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**Transitivity Shifts in Academic Writing  
(Featured Article)**

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Biography:

Dr Angelia Lu has a PhD in Linguistics from Macquarie University. She has been invited as an expert panelist on international conferences and symposium to speak on topics such as Social Media, Multimodality and Leadership, as well as Bilingualism and Religion. She is a co-principal investigator and collaborator of written research grants worth over 100 K, studying socio-cognitive processes in academic writing and religious ideologies and literacy practices. She is currently involved in research on multilingualism, bilingualism, multi-modalities, writing and code-switching. She has created an Iphone app "Academic Writing Template App" found in Iphone and Android Stores, and has served as editor and mentor for internationally refereed journals Asian EFL Journal and Reading in a Foreign Language.

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**Abstract**

This is an experimental non-equivalent designs study, comparing four groups of ESL students who have drafted a scientific essay. The main research question of this study is whether there is an observable difference in clause types as students progressed from draft to draft. T-tests and the one way ANOVA were used to test if there was a significant difference in clausal change between the groups. Results are as follows: (a) The group who had peer feedback before teacher and verbal feedback became statistically more inclined than other groups to add material processes (i.e., clauses that include action verbs) to improve scientific aspects; (b) Effect sizes are moderately significant for the rise in material processes observed in this same group, compared with other groups who either had teacher feedback first or administered self-feedback. The results hint that the ESL students could be more vigilant in improving material clauses than relational clauses in scientific expository essays. This has important pedagogical implications that students may choose to place a greater focus on improving scientific aspects rather than expository aspects of an essay entitled "Should genetic modification be approved?"

The theoretical orientation of this paper lies in the many forms of research conducted on the areas for feedback in academic writing. Usually, feedback involves

looking at whether content or form feedback should be conducted first in order to produce a better draft (a draft with fewer language and content errors compared with the first). However, the feedback that is carried out in this study is based on genre concerns, i.e., are students explicitly aware of the fact that in a scientific expository essay such as *Should one approve of genetic modification?*, the writer should not only focus on scientific aspects, but on argumentative issues based on religion, health and the law. The author's research question is therefore based on looking out for genre features related to nominalised structures and verbs (Halliday, 1993), realised in turn by relational and material processes in clauses.

The writing experience, like any other experience, consists of a flow of events which are chunked into a quantum of change by the grammar of the clause (Halliday and Matthiessen, 2004). This flow is modelled by a figure of happening, doing, sensing, being, or having, and saying, and these figures are classified as certain Process Types: behavioural, material, mental, existential, relational, and verbal, accordingly. More detailed definitions will be provided later in this paper. When producing an expository essay on science, students are clearly expected to include more procedural methods than when composing an expository essay on music in the twenty-first century. In scientific genres, certain clausal constructions are expected to dominate the discourse. For instance, scientific procedures involve more *doing* verbs, and these procedures are known in systemic-functional grammar as material processes. In an essay on music that hardly involves procedures but focuses on historical facts, specific relational processes (i.e., clauses that involve verbs such as *is* and *are* and convey facts) are expected to constitute a large proportion of the writing. Therefore, to write appropriately for a particular genre, a writer needs to understand what is expected; the writing should include a high percentage of those clausal constructions that meet genre expectations. This study examines the use of process types during drafting in the scientific-expository genre, in an essay written on the topic, *Should genetic modification be approved?* The scientific-expository genre is selected in order to explore the likelihood of a certain kind of process, realised by the use of a particular clausal construction (e.g., a *doing* verb or a *mental* verb), to dominate in the process of drafting. For instance, given this genre and the way the topic is presented, do students include more scientific constructions during drafting, or are they more inclined to write arguments for and against the issue?

*Experientially*, an increase in the frequency of a certain process type—for instance, the material process—is often dependent on (a) change of a sentence structure to a more

nominalised version, or (b) change of content. For instance, material processes are those of *doing* whereby a person or thing does something which may “in turn be performed by another person or thing” (Halliday, 1985). These processes are often represented by dynamic verbs such as *eat/inject/get*. The addition of more scientific description means that more material processes were involved as scientific processes, such as *injecting chemicals* or *inserting a gene*. If changes at the discourse-semantics stratum were involved, one could say that the content had evolved to a different experiential level, at which the content of the essay was based less on scientific descriptions and more on the interpretation of these descriptions with respect to how well they benefit us. The greatest modification with regard to all drafts produced as a result of the present study was observed in material and relational processes; there seemed to be an increase in both material and relational processes whenever new material was added to the essay. Material processes were often added to clarify scientific descriptions of genetic modification and were identified by *doing/action* verbs such as *get/feed/inject/eat*. The relational processes were usually added to supply additional factual information, often identified by the presence of *is/are/has* accompanied by an attribute or token at the end of each clause. These processes are detailed in the section on interpretation of results.

