

Explanations without a purpose? Genre-based instruction and academic writing

Su-Hie Ting^a, Yvonne M. Campbell^b, Lily Law^c and Hong-Hua Poh^d

^{a,b}*Centre for Language Studies, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia*

^c*Faculty of Cognitive Science and Human Development, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia*

^d*State Education Department Sarawak, 93764 Kuching, Sarawak, Malaysia*

Email: ^ashting@cls.unimas.my; ^bmcyvonne@cls.unimas.my; ^clily@fcs.unimas.my; ^dchelen173@hotmail.com

(Received 12 October, 2012; Published online 15 June, 2013)

The study examined the structure and language features of explanation texts written by university students who have been taught academic writing through the principles of genre-based instruction. Students enrolled in an English for Academic Purposes (EAP) course at a Malaysian university were asked to write an explanation of a natural phenomenon in a text-to-diagram task. The analysis of 100 explanation texts showed that the sequential explanation of how a natural phenomenon occurs inevitably involves an account of the causal connection between the events. Text structure-wise, the students were able to sequence the events and the only weakness was the tendency to omit the statement of text purpose. These results indicate that some elements of conventions of text structure may be more difficult to acquire than language features despite explicit teaching using the genre-based approach. The orderly sequencing of events was achieved through the use of many connectors, predominantly sequential connectors and less causal connectors but the range was limited. The three most commonly used connectors were “then”, “after” and “when”. In their explanations, the students also used some passives as is characteristic of the explanation genre but the construction was often inaccurate. Most of the students used the present tense to show the timelessness nature of the phenomenon but a quarter of the verbs were written in the future tense. The study also found that poor language competence prevents students from writing good explanations.

Key Words: English for Academic Purposes, genre-based instruction, explanation, procedural texts.

1. Introduction

Mastery of academic discourse is necessary for students to succeed in university education because of the frequent assessment of knowledge and skills in the form of oral presentations and written assignments. In higher education settings, students need to master a number of genres in order to display knowledge and learn the writing norms of the academic discourse community. Working from Biber’s (1988) definition of genre categories, Lee (2001) defined genre as:

a category assigned on the basis of external criteria such as intended audience, purpose, and activity type, that is, it refers to a conventional, culturally recognised grouping of texts based on properties other than lexical or grammatical (co-)occurrence features. (p. 38)

The different purposes of texts are reflected in the variety of genres. Academic genres include narratives, procedures, explanations, information reports and exposition. The academic genres that are critical for success in educational contexts are description, information report, procedure, recount, explanation, story genres, response genres, and exposition which includes argument (Derewianka, 2003). “Information report” is a specialised term used by Derewianka (2003) to refer to classification of phenomenon such as types of forest. It is not a genre that includes different types of factual writing.

The basic premise of the genre-based approach is that language is “functional ... through language we get things done” (Paltridge, 2004, p. 1; see also Halliday, 1978). The functional model of language emphasises “how language is involved in the construction of meaning” (Derewianka, 1991, p. 4). In the genre-based approach, detailed attention is given to “the communicative purpose, text structure and language features of particular genres, primarily with a view to helping students achieve control over the genres that they will encounter in professional and academic contexts” (Derewianka, 2003, p. 134). To facilitate mastery of academic discourse, the genre-based approach has been employed with success to teach students to produce various types of texts. Genre-based instruction on general types of academic writing has also been found to help students in their writing of academic essays (Swami, 2008), essay introductions and conclusions (Henry & Roseberry, 1997, 1999), and term paper and report writing (Marshall, 1991; Mustafa, 1995). Instruction of genre writing for academic purposes has also helped students to write specific types of texts such as brochure (Henry & Roseberry, 2007; Osman, 2004), job application letters (Al-Ali, 2004; Bhatia, 1993), and laboratory and field trip reports in an online learning environment (WRISE, “Write Reports in Science and Engineering”; see Drury & Jones, 2010; Mort & Drury, 2012). The nature of assignments at university is more complex and usually requires familiarity with a number of genres to show higher levels of thinking.

Among the academic genres, the argument genre has been studied more than other genres. For example, research has shown that better writers produce better arguments, particularly native speakers of English compared to non-native speakers of English (Jenkins & Pico, 2006; Lee, 2005). The better writers in Jenkins and Pico’s (2006) study were English majors at an advanced stage of their university studies whereas the weaker students were learning English before embarking on diploma programmes such as International Trade, Finance and Banking, or Hospitality. Jenkins and Pico described the better essays as appropriately structured with arguments and counter-arguments, and good topic sentences to indicate the positions taken. The better writers also used a range of connectors not only to provide cohesion but also to introduce new thematic material, that is, material which “have not been mentioned directly – but are implied, and therefore can be used without reducing the coherence of the text” (Jenkins & Pico, 2006, p. 160). In another study, students showed much better argument genre knowledge than explanation genre knowledge (Klein & Rose, 2010). In the two-phase experimental study to teach argument and explanation, students were asked to provide a possible title for given texts, words typical of the genres, where they might find similar texts, and identify differences between good and poor arguments and explanations. Based on their informal observations, Klein and Rose suggested that although students may read brief explanations in science and social studies, they are seldom given opportunities to write explanations in class. In other words, “explanation has been relegated to the hidden curriculum” (Klein & Rose, 2010, p. 453).

