasks is highly complex since students were expected to employ a range of contemporary *Management Accounting* tools. These 10 budgets help businesses in the decision making process, as each one serves a specific purpose.

Having provided an overview of the context by briefly describing the academic literacy and numeracy practices students were required to master to meet the demands, next we present the findings of the SF-MDA of a key topic in this course, namely budgeting schedules.

An SF-MDA of cohesion in the *Management Accounting* assignment

Students construct disciplinary-specific *Management Accounting* knowledge through the meaning-making processes which involve the interaction of the ideational (experiential and logical), the interpersonal, and the textual meanings. The SF-MDA of these meanings sought to provide an explanatory account of how texts are typically constructed and how they relate to their context of use. As stated earlier, due to space constraints we investigated here only the way the two groups represented the textual and the logical, conceptual knowledge. The textual metafunction realising the mode of discourse is partly represented in the text by the students' use of lexical cohesion, reference, ellipsis, and substitution. The logical metafunction concerns the representation of the relations between one clause and another that are achieved through conjunctions.

The corpus was composed of two assignments written in English (6,239 words) in the field of *Management Accounting*. The two texts were written by two groups: Group 1, Abdulrahman, Abdullah and Steve, and Group 2, Omar and Peter. Each group received a distinction mark: 45 and 45.50 out of 50 respectively. Abdulrahman attended three 2-hour meetings with his group members. Group 2 organised three 3-hour meetings in order to accomplish the assignment together. The total number of words in Group 1's (Abdulrahman, Abdullah and Steve) text was 2024 words (1416 in the tables and 608 in the footnotes and the memo) while it was 4239 words in Group 2's (Omar and Peter) text (1495 in the tables and 2744 in the explanatory text). The following table compares numeracy representations in the two groups' texts:

Table 2. A pivot table of numeracy representations in the participants' texts.

Group	Words			Tables	Footnotes
	Tables	Text	Total		
1. Abdulrahman , Abdullah & Steve	1416	608	2024	14	26
2. Omar and Peter	1495	2744	4239	12	0

Group 1 concisely presented its findings in 14 tables, in addition to a 206-word memo and 402-word footnotes. Abdullah (personal communication, March 19, 2011) argues that although the task sheet did not require them to write a memo, they strongly believed that in workplace settings they would normally attach a memo along with the 10 budgeting schedules when presenting the findings to a manager.

Group 1 prepares the balance sheet by starting with the heading which indicates the name of the entity, the title of the statement and the statement date, as illustrated in Table 3 below. The remaining entries are set out as a table. Then the main categories *assets*, *liabilities* and *equity* are listed in column 1. Next, each sub-category is assigned to its respective main category. With the exception of 'Total', the other main categories do not align with the figures. Column 2 refers to debit, whereas the right column is the credit side.

Table 3. Group 1's Budgeted Balance Sheet.

Frame-it Ltd	
Budgeted Statement of Financial Position	
as at 31 December 2011	
	Notes
Current assets	
Cash at bank	\$ 204,500.00
Accounts receivable	192,000.00
Inventory:	
Raw materials	83,200.00
Finished goods	235,000.00
Total inventory	318,200.00
Total current assets	\$ 714,700.00
Non-current assets	
Plant and equipment y)	8,920,000.00
(net of depreciation)	
Total assets	\$ 9,634,700.00
Liabilities	
Accounts Payable	143,400.00
Net Assets	\$ 9,491,300.00
Equity	
Ordinary shares	5,000,000.00
retained Earnings	4,491,300.00
Total equity	\$ 9,491,300.00

The Group inserted a footnote, Y, next to the sub-category 'Plant and equipment' in the table above to show their calculations.

- y) Plant and Equipment Calculation:
- | | |
|---|--------------|
| Plant and equipment 1 Jan 2011 | 8,000,000.00 |
| add: Purchased plant and equipment | 1,000,000.00 |
| less: depreciation for the year | z) 80,000.00 |
| Plant and equipment 31 Dec 2011 (net of depreciation) | 8,920,000.00 |
- z) No depreciation for the robot in 2011 because it will take most of year (2011) to train staff and gain benefits in 2012.