Using transitivity as a tool, the purpose of this study is to report the use of material, mental, verbal, relational, existential, and behavioural functions found in the expositions of university students. The results could be extended to contribute to the knowledge of how teachers can best give feedback to students’ written assignments. My research questions include the following:

1. Would there be an increase in certain processes (for instance, material and relational processes) as students gain awareness of the requirements of scientific/expository genre?
2. Would there be a statistical difference in process increase within and between different groups? For instance, would a group that receives teacher feedback after writing an essay employ more material processes than one that receives teacher feedback first?

Using Systemic Functional Linguistics, the author hopes to be able to discover the shift in use of verbs and nouns in a scientific expository genre, in an essay entitled “Should one approve of genetic modification?” The author is interested in finding out the focus of the students, i.e., whether they are solely interested in conveying their knowledge of the scientific methods involved in modification, and whether they address the expository

concerns of the research questions. Material processes are more often used in scientific genres, and relational ones are more often used in expository text types (Halliday, 1993). Through feedback via three drafts, students know that they have to focus not only on scientific aspects but the argumentative aspects of the question. Teo and Kramer-Dahl (2011) and Chandrasegaran (2008) noted that Singaporean students tended to be drilled in conventions of letter and report writing, but few grasped the subtleties and nuances of persuasion and argument. The interesting question is if these students would be able to modify their drafts according to feedback given in different orders, in the way that they focus on both, and not only one aspect.

### **Literature Review**

Transitivity is understood as a grammatical system of process types by which one manages and construes the world of experience (Halliday and Matthiessen, 2004). The basic way of representing the patterns of our experience emerge as a result of the three fundamental processes of doing, sensing and being. In lexicogrammar, the clause is the central processing unit, i.e., these meanings are embedded in clauses and through language, the construing of human experience into such meanings consequently results in the creation of metafunction, whereby we make sense of our experience by categorising them (Halliday & Matthiessen, 2004). This is why it is interesting to explore the percentage change of process types from draft to draft, particularly if the sum of meanings of clauses leads to a context (Butt et. al, 2003). Linking the findings of these strands of research to the purpose of this study, the author hopes to uncover the ideational aspects concerning clause-type changes in drafting.

Sheen (2007) remarked that many studies on corrective feedback did not have a contrast or control treatment group. This was indeed the case with Kepner (1991) and Robb, Ross, and Shortreed (1986) who did not have contrast groups at all. However, Fathman and Whalley (1990) and Ashwell (2000) carried out studies based on different orders of feedback including a contrast group. The recommended pattern was (1) content feedback followed by form feedback compared with three other patterns, (2) form followed by content feedback, (3) a pattern of mixed form and content feedback after the first two drafts, (4) a control feedback type called no feedback at either stage. Their results suggested that the order of feedback did not matter, and they concluded that multiple drafting may not be necessary since revision and editing can be dealt with at the same time.

Their research is similar to the present study in that it has different ordered patterns of testing feedback to ascertain which order is most effective, except that the present study tests teacher-, peer-, and self-feedback. The reason I preferred to perceive the contrast group as giving self-feedback rather than no feedback is this: I believe that in the process of drafting, all students would have been able to give themselves some feedback to recraft or remould their essays to improve them. This cannot really be considered no feedback. Overall, the author agrees with Sheen (2007) that it is important to have a contrast group to ensure a more rigorous methodology to ascertain whether feedback is effective.

The assumption that teacher feedback is always effective has been questioned by Goldstein's (2004) interesting research. She listed some ways (supported by earlier research) in which teacher feedback might be ineffective: (a) the student might not be willing to critically examine the teacher's point of view (Conrad and Goldstein, 1999), (2) the student might think that the teacher's feedback is incorrect (Goldstein, 2004), (3) the student may lack the time to do revisions (Palloff and Pratt, 1999), (4) the student might lack the content knowledge to do the revision (Conrad and Goldstein, 1999), (5) the student might think that feedback is not reasonable (Anglada, 1995 cited in Goldstein, 2004), or (6) the student might not trust the teacher's content knowledge (Palloff and Pratt, 1999). Generally, Goldstein's stand was to illustrate that teachers' feedback is not necessarily more welcome than peers', but for different reasons such as those cited above. Hedgcock and Lefkowitz (1992) found that the final drafts of essays receiving only peer feedback resulted in higher overall scores than those receiving only teacher feedback.