Explanation is an important genre for university students to learn. In the science disciplines, it is understood that technical discourse involve writing of explanations, but in the arts disciplines, even subjects like history involve textual features of causal explanations similar to science (Unsworth, 1999). Explanations give “an account of how something works or reasons for some phenomenon” (Derewianka, 1991, p. 60). Derewianka (1991) divided explanations into two basic types, those that explain how a phenomenon happens and those that explain why certain phenomena occur (e.g., why iron goes rusty). The explanations of how something works include mechanical explanations (e.g., how a pump works), technological explanations (e.g., how a computer works), system explanations (e.g., how a company works) and natural explanations (e.g., how mountains are formed). To explain why a phenomenon happens, more logical

connectors are used for cause-and-effect relationships but to explain how the process happens, more connectors for time relationships are used. Explanation is a form of procedural text (Aouladomar & Saint-Dizier, 2005) which share common structures: specification of goal, description of lists of pre-requisites to reach the goal, and description of sequences of instructions (see also Klein & Rose, 2010; Yang, 2008).

In comparison to argument, “the explanation genre has not yet been studied in great detail” (Derewianka, 1991, p. 60). Although Derewianka’s observation is over 20 years old, a literature search using keywords such as “explanation”, “procedural text”, “cause-effect”, “causality” and “sequence” has not uncovered much research on university students’ writing of explanation. Some studies on kindergarten children (Miller, 2009), primary school students (e.g., Chambliss, Christenson, & Parker, 2003; Williams, Nubla-Kung, Pollini, Stafford, Garcia, & Snyder, 2007) and adolescents (Ciardiello, 2002) showed that writing explanations assists reasoning and understanding of cause/effect relationships. Yang (2008) wrote on thematic progression analysis to teach writing of explanation but no empirical results on areas of difficulty were provided. Among the few studies on university student writing of explanation is Ting and Tee’s (2009) research on explanations written by molecular biology students which indicated greater difficulty with the text structure than language features. The paucity of research on explanation writing is also brought up by Klein and Rose (2010) whereby they stated, “we are not aware of any systematic recent research on the frequency of explanation writing in classrooms, but older research indicates that it is infrequent (Martin, 1989)” (p. 453). Since explanation is an integral part of academic writing done by university students, the insights from this study can inform teaching of the explanation genre to facilitate student learning of this academic genre.

The study examined the structure and language features of explanation written by university students after genre-based instruction in an EAP course. The structure refers to the macro-organisation of the text and language features examined are the lexico-grammatical features which are relevant to the explanation genre.

2. The Study

The explanation texts analysed in this study were written by 100 students enrolled in an English for Academic Purposes (EAP) course in a Malaysian university. Most of the students, aged 21 to 22, were in their second or third year in their university studies from different disciplines. The students either had at least Band 4 (out of 6) in the Malaysian University English Test (MUET) or had passed the two compulsory foundation English courses in the University. According to the MUET band descriptors, those scoring Band 4 are satisfactory users of English who are generally fluent and can use the language appropriately although they make some grammatical errors. These students had spent about 12 years learning English in school and came from a multi-ethnic background such as Chinese, Tamil and indigenous communities (e.g., Iban, Bidayuh, Kadazan-Dusun).

Most students came from homes where they do not speak English as their first language, although a handful spoke English as the main language of family communication. In Malaysia, English is the second language and the de facto official language of the private sector and higher institutions of learning. The national and official language is Bahasa Malaysia and it is also the medium of instruction in national primary and secondary schools. English is taught as a subject in primary school (Primary 1 to 6) and also in secondary school (Form 1 to 5) and pre-university (lower and upper sixth form) using the communicative approach.

In the EAP course, academic writing skills were taught using the genre-based approach and the genres taught were information report, explanation and discussion, but there were also modules on reading skills, and citation and referencing. The pedagogical approach used with the genre-based approach (Derewianka, 1991; Feez, 1998) is Vygotsky’s (1978) notion of scaffolding where the instructor supports learners as they move towards their potential level of performance. In the 12-hour module for each genre which was spread across three weeks, students were sensitised to the communicative purpose of each genre.

Week 1 of the module for a particular genre began with the field-building on the topic and genre, that is, building background knowledge of students. Later, the structure and language features that are significant for achieving the purpose of the text were pointed out using a model text. Following this was the modeling or text deconstruction stage in which students and the instructor jointly deconstructed a second text to identify the structure and significant language features of the genre. This was followed by a deconstruction of a third text by students, often in pairs. Language focus exercises were then given to enable students to develop accuracy in the use of language features relevant to the genre.