Generally speaking, some students may face, at times, difficulties in assigning a given classification to its respective category. These difficulties are related to the logical interconnections between the lexical strings in the balance sheet, i.e. what does the lexical string 'accounts receivable mean? Is it assigned to *assets*, *liabilities* or *equity*? Or, is it assigned to *current* and *non-current assets* or *liabilities*? Both groups successfully compiled the balance sheet, though they lost only half mark because they did not show the total liabilities and equity (i.e. \$ 9,634,700.00). They did not face difficulties in the logical metafunction that is construed in the relations between the categories and the sub-categories.

The cohesive devices used in the two texts were analysed. Table 4 compares the numbers and percentages of the different subcategories of grammatical and lexical cohesive ties identified in the two texts.

Lexical cohesion was the most frequently occurring cohesive type in the two texts (96.66% and 79.84% of the total cohesive devices), and in particular repetition of the same lexical items (74.17% and 68.68%), while the second most frequently occurring cohesive type was reference (1.68% and 14.77%). Most of the repetitions in text 1 occurred in tables (612 out of the 666 instances or 91.89%); while in text 2 they mostly occurred in the text (922 out of the 1540 instances or 59.87%). This is ascribed to the fact that Group 1's text, unlike Group 2, was comprised of only tables, footnotes and a 206-word MEMO. As a result this group used fewer reference cohesive devices than did Group 2, 1.68% and 14.77% respectively. Group 2's explanatory text was considered redundant as the task sheet required students "to provide supporting schedules 1-9 that are needed to compile a budgeted balance sheet".

Table 4.Types of cohesive ties in the two texts.

Category	Sub-category	Type of tie	Text 1		Text 2	
			Frequency	Percentage	Frequency	Percentage

Category	Sub-category	Type of tie	Text 1		Text 2	
			Frequency	Percentage	Frequency	Percentage
Conjunctives	Elaboration	Appositive	1	0.11%	2	0.08%
		Clarification	2	0.22%	20	0.90%
	Extension	Additive	6	0.67%	25	1.12%
		Variation	0	0.00%	0	0.00%
	Enhancement	Temporal	1	0.11%	25	1.12%
		Manner/comparative	1	0.11%	37	1.65%
		Causal	3	0.33%	7	0.31%
		Concessive/conditional	0	0.00%	2	0.08%
		Total	14	1.55%	118	5.26%
	Substitution			0	0.00%	0
Ellipsis			1	0.11%	3	0.13%
	Total	1	0.11%	3	0.13%	
Lexical Cohesion		Repetition	666	74.17%	1540	68.68%
		Synonym	1	0.11%	10	0.44%
		Hyponym	65	7.23%	68	3.04%
		Hypernym	15	1.67%	11	0.49%
		Meronym	98	10.92%	125	5.58%
		Antonym	23	2.56%	36	1.61%
		Total	868	96.66%	1790	79.84%
Reference		Demonstrative	0	0.00%	41	1.83%
		Definite	14	1.57%	208	9.28%
		Comparative	0	0.00%	5	0.22%
		Pronouns	1	0.11%	13	0.58%
		Possessive	0	0.00%	0	0.00%
		Anaphoric	0	0.00%	11	0.49%
		Cataphoric	0	0.00%	53	2.37%
		Total	15	1.68%	331	14.77%
	Sub-total	898	100.00%	2242	100.00%	

The high frequency of lexical cohesive devices is mainly attributed to the abundance of lexical ties in financial statements. For example, the use of meronyms in Group 1's text was 10.92%. As the major discourse consisted of financial statements, taxonomic classifications contributed to the texts' cohesiveness. They led to the cohesiveness of well-formed texts not only through the top-down paradigmatic and left-to-right syntagmatic lexical relations, as in orthographic texts, but also through the bottom-up and right-to-left relations: e.g. the lexical strings 'Cash at bank' and 'Accounts receivable' are meronyms (part of) of the hyponym 'Current assets' (cf. Table 3 above). Hyponymy is a sign whose denotation class is properly

included in the denotation class of another sign. A meronym, on the other hand, denotes a part in respect to a lexical item denoting a whole. Sense relations in financial statements occur between single lexemes but also between lexical strings. In addition, when taking into account the meaning making processes of the general categories 'Liabilities' and 'Equity' it appeared that they are not only hypernyms of their sub-classes, but also meronyms of 'Assets' since the sum of numerical value for the two general categories equals 'Assets', i.e. part-whole relations exist. A hypernym refers to the lexeme with the more general or inclusive meaning.