In Week 2 of the module, students were given comprehension exercises to familiarise them with the text structure and language features of the genre. For the text deconstruction stage, the task was first carried out by the students with the instructor guiding them by means of prompts and questions to scaffold their learning. Then students worked together to draw a diagram to show the sequence of steps in a process such as metamorphosis of a caterpillar into a butterfly. Subsequently, they wrote a text based on a given diagram for another process.

In Week 3 of the module, students were taught to edit their written work. Their attention was drawn to the organisation of the genre as well as the relevant language features. They were also asked to edit their text to ensure compliance with citation and referencing conventions.

At the end of the instruction stage, students were asked to independently construct a text. For the module on the explanation genre, the coursework assignment required students to describe either a natural or social phenomenon.

The students' explanation texts analysed in this study were written during the final examination. A diagram showing the water cycle was given and students were required to explain the stages in the formation of rain (see Appendix 1). The students had about one hour to write the essay. They did not have access to a dictionary and had not received specific instruction on the content or topic of the essay but they had been taught the structure and language features of explanation texts during the semester. Out of 101 texts collected from students, one was used for the trial analysis and 100 texts were used for the actual analysis. The text for trial analysis was omitted from the actual analysis to keep the total number of texts to 100 so that the frequency and percentage are the same for convenience of reporting. The texts were coded from 1 to 100 and no information about the identity or the language background of the students was revealed which could influence the analysis.

The explanation texts were analysed based on the text structure outlined by Derewianka (1991): statement of the phenomenon representing the purpose of the text; and a sequence of events. Altogether there were eight events in the formation of rain (see Appendix 1) and the students' explanation texts were analysed for the presence and absence of these stages.

In addition to the text structure, the explanation texts were also analysed for language features which are important for achieving the purpose of the text, as outlined by Derewianka (1991). These are generalised non-human participants, time relationships, cause-and-effect relationships, action verbs, passives and timeless present tense. In this study, generalised non-human participants were not analysed because the nouns were provided in the given diagram (e.g., rain, water, cloud). Similarly, action verbs were also not analysed because the verbs are provided in nominalised form in the diagram (e.g., precipitation) but we focused on whether they unpacked the nominalised forms in an active or passive voice because passive voice is a feature of explanations (e.g., Polias & Dare, 2006, as cited in Derewianka, 2012, p. 140).

The explanation texts were also analysed for the frequency of time relationships (e.g., first, secondly, after that, then, next) and cause-and-effect relationships (e.g., consequently, since, because). For the analysis, the connectors were categorised into four groups following Celce-Murcia and Larsen-Freeman (1999): additive, adversative, causal and sequential. The connectors were not pre-selected. Texts were read to identify the range of connectors used and subsequently frequencies were computed. During the analysis, the variable uses of "as" were found. Only the use of "as" as connectors were counted (e.g., as the water vapour rises higher in the sky, it becomes cooler), but not when "as" was used as prepositions (e.g., as rainfall) or phrasal conjunctions (e.g., as soon as).

Finally, the tenses of the verbs in the explanation texts were analysed. Timeless present tense is relevant to this particular explanation text because the natural phenomenon explained is a natural phenomenon. The frequency counts for past, present and future tenses were computed and the number of texts without these features was also noted.

4. Results and discussion

4.1. Text structure of students' explanation texts

The results showed that the students' writing on the formation of rain or the water cycle reflected the typical text structure of explanation texts, with the exception of the statement of phenomenon which was omitted by some students.

Table 1 shows that 56 out of 100 students included an appropriate statement of the phenomenon being explained. For example, "Water is formed from several processes, namely, evaporation, condensation, cloud formation, precipitation and absorption". Sometimes the phenomenon is stated without the main events. For instance, "The water cycle involves several steps". This is still counted as a statement of phenomenon although it is not as complete as it could be. Almost half of the students' explanation did not include the purpose of the text. Without a clear identification of the phenomenon that is being described, the audience may be left wondering as to what the events are leading to (see Excerpt 1 for irrelevant introduction). Instead of stating the phenomenon, the students provided background information such as general information on the importance of water in daily life.

Table 1. Frequency of appropriate stages in explanation texts.

Stages of Explanation	Frequency
Statement of phenomenon (water cycle)	56
Event 1 (heating by sun)	87
Event 2 (evaporation of water)	97
Event 3 (rising of water vapour)	100
Event 4 (formation of clouds)	100
Event 5 (movement of clouds towards land)	100
Event 6 (precipitation of rain)	100
Event 7 (absorption of rain by soil)	98
Event 8 (flow of water back to sea)	98

<i>Excerpt 1</i>	<i>Text structure</i>
Water is the most important thing for living things on the earth. Humans will die without drinking water for three days. Water is used by plants for processing their food. This process is known as photosynthesis. Natural water [bodies] such as lake and sea are the important habitats for aquatic organisms.	Irrelevant introduction
Water is formed from several processes, namely, evaporation, condensation, cloud formation, precipitation and absorption.	Statement of phenomenon
Firstly, the sea water is heated by the sun radiation. This water is evaporated and water vapour is formed. Then, the water vapour will rise until reach one point at which the cooling of vapours takes place. This will lead to the condensation of the vapour. Next, the condensed vapours are slowly accumulated and then the clouds are formed. These clouds moved towards land. After they arrived over the high land, the clouds will be precipitated as rain since the temperature falls, which leads to the precipitation process. Finally, the rain is absorbed by soil or it directly flows to the sea. This process is continued. [Excerpt 1 has been minimally edited for grammaticality to facilitate readability.]	Explanation of events

After stating the phenomenon, students were expected to explain the eight events leading to the formation of rain. The frequencies in Table 1 show that some students omitted the first two or last two events in the water cycle (Events 1, 2, 7 and 8). It is not clear from an examination of the diagram (Appendix 1) why these events were omitted because they were clearly indicated in the diagram.

The more serious implication for the teaching of the explanation genre is the omission of the statement of phenomenon. Similar observations were made by Ting and Tee (2009) on the omission of the text purpose in their study on students' explanations of molecular biology technique. A general introduction of the topic without a statement of text purpose could be due to familiarity with the three-part essay. Students are usually taught the general introduction-body-conclusion structure in school (see Cahill, 2003; Gautreau et al., 1986; Liu, 2005). Students taught in the tripartite structure of general discursive essays do not realise that the introduction and conclusion are very different depending on the communicative purposes of the text. In the context of the genre-based approach, introductions must contain a statement of the purpose of the text. For the explanation genre, the introduction must have a statement of phenomenon but a conclusion is optional. The results of the present study on the explanation genre and others on the argument genre (e.g., Jenkins & Pico, 2006; Ting, Raslie, & Jee, 2011) indicate that the genre-based approach to teaching writing can draw students' attention to the text structure of genres. The genre instruction can help them to produce writing that is more tightly organised to achieve the purpose of the text. Examples of tasks to raise awareness of students on text purpose are asking students to write a clear statement of the purpose of some texts which have general introductions and presenting students with several alternatives of the text purpose for them to choose from.

4.2. Language features of students' explanation texts

The students' explanation texts were analysed for the presence of three language features which are typically used in the explanation of processes: present tense, active and passive voice and temporal and causal connectors.

4.2.1. Present tense

As natural phenomena are timeless events, explanations should be written in the present tense (Derewianka, 1991). Table 2 shows that the students in this study kept largely to the use of the present tense (73.05%), but a sizable one-quarter of the verbs were written in the future tense. For example, "The water *will* flow back to the sea. The water in the sea *will* be heated again by the sun" (Text 28). The use of the future tense marker in place of the present tense to express a statement of fact has been found to be a feature of the Malaysian variety of English (Nair-Venugopal, 2003; Talif & Edwin, 1989). In other words, Malaysian speakers of English tend to use the future tense out of habit without the intention of expressing the events as future events. When explanations of natural phenomena are written in a mixture of the present tense and future tense, the text appears to be describing a series of narrative events in the future. The inaccuracy in the use of tenses compromises the purpose of the explanation text but the problem with the surface errors can be addressed by asking students to check their choice of tenses during the editing of their writing. Even if the students have low proficiency in English, they would be able to delete the future tense marker "will" and subsequently check the subject-verb agreement. Grammatical inaccuracy in the use of another language feature of explanations, the passives, is not as easy to correct as will be explained next.

Table 2. Frequency of past, present and future tense of verbs in explanation texts.

Tenses of verbs	Frequency	Percentage
Past	54	2.77
Present	1423	73.05
Future	471	24.18
Total	1948	100.00

4.2.2. Passives

In this study, the use of passives was analysed because this was identified as a language feature of explanation texts by Derewianka (1991) whose framework of genres was adopted for use in this study. In the figure given to students for the diagram-to-text transfer task (Appendix 1), the events were labeled using nominalisations (e.g., movement of clouds towards land, fall in temperature), thereby avoiding the use of verbs which may influence students' choice of active or passive voice.

When the relative number of active and passive voice constructions per script was computed, it was found that the students were inclined to write more sentences in the active voice rather than in the passive voice. A total of 1948 clauses were identified in the 100 explanation texts analysed (Table 3). A majority of the clauses were written in the active voice (83.16%) rather than in the passive voice (16.84%). The exceptions were two texts written predominantly in the passive voice and 10 texts were written solely in the active voice. For the explanation of the water cycle, more processes are explained in the active voice than in the passive voice because some processes require the use of intransitive verbs. For example, water vapour *rises*, vapour *condenses*, clouds *arrive* over high land and temperature *falls*. Clauses with these intransitive verbs were written in the active voice but clauses with transitive verbs could be written in either the passive (e.g., clouds are formed) or active voice (e.g., condensation of vapour forms clouds). This results in more frequent use of the active voice than the passive voice for the explanation of the water cycle.