It should be noted here that both groups used only one sub-component of extension devices, namely the additive conjunctives. The frequency of the extending sub-component additive conjunctions in the two groups' texts was higher than the other sub-components of elaborating and enhancing, as in:

c) Other raw materials, such as [C: Elaboration: Appos.] cardboard backing, are insignificant in cost and [C: Extension: Add.] are treated as indirect materials. (Group 1's text, no. 4)

Z) No depreciation for the robot in 2011 because [C: Enhancement: Caus.] it will take most of year (2011) to train staff and [C: Extension: Add.] gain benefits in 2012. (Group 1's text, no. 61)

For [C: Elaboration: Clari.] the S line, Q1 2011 sales were calculated at 55,000, based on the instructions where 50,000 units were budgeted in Q4 2010 and [C: Extension: Add.] were projected to then [C: Enhancement: Temp.] grow at 5,000 units per quarter. (Group 2's text, no. 3)

In addition, [C: Extension: Add.] 20% of the credit sales from the previous quarter were included, which amounted to \$60,000. (Group 2's text, no. 16)

Group 2 used more temporal and manner conjunctive devices (1.12% and 1.65% respectively) than did Group 1 (only .11% for each device type). Enhancement devices were used to expand the proposition by providing circumstantial details such as time, place, manner, cause or condition. The most frequent reference type in the two texts was the definite article (1.57% and 9.28%). Halliday & Hasan (1976, p. 74) argue that the definite article 'the' "creates a link between the sentence in which it itself occurs and that containing the referential information", though, unlike the demonstratives, it contains no specifying element of its own. Whereas Group 1's text lacked the use of demonstrative devices, they occurred 41 times in Group 2's text in order to refer to the Rheme in the previous clauses. The group employed nominalisations in subject-head position and in conjunction with the deictic *this* (e.g. "*this process*"), which are called *retrospective labels* as they do not only contribute to the organisation of the text, but also have the potential to reveal the writer's opinion or evaluation within the text (Baratta, 2010): e.g. *This process* was then repeated for each of the following quarters in the 2011 year/ *This process* is repeated for each subsequent quarter

The frequency of occurrence of the lexical and grammatical cohesive devices in text 2 exceeded text 1 by 150%. This is not surprising since the length of both texts was not comparable. In addition, rather than using the synonyms total, sum, and added up to, group 2 excessively

repeated the word “amount(ed) to” forty-nine times in the text. The cohesive density index was higher in Group 2’s text than in Group 1’s.

Table 5. Cohesive density index in the two texts.

Participant Category	Abdulrahman, Abdullah & Steve, Text 1	Omar and Peter, Text 2
Word count	2024	4239
Number of ties	898	2242
Ratio of ties/100 words	44.36%	52.88%

This index revealed that Omar and Peter’s text contained higher frequency of cohesive devices (52.88 ties per 100 words) than Abdulrahman, Abdullah and Steve’s text (44.36 ties per 100 words). This is not surprising when taking into consideration text length.

Having presented the findings of the SF-MDA of two *Management Accounting* assignments, next we present a discussion of the main findings of this case study and the conclusion.

Discussion of the findings

The focus (or topic) of the task sheet was to produce nine schedules that lead to a “Budgeted Balance Sheet”. The focus of the analyses was on students’ construction of disciplinary-specific *Management Accounting* knowledge. The description of the task sheets showed that the participants simulated workplace practices by adopting the role of management accountants in order to provide nine supporting schedules that were needed to compile a “Budgeted Balance Sheet”.