Table 3. Frequency of passive and active voices in explanation texts.

Voice	Frequency	Percentage
Active	1620	83.16
Passive	328	16.84
Total	1948	100.00

It needs to be noted that the analysis of the frequency of clauses written in the active and passive voice disregarded grammatical inaccuracies in the construction. In effect, the analysis revealed frequent inaccuracies for the past participle of the verb (e.g., This phenomenon *is cause* by radiation of heat that comes from the sun) and subject-verb agreement (e.g., Rain *are formed* from water). Research has shown that advanced non-native speaker students may have difficulty with the passive voice in written academic discourse (Hinkel, 2004). Hence, when teaching the explanation genre to non-native speakers of English, it may be necessary to revisit the grammatical construction of the passive voice because frequent grammatical inaccuracies of this nature affect the comprehensibility of the text.

4.2.3. Connectors

Table 4 presents the frequency of the four categories of connectors used in the explanation texts. Out of 778 connectors identified in the data set, 614 (or 78.92%) were sequential connectors and 141 (or 18.12%) were causal connectors.

Table 4. Frequency of four categories of connectors used in explanation texts

Category of connectors	Frequency	Percentage*
Sequential	614	78.92
Causal	141	18.12
Additive	18	2.31
Adversative	5	0.64
Total	778	99.99

*Total percentage does not add up to 100 due to rounding off.

Additive and adversative connectors accounted for only 2.95% of the connectors identified. In comparison to sequential and causal connectors, additive and adversative connectors are not as relevant for explanation texts because there is little comparison of similar and different ideas when explaining a process. With a total of only 13 additive connectors in the data set, this means that some students did not use any additive connectors. Examples of additive connectors identified were “such as”, “moreover”, “besides” (2 instances each), “in addition”, “furthermore”, “for example” and so on, of which only one instance each was identified. Adversative connectors were even less needed to explain processes, as indicated by the total of only 5 instances of “but”, “whereas”, “however”. Additive and adversative connectors are more relevant for the argument genre which involves evaluation and persuasion, and it is right for students not to overuse this feature in their explanation texts.

In order to explain rain formation, the students relied on sequential connectors more than causal connectors because the purpose of the text was to explain how rain is formed rather than the reasons for certain rainfall patterns. The sequential connectors indicate the progression in events in the water cycle. One student wrote: “*Next, as the vapour rise higher to the sky and it becomes cooler, it will undergo the process of condensation. Condensation of vapour will later contribute to the formation of clouds ...*” (Excerpt 1). Following this, the student provided the reason for the precipitation of clouds as rain using the connector “since”: “After they arrived over the high land, the clouds will be precipitated as rain *since* the temperature falls which leads to the precipitation process”. This is the only use of connectors to mark a causal relationship in the whole text, and the other sequential connectors were used to signal temporal relationships between the events (see Table 5).

Table 5. Frequency of sequential connectors used in explanation texts.

Function of sequential connectors	Connectors	Frequency	Total	Percentage
To show initial event	first(ly)	55	56	9.12
	in the beginning	1		
To show preceding or subsequent events	Then	110	290	47.23
	after (that/-wards)	103		
	next	45		
	Secondly	17		
	subsequently	5		
	later	5		
	before	5		
To show simultaneous events	When	106	170	27.69
	as	51		
	at the same time	5		
	meanwhile	5		
	while	3		
To show duration of event	until	13	18	2.93
	during	5		
To show point of event	in this stage (period)	8	10	1.63
	at this point	2		
To show final event	finally	48	70	11.40
	Lastly	12		
	eventually	8		
	In conclusion	1		
	In summary	1		
Total		614	614	100

In the category of sequential connectors, almost half (47.23%) of the connectors were used to signal preceding or subsequent events (Table 5). This was followed by the use of sequential connectors to show simultaneous events (27.69%) – out of the eight events in the formation of rain, the only co-occurring events were the arrival of clouds over high land and the fall in temperature. Sequential connectors to show initial and final events, together, accounted for only one-quarter of the total number because of the presence of only one initial and one final event, and this is expected.

To show preceding or subsequent events, the most frequently used connectors were “then” and “after” (110 and 103 instances respectively), followed by “next” (45 instances). Similarly, to show simultaneous events, the students relied on one to two connectors – “when” was the most frequently used connector (106 instances), followed by “as” (51 instances).

The results in Table 6 show that more causal connectors were used to highlight the cause rather than the effects: 61% and 39% respectively. An example of how causal connectors are used to draw attention to the cause of events is as follows: “When the cloud arrives over the high land, the clouds will be heavy *because of* the fall in temperature” (Student Text 99). In this sentence, “because” signals an answer to the question of why the clouds are heavy. Because of the fall in temperature, more water molecules condense and the cloud becomes denser. It is normal in writing of explanations for students to tell why each event in a process happens the way it does (Klein & Rose, 2010). In the context of the explanation text analysed in this study where the focus is on explaining how rain is formed, the temporal sequence takes precedence and the reasons are added to enable readers to make sense of the unfolding events. In the case of sentences with causal connectors for showing effect, the sentences function to explain an event in the process of rain formation. The causal connectors are added to highlight the effect. For example, “When the temperature decreases, the weight of clouds increase. *Thus*, when the clouds cannot accommodate the water content within them, the water contents drop to the earth” (Student Text 87). Without the use of “thus”, the events are still connected but there is no emphasis on the cumulative effect of preceding events. This is a characteristic of texts written by some of the better writers.

Table 6. Frequency of causal connectors used in explanation texts.

Function of causal connectors	Connectors	Frequency	Total	Percentage
To highlight cause	because	36	86	61.00
	due to	27		
	since (reason)	11		
	as (reason)	10		
	(even) if	2		
To show effect	Thus	18	55	39.00
	As a result	10		
	So	9		
	Consequently	6		
	Therefore	6		
	Hence	3		
	in order to	2		
	Thereby	1		
Total		141	141	100.00

The analysis also showed that 28 out of 100 students used only sequential connectors and no connectors for showing causal, additive and adversative relationships. Their writing came across as a series of events without any attempt to explain the scientific processes accounting for the events such as why the heat from the sun causes water to evaporate or why the decrease in temperature causes precipitation of rain. However, the majority of the students attempted to explain the scientific processes underlying the process of condensation and precipitation and this is reflected in the use of causal connectors.

This study revealed that there is probably not such a clear-cut distinction between explanations of how and why phenomena happen as postulated by Derewianka (1991) and both types of connectors are necessary to achieve a meaningful explanation of processes. In explaining how events happen, for example, how rain is formed or the process of rain formation, it is inevitable to go beyond temporal succession (how-explanations) to causal connections (why-explanations). The focus on the causes and effects makes the connection among the events tight enough to give the text coherence. In this respect, explanation has some resemblance to narrative pertaining to the sequence of events (Velleman, 2003). Unsworth (1999), in writing about the technical discourse of science and history, acknowledged that genres that explain and interpret history involve textual features of explanation similar to science, calling into use nominalisation to package sequence of events into a thing or noun groups for more versatility in meanings. The historical discourse referred to is not just narrative events but those involving causal explanations. Unsworth's (1999) observation was made in the context of the functional description of language to help teachers in content area literacy development in Australia to help students progress from everyday understanding of the topic to systematic, technical understanding.

In this course, students were taught academic genres using the genre-based approach but because a pre- and post-test research design was not employed, the gains in their academic writing skills or increase in their knowledge of generic features of academic texts were not measured. What the results show is that many of the students were generally able to produce the text structure and language features of the explanation text after genre-based instruction, but about half of them still did not state the purpose of the text, thereby making the communicative purpose unclear for readers who have to figure out what the events are leading to. The study also found that poor language competence keeps some students from producing good pieces of explanations. Their limited range in the use of connectors as well as their frequent errors in tense choice and passive voice construction severely affected the coherence of the texts produced. These results indicate that some elements of discourse features may be more difficult to acquire than others despite explicit teaching using models and deconstruction of the texts, coupled with writing tasks. Although the genre-based instruction in the EAP course makes expectations of the academic community explicit to students, they do not seem to have the language skills to help them to attain the desired levels of academic literacy. For students to engage in the academic discourse community, they must not only learn the norms, value and expectations related to academic writing, but also have the competence to handle it and this is challenging for second or foreign language learners (van de Poel & Gasiorek, 2012). Flowerdew (2000) advocates the use of good student models for students to learn academic writing because they are incapable of replicating expert models due to communicative or linguistic deficiencies.

One limitation of this study is that the diagram-to-text explanation task may not reflect the demands of the coursework assignments given by the lecturers such as laboratory reports and explanations of social phenomena. For one, in the study the students wrote an explanation of about 200 words based on a familiar everyday topic whereas disciplinary assignments are usually longer and deal with more complex subject matter where students' background knowledge of the field may be lacking. The gaps in knowledge in itself may hamper the coherence of the explanation produced because of the difficulty in accessing specialised knowledge, which has little to do with the ability to produce the text structure and language features characteristic of the explanation genre. In addition, in real life, genres are often embedded in other genres. This is true as far as this study is concerned because a straightforward explanation of processes does not occur much in real life. The more common

are variations of prototypical structures. For example, Fontan and Saint-Dizier (2009) show that procedural texts have elements of argumentative texts in the form of advice, justification or threats and warnings that accompany instructions, and these are realised through the use of modality. We believe that the results provide useful insights into students' problems with writing explanation texts. Nonetheless, in view of the limitation, the results should be interpreted with care.