Drawing on Halliday’s (1985) SFL theory and Halliday & Hasan’s (1976) and Halliday & Matthiessen’s (2014) cohesion analysis schemes, we have conducted an SF-MDA of the textual and the logical meanings in the *Management Accounting* texts. The findings showed that lexical cohesion was the most frequently occurring cohesive type in the two texts, and in particular repetition of the same lexical items, while the second most frequently occurring cohesive type was reference. This is normal as topic maintenance involves talking about the same entities (or nouns). The high frequency of reference in text 2 is ascribed to the fact that although financial tables constituted the major part in *Management Accounting* discourse, Group 2 preferred to accompany the tables with explanatory text. Taxonomic classifications of synonyms, hyponyms, hypernyms, meronyms, and antonyms play a major role in the organisation of financial statements’ discourse. These devices also add interest and subtlety to the text. The well-formed taxonomic lexical relations in financial statements bind the separate lexical strings in a hierarchical networked structure, thereby constituting a tight semantic unit. Lexical relations between financial statements’ categories are organised into a network. Thus the abundance of hierarchically networked lexical ties is one of the key features that characterise financial statements.

The findings also showed that the participants underused other lexical and grammatical cohesive devices, namely conjunction, reference, substitution, and ellipsis. These findings support those in other studies (Abusharkh, 2012; Alharbi, 2011; Aljabr, 2011; Alshammari, 2011; Fazelimanie, 2004; Hinkel, 2001; Johns, 1980; Kamal, 1995; Khalil, 1989; Liu & Braine, 2005; Mohamed-Sayidina, 2010; Mohamed & Omer, 2000), which found that ESL/EAL students extensively used lexical repetition to convey the interrelationships among ideas, direct the attention of reader/listener, and show the relative *foregrounding* and *backgrounding*. For example, Johns (1980) found that lexical cohesion was the most frequently occurring cohesive type in the written business discourse, while reference was the second most common category.

Conjunctions were minimally used to signal extension and enhancement relationships. Extension devices are typically used to provide further related information or to establish counterclaims (e.g. and, also, furthermore, but, however, etc). On the other hand, enhancement devices are used to provide reason (e.g. because, thus, so, etc), to illustrate the manner in which an action takes place (e.g. as, though, although, etc.), and to order the sequential structure of events (e.g. first, second, etc.). Thus whereas these devices expand the utterance by providing circumstantial details such as time, place, manner, cause or condition, elaboration devices expand an utterance by reformulating the message to provide focus on the content (e.g. more specifically, in fact, etc). The findings showed that Additive conjunctions that aim to extend the meaning, in particular 'and', 'also', and 'in addition', had the highest frequency, compared to the variation cohesive devices (on the other hand, alternatively, rather, in contrast, or, etc) whose occurrence was 0.00%. This implies that the participants had difficulties in employing the logico-semantic resources of extension for construing the inter-clausal relations, particularly in the use of variation devices. The lack of these devices in international students' texts in general, and in the Saudi students' texts in particular could be ascribed to a number of reasons, including the use of the rhetorical organization in L1, limited writing opportunities, and the Saudi educational system that relies heavily on memorizing (Alyousef, 2014; Fageeh, 2003; McMullen, 2009; Mohamed-Sayidina, 2010).

While ellipsis rarely occurred in the two texts, substitution never occurred. The findings showed that ellipsis was used in the accounting discourse calculations as a means to avoid redundancy. The scarce occurrence of these two devices in the participants' texts has also been reported in a number of other studies (Abusharkh, 2012; AlJarf, 2001; Fazelimanie, 2004; Hessamy & Hamedi, 2013; Hinkel, 2001; Johns, 1980; Khalil, 1989; Mohamed-Sayidina, 2010). For example, Khalil (1989, p. 363) found that substitution rarely occurred in ESL students' texts, while ellipsis never occurred. Similarly, AlJarf's (2001) findings showed that EFL college students' difficulties in resolving substitution, reference and ellipsis relationships were due to difficulties in organizing the meaning-making processes through the use of the cohesive devices. The rare occurrence of these ties, however, seems to be natural as these ties are more characteristically found in dialogues, where the typical sequence is based on pairs or triads or longer structures that are related by interpersonal meaning. Hessamy & Hamedi (2013), however, ascribe the rare occurrence in their study to the participants' limited knowledge and the influence of their L1, Persian, which permits the use of repetition of words more than English.