5. Conclusion

This study examined the structure and language features of explanation texts written by university students who have been taught academic writing through the principles of genre-based instruction. The findings showed that the students can produce an ordered, sequential explanation of a natural phenomenon but about half of them omitted a statement of the text purpose at the beginning of the explanation. In comparison to text purpose, the students demonstrated better knowledge of the language features of explanation in their writing. The students learnt to build a link between events with sequential connectors and attributions of the cause-and-effect relationships with causal connectors but the range of connectors used was limited. Most of the students explained the natural phenomenon in the present tense, but inadvertent use of the future tense for timeless events was rather frequent. The explanations were written largely in the active voice with some use of passives, but the construction of the passive voice was often inaccurate. Student weaknesses in writing of explanation texts identified in this study provide insights into areas which need more attention in the teaching of academic writing to non-native speakers of English with similar background characteristics. The results suggest that more attention needs to be given to teaching the text structure rather than the language features of explanation. The findings of this study on the omission of text purpose concurs with other studies indicating that many student writers struggle with a purposeful introduction of a topic – an area worthy of further research.

References

- Al-Ali, M. N. (2004). How to get yourself on the door of a job: A cross-cultural contrastive study of Arabic and English job application letters. *Journal of Multilingual and Multicultural Development*, 25(1), 1-23.
- Aouladamorar, F., & Saint-Dizier, P. (2005). *Towards generating instructional texts: An exploration of their rhetorical and argumentative structure*. Retrieved August 26, 2011, from Université Paul Sabatier, Institut de Recherche en Informatique de Toulouse Web site: http://www.irit.fr/~Patrick.Saint-Dizier/publi_fichier/EWNLG05.pdf
- Bhatia, V.K. (1993). *Analyzing genre: Language use in professional settings*. London: Longman.
- Biber, D. (1988). *Variation across speech and writing*. Cambridge, UK: Cambridge University Press.
- Cahill, D. (2003). The myth of the “turn” in contrastive rhetoric. *Written Communication*, 20(2), 170-194.
- Cardiello, A.V. (2002). Helping adolescents understand cause/effect text structure in social studies. *The Social Studies*, 93(10), 31-36.
- Celce-Murcia, M., & Larsen-Freeman, D. (1999). *The grammar book: An ESL/EFL teacher's course* (2nd ed.). Boston: Thomson Heinle.
- Chambliss, M.J., Christenson, L.A., & Parker, C. (2003). Fourth graders composing scientific explanations about the effects of pollutants. *Written Communication*, 20(4), 426-454.
- Derewianka, B. (1991). *Exploring how texts work*. Newtown, Australia: Primary English Teaching Association.
- Derewianka, B. (2003). Trends and issues in genre-based approaches. *RELC Journal*, 34(2), 133. Retrieved August 22, 2011, from <http://rel.sagepub.com/cgi/content/abstract/34/2/133>.

- Derewianka, B. (2012). Knowledge about language in the Australian curriculum: English. *Journal of Language and Literacy*, 35(1), 127-146.
- Drury, H. and Jones, J. (2010). Transforming the teaching of report writing in science and engineering through an integrated online learning environment, WRiSE (Write Reports in Science and Engineering). In C. H. Steel, M. J. Keppell, P. Gerbic, & S. Housego (Eds.). *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney 2010* (pp. 313-323). Retrieved April 8, 2013, from <http://ascilite.org.au/conferences/sydney10/procs/Drury-full.pdf>.
- Eggs, S. (1994). *An introduction to systemic functional linguistics*. London: Pinter.
- Feez, S. (1998). *Text-based syllabus design*. Sydney: Macquarie University.
- Flowerdew, L. (2000). Using a genre-based framework to teach organizational structure in academic writing. *ELT Journal*, 54(4), 369-378.
- Fontan, L., & Saint-Dizier, P. (2009). An analysis of the persuasive strength of arguments in procedural texts. Retrieved August 25, 2011, from <http://www.aisb.org.uk/convention/aisb09/Proceedings/PERSUASIVE/FILES/SAINT-DIZIERP.pdf>
- Gautreau, A.L., Averett, J.B., Trusock, D., McFerren, S.E., Phipps, C., Lynch, M. ... Speer, L.W. (1986). Our readers write: What's a practical idea for teaching organization in writing? *The English Journal*, 75(5), 61-68. Retrieved October 11, 2012, from <http://www.jstor.org/stable/pdfplus/818208.pdf?acceptTC=true>
- Halliday, M.A.K. (1978). *Language as social semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
- Henry, A., & Roseberry, R.L. (1997). An investigation of the functions, strategies and linguistic features of the introductions and conclusions of essays. *System*, 25(4), 479-495.
- Henry, A., & Roseberry, R.L. (1999). Raising awareness of the generic structure and linguistic features of essay introductions. *Language Awareness*, 8(3/4), 190-200.
- Henry, A., & Roseberry, R.L. (2007). Language errors in the genre-based writing of advanced academic ESL students. *RELC Journal*, 38, 171-197.
- Hinkel, E. (2004). Tense, aspect and the passive voice in L1 and L2 academic texts. *Language Teaching Research*, 8(1), 5-29.
- Jenkins, H.H., & Pico, M.L. (2006). SFL and argumentative essays in ESOL. *Proceedings of 33rd International Systemic Functional Congress* (pp. 155-170).
- Klein, P.D., & Rose, R.A. (2010). Teaching argument and genre to prepare junior students for writing to learn. *Reading Research Quarterly*, 45(4), 433-461.
- Lee, S.H. (2005). The use of interactional resources in argumentative/persuasive essays (APEs) by tertiary ESL students: A critical perspective. *Proceedings of the International Conference on Critical Discourse Analysis: Theory into research* (pp. 379-403).
- Lee, D.Y.W. (2001). Genres, registers, text types, domains and styles: Clarifying the concepts and navigating a path through the BNC jungle. *Language Learning & Technology*, 5(3), 37-72.
- Liu, L. (2005). Rhetorical education through writing instruction across cultures: A comparative analysis of select online instructional materials on argumentative writing. *Journal of Second Language Writing*, 14(1), 1-18.
- Marshall, S. (1991). A genre-based approach to the teaching of report-writing. *English for Specific Purposes*, 10(1), 3-13.
- Miller, R.G. (2009). Thinking like a scientist: Exploring transference of science inquiry skills to literacy applications with kindergarten students. *Electronic Journal of Literacy Through Science*, 6(1), 41-53. Retrieved April 25, 2013, from <http://ejlts.ucdavis.edu/sites/ejltts.ucdavis.edu/files/articles/Vol6Is1Sum07Miller.pdf>