Conclusion

In summing up, the description of the *Management Accounting* task sheets revealed the key

academic literacy and numeracy practices students were expected to perform. The SF-MDA contributes to the multimodal description of the representation of meaning-making processes in texts along with the visual and numeral semiotic resources. The students demonstrated their grasp of *Management Accounting* language through their selections of cohesive devices and through resolving the logical interconnections between the lexical strings. The documentation revealed the interdiscursive multimodal literacy and numeracy practices that are embedded in *Management Accounting* discourse.

This study adds to our stock of knowledge as it is the first to analyse the use of cohesive devices in *Management Accounting* course, and in particular in budgeting tables. It adds to our understanding of this disciplinary specific discourse and of the learners' knowledge and experiences as they engage in the practices of accountancy and employ the relevant lexical and grammatical cohesive resources.

Based on the multimodal exploration of the participants' literacy and numeracy practices, next we discuss the implications of the study.

Implications of the study

Management Accounting students need to successfully represent the logical connection between each sub-category and its main category in the schedules. The findings we presented in this study represent instances of a broader recognisable set of features, as they reflect only a sub-set of the full range of the literacy and numeracy practices. The explicit analysis of academic literacy and numeracy practices in academic programs and in professional contexts builds cross-institutional links, opening up possibilities for collaboration with potential for detailed research into the relationship of academic preparation and professional applications (Alyousef & Mickan, forthcoming). SFL provides a potential research tool not only for the SF-MDA of finance and accounting discourses but also for similar multimodal investigations across both disciplinary and professional communities.

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References

- Abusharkh, B. (2012). *Cohesion and coherence in the essay writing of Palestinian college students*. Unpublished MA thesis, Hebron University, Hebron, Palestine. Retrieved from <http://elearning.hebron.edu>
- Al Jarf, R. S. (2001). Processing of cohesive ties by EFL Arab college students. *Foreign Language Annals*, 34(2), 141-151.
- Alharbi, A. (2011). *An investigation into the English writing of two culturally and linguistically diverse student groups in the Pre-Enrolment English Program (PEP) at Adelaide University*. Unpublished MA thesis, University of Adelaide, Adelaide, Australia.
- AlHuthali, M. (2007). *The construction of mechanical engineering literacies: autonomous or social practices?* Unpublished MA dissertation, University of Adelaide, Australia.
- Aljabr, F. (2011). *An analysis of cohesion and thematic development in university assignments written by undergraduate English major students in one Saudi univesrity*. Unpublished MA thesis, University of Adelaide, Adelaide, Australia.
- AlJarf, R. S. (2001). Processing of cohesive ties by EFL Arab college students. *Foreign Language Annals*, 34(2), 141-151.
- Alshammari, B. (2011). *A cohesion analysis of scientific papers written by Saudi students in an Australian University*. Unpublished MA thesis, University of Adelaide, Adelaide, Australia.
- Alyousef, H. S. (2012). An investigation of postgraduate Business students' multimodal literacy and numeracy practices in Finance: a multidimensional exploration. *Social Semiotics*, 23(1), 1-29. doi: <http://dx.doi.org/10.1080/10350330.2012.740204>
- Alyousef, H. S. (2013). An investigation of postgraduate Business students' multimodal literacy and numeracy practices in Finance: a multidimensional exploration. *Social Semiotics*, 23(1), 18-46. doi: <http://dx.doi.org/10.1080/10350330.2012.740204>
- Alyousef, H. S. (2014). *Investigating international postgraduate Business students' multimodal literacy and numeracy practices: A multidimensional approach*. Unpublished PhD thesis, University of Adelaide, Adelaide, Australia.
- Alyousef, H. S. (2015). *A Study of Theme and Information Structure in Postgraduate Business Students' Multimodal Written Texts: A SF-MDA of Management Accounting Texts*. Paper presented at the Official Conference Proceedings of the 2015 Asian Conference on Language Learning (ACL 2015), Kobe, Japan.
- Alyousef, H. S., & Mickan, P. (forthcoming). Literacy and Numeracy Practices in Postgraduate Management Accounting. In A. Archer & E. Breuer (Eds.), *Multimodality in Higher Education*. Leiden and Boston: Brill Publishing.
- Alyousef, H. S., & Picard, M. Y. (2011). Cooperative or collaborative literacy practices: Mapping metadiscourse in a business students' wiki group project. *Australasian Journal of Educational Technology*, 27(3), 463-480.
- Baratta, A. M. (2010). Nominalization development across an undergraduate academic degree program. *Journal of pragmatics*, 42(4), 1017-1036. doi: <http://dx.doi.org/10.1016/j.pragma.2009.08.007>
- Bargiela-Chiappini, F. (2009). *The handbook of business discourse*. Edinburgh: Edinburgh University Press.
- Barwell, R. (2004). What Is Numeracy? *For the learning of mathematics*, 24(1), 20-22.

- Cazden, C., Cope, B., Fairclough, N., Gee, J., Kalantzis, M., Kress, G., et al. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.
- Cope, B., & Kalantzis, M. (2000). *Multiliteracies: Literacy learning and the design of social futures*. New York: Routledge.
- Cope, B., & Kalantzis, M. (2013). "Multiliteracies": New literacies, new learning. In M. Hawkins (Ed.), *Framing languages and literacies: Socially situated views and perspectives* (pp. 105-135). New York: Routledge.
- Craig, J., & Moores, K. (2005). Balanced scorecards to drive the strategic planning of family firms. *Family Business Review*, 18, 105-122.
- Crawford Camiciottoli, B. (2010). Discourse connectives in genres of financial disclosure: Earnings presentations vs. earnings releases. *Journal of Pragmatics*, 42(3), 650-663. doi: <http://dx.doi.org/10.1016/j.pragma.2009.07.007>
- de Oliveira, L., & Cheng, D. (2011). Language and the multisemiotic nature of mathematics. *Reading Matrix: An International Online Journal*, 11(3), 255-268.
- Drury, H., O' Carroll, P., & Langrish, T. (2006). Online approach to teaching report writing in chemical engineering: implementation and evaluation. *International Journal Engineering Education*, 22(4), 858-867.
- Eggs, S. (2007). *An Introduction to Systemic Functional Linguistics* (2nd. ed.). London & New York: Continuum.
- Fageeh, A. I. (2003). *Saudi College Students' Beliefs Regarding Their English Writing Difficulties*. Ph.D., Indiana University of Pennsylvania.
- Fazelimanie, A. (2004). *A linguistic analysis of some ESP texts used in Iranian universities with special focus on cohesion in texts of business and commerce*. Unpublished Ph.D. thesis University of Adelaide Retrieved from <http://digital.library.adelaide.edu.au>
- Garzone, G. (2009). Multimodal analysis. In F. Bargiela-Chiappini (Ed.), *The handbook of business discourse* (pp. 155-165). Edinburgh: Edinburgh University Press.
- Guo, L. (2004). Multimodality in a biology textbook. In K. O'Halloran (Ed.), *Multimodal discourse analysis: systemic-functional perspectives* (pp. 196-219). London/ New York: Continuum.
- Halliday, M., & Hasan, R. (1976). *Cohesion in English*. London: Longman
- Halliday, M., & Hasan, R. (1985). *Language, context, and text: Aspects of language in a social-semiotic perspective*. Victoria: Deakin University Press.
- Halliday, M. A. K. (1978). *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
- Halliday, M. A. K. (1985). *An introduction to functional grammar*. London: Edward Arnold.
- Halliday, M. A. K., & Matthiessen, C. (2014). *An introduction to functional grammar* (4th revised edition of Halliday's Introduction to Functional Grammar ed.): Routledge.
- Hessamy, G., & Hamed, S. (2013). A comparison of the use of cohesive devices in EFL Learners' performance on independent vs. integrated writing tasks. *Study in English Language Teaching*, 1(1), p121.
- Hinkel, E. (2001). Matters of cohesion in L2 academic texts. *Applied Language Learning*, 12(2), 111-132.
- Johns, A. M. (1980). Cohesion in written business discourse: Some contrasts. *The ESP Journal*, 1(1), 35-43.
- Jones, J. (2006). *Multiliteracies for academic purposes: A metafunctional exploration of intersemiosis and multimodality in university textbook and computer-based learning*