- Mort, P., & Drury, H. (2012). Supporting student academic literacy in the disciplines using genre-based online pedagogy. *Journal of Academic Language & Learning*, 6(3), A1-A15.
- Mustafa, Z. (1995). The effect of genre awareness on linguistic transfer. *English for Specific Purposes*, 14(3), 247-256.
- Nair-Venugopal, S. (2003). Malaysian English, normativity, and workplace interactions. *World Englishes*, 22(1), 15-19.
- Osman, H. (2004). Genre-based instruction for ESP. *The English Teacher*, 33, 13-29.
- Paltridge, B. (2004). Approaches to teaching second language writing. *Proceedings of 7th Educational Conference Adelaide 2004*. Retrieved September 15, 2010, from http://www.englishaustralia.com.au/ea_conference04/proceedings/pdf/Paltridge.pdf
- Polias, J. & Dare, B. (2006). Towards a pedagogical grammar. In R. Whittaker, M. O'Donnell & A. McCabe (Eds.) *Language and Literacy: Functional Approaches* (pp. 123-143). London: Continuum.
- Swami, J.A. (2008). Sensitizing ESL learners to genre. *Teaching English as a Second or Foreign Language (TESL-EJ)*, 12(3), 1-13. Retrieved April 22, 2013, from <http://www.tesl-ej.org/ej47/a9.html>
- Talif, R., & Edwin, M. (1989). Error analysis of Form Four English compositions. *The English Teacher* Vol XVIII. Retrieved October 5, 2012, from <http://www.melta.org.my/ET/1989/main9.html>
- Ting, S.H., Raslie, H., & Jee, L.J. (2011). Case study on persuasiveness of argument texts written by proficient and less proficient Malaysian undergraduates. *Malaysian Journal of Learning and Instruction*, 8, 71-92.
- Ting, S.H., & Tee, F.P.F. (2009, April 22-24). *Organisational and grammatical features of explanations written by Biology undergraduates*. Proceedings of 4th International Conference on English Language Learning Conference (ELT-CON 2009), Georgetown, Malaysia.
- Unsworth, L. (1999). Developing critical understanding of the specialised language of school science and history texts: A functional grammatical perspective. *Journal of Adolescent & Adult Literacy*, 42(7), 508-521.
- Van de Poel, K., & Gasiorek, J. (2012). Effects of an efficacy-focused approach to academic writing on students' perceptions of themselves as writers. *Journal of English for Academic Purposes*, 11, 294-303.
- Velleman, J.D. (2003). Narrative explanation. *The philosophical review*, 112(1), 1-25.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Williams, J.P., Nubla-Kung, A.M., Pollini, S., Stafford, K.B., Garcia, A., & Snyder, A.E. (2007). Teaching cause-effect text structure through social studies content to at-risk second graders. *Journal of Learning Disability*, 40(2), 111-120.
- Yang, X. (2008). Thematic progression analysis in teaching explanation writing. *English Language Teaching*, 1(1), 29-33.

Appendix 1. The water cycle for the diagram-to-text task