- resources in science*. Unpublished Doctor of EdD thesis, University of Sydney. Retrieved from <http://hdl.handle.net/2123/2259>
- Kalantzis, M., & Cope, B. (2012). *Literacies*. Melbourne: Cambridge University Press.
- Kamal, E. (1995). *The rendition of English cohesive devices into Arabic: A study of translated texts*. Unpublished MA dissertation, King Saudi University, Saudi Arabia.
- Khalil, A. (1989). A study of cohesion and coherence in Arab EFL college students' writing. *System*, 17(3), 359-371.
- Lea, M., & Street, B. (2006). The "academic literacies" model: Theory and applications. *Theory into Practice*, 45(4), 368-377.
- Liu, M., & Braine, G. (2005). Cohesive features in argumentative writing produced by Chinese undergraduates. *System*, 33(4), 623-636.
- McMullen, M. G. (2009). Using language learning strategies to improve the writing skills of Saudi EFL students: Will it really work? *System*, 37(3), 418-433.
- Mohamed-Sayidina, A. (2010). Transfer of L1 cohesive devices and transition words into L2 academic texts: The case of Arab students. *RELC Journal*, 41(3), 253-266. doi: <http://dx.doi.org/10.1177/0033688210380569>
- Mohamed, A., & Omer, M. (2000). Texture and culture: Cohesion as a marker of rhetorical organisation in Arabic and English narrative texts. *RELC Journal*, 31(2), 45-75. doi: <http://dx.doi.org/10.1177/003368820003100203>
- O'Halloran, K. (1996). *The discourses of secondary school mathematics*. Unpublished Ph.D. thesis, Murdoch University, Western Australia. Retrieved from <http://researchrepository.murdoch.edu.au>
- O'Halloran, K. (1999a). Interdependence, interaction and metaphor in multisemiotic texts. *Social Semiotics*, 9(3), 317-354.
- O'Halloran, K. (1999b). Towards a systemic functional analysis of multisemiotic mathematics texts. *Semiotica*, 124(1/2), 1-29.
- O'Halloran, K. (2000). Classroom discourse in mathematics: A multisemiotic analysis. *Linguistics and Education*, 10(3), 359-388.
- O'Halloran, K. (2004). On the effectiveness of mathematics. In E. Ventola, C. Charles & M. Kaltenbacher (Eds.), *Perspectives on multimodality* (pp. 91-118). Amsterdam: John Benjamins Publishing Company.
- O'Halloran, K. (2005). *Mathematical discourse: Language, symbolism and visual images*. London: Continuum.
- O'Halloran, K. (2008). Mathematical and scientific forms of knowledge: A systemic functional multimodal grammatical approach. In F. Christie & J. R. Martin (Eds.), *Language, knowledge and pedagogy: Functional linguistic and sociological perspectives* (pp. 205-236). London: Continuum.
- O'Halloran, K. (2009). Systemic functional multimodal discourse analysis (SF-MDA) approach to mathematics, grammar and literacy. In A. McCabe, M. O'Donnell & R. Whittaker (Eds.), *Advances in language and education* (pp. 77-102). London & New York: Continuum. (Reprinted from: 2007).
- Okawa, T. (2008). *Academic literacies in the Discipline of Nursing: Grammar as a resource for producing texts*. Unpublished MA dissertation, University of Adelaide, Adelaide.
- Pauwels, L. (2012). A multimodal framework for analyzing websites as cultural expressions. *Journal of Computer-Mediated Communication*, 17(3), 247-265. doi: <http://dx.doi.org/10.1111/j.1083-6101.2012.01572.x>

- Perren, L., & Grant, P. (2000). The evolution of management accounting routines in small businesses: A social construction perspective. *Management Accounting Research*, 11(4), 391-411. doi: <http://dx.doi.org/10.1006/mare.2000.0141>
- Thomas, J. (1997). Discourse in the marketplace: The making of meaning in annual reports. *Journal of Business Communication*, 34(1), 47-66.
- Wake, B. (2006). *Dialogic learning in tutorial talk: A case study of semiotic mediation as a learning resource for second language international students*. Unpublished Ph.D. thesis, University of Adelaide, Adelaide.