Conrad and Goldstein (1999) came to the unanimous conclusion that students found some commentary confusing: results varied as to whether students were sure about understanding their teachers' comments. In addition, teachers reported that students sometimes misunderstood comments or misconstrued them. Research indicated that many students faced difficulty in creating a strategy for revising, or they varied in terms of how successfully they could use their teachers' feedback to revise their work. An interesting and relevant piece of research was carried out by Hyland and Hyland (2001) in which they found that some students are able to perceive the initial praise that precedes negative criticism to be simply sugaring the pill. This is normally found in teacher feedback, where there is an initial positive buffering statement that makes it easier for students to psychologically digest the negative criticism of their work, which is usually the later part of the feedback process. As students are aware of the motivations of sugaring of the pill, teachers are advised not to overdo praise, and praise is better appreciated when sincere.

Ferris (2002), Chandler (2003), and Lanlande (1982) were keen on determining whether direct or indirect feedback strategies resulted in marked improvement of writing. Ferris (2002) indicated that indirect feedback strategies should be more effective because they encouraged students to engage in hypothesis testing, there was not much evidence of one feedback strategy showing more effectiveness than the other. Sheen (2007) has brought the issue to a deeper level, suggesting that (a) direct metalinguistic feedback (the use of linguistic awareness) is definitely more effective (statistically) than direct-only feedback, and (b) language analytic ability was more strongly related to acquisition in the direct metalinguistic group than in the direct-only group. Direct metalinguistic feedback involved more work, such as explaining the correct use of the actual linguistic structure in writing, in contrast with direct-only feedback which is the traditional method of merely indicating whether a linguistic structure is right or wrong (Sheen, 2007). Finally, in the latest research on feedback, Sharifi and Hassaskhah (2011) found a significant level of effectiveness using portfolios to do reflections on feedback of one's own writing.

It is generally known that in the scientific genre, relational clauses and material clauses are more widely used than other types of clauses; relational clauses are often used to convey factual information, and material clauses are often used to convey actions (which include procedural steps in scientific texts) (Halliday, 1993). The current study allows one to investigate whether students become increasingly aware of their use of transitivity (verb types) to suit the appropriateness of the genre as they move from draft to draft. This study adopts a different perspective from those above, which have been primarily interested in the orders of content and form feedback, as well as direct or indirect feedback strategies. In addition, peer and teacher feedback have been carried out in the studies illustrated above, but usually not in the manner of an order as illustrated in the present study.

## **Method**

Students were encouraged to provide comments on writing that would help improve the essay. However, they were not informed of the goals of the study, as this was supposed to be a double-blind study to ensure greater reliability and validity. They were instructed to improve ungrammatical sentences, as well as the content and coherence of the essay by writing their comments on their peers' essays or their own. No specific instruction was given that they should look out for material and relational clauses because I wanted to know if any awareness of the scientific or expository genre would emerge in the process of

drafting. Goh (2001) stated that whether in a quantitative study or qualitative study, the researcher must keep an open mind about the group or culture being studied. This quality, however, does not imply any lack of rigor or a passive researcher. In fact, an open mind allows the researcher to explore rich, untapped sources of data not specified in the research design.

### *Participants*

The population that the author would ideally like to generalize to is ESL students who take the Freshmen course in every university around the world, as a form of preparation for their diploma and degree programmes. The participants selected were second-language speakers from China and Singapore. The sampling procedure was such that those selected were generally students estimated to be 5 on the IELTS (International English Language Testing System) proficiency test, set by a local university for teacher training. Most of the Singaporean students were from a Chinese-speaking or Malay-speaking background. Essentially, this means that the students needed to be enrolled in English proficiency courses, while concurrently studying their diploma and degree courses. The sample size was 100. The students were divided into four groups, each comprising 25 students. Details of each group are explained in later sections. All students were required to write an essay within an hour on a topic based on an essay belonging to the scientific, argumentative genre entitled “Should genetic modification be approved?”

### *Design*

This research design is classified as the Non Equivalent Groups Design by Best and Khan (1989). Designed in this manner of having three treatment groups and one contrast group, the design is perhaps powerful but we need to include the possibility of influence of effects of testing and interaction with experimental variables (Best & Khan, 1989).

Four classes of approximately 25 undergraduate students were targeted for the collection of data. These four classes were labelled A, B, C and D. All classes were given instructions on how to write the essay (e.g., the first draft was written in a classroom.).

### *Variables*

The four independent variables were the three treatment groups (A – C) and one contrast group (D). The dependent variables were the number of added clause types found in each

essay group: for instance, how many material (or other) clauses were added by the time the essay progressed to Draft 3?

### *Procedure*

(A) Students compose the first draft, followed by teacher feedback and then peer feedback. This group will be referred to as the **TP Group** throughout the paper.

(B) Students compose the first draft, followed by peer feedback and then teacher feedback. This group will be referred to as the **PT Group** throughout the paper.

(C) Students compose the first draft followed by peer feedback and then teacher feedback + Verbal Comments. This group will be referred to as the **PVT Group** throughout the paper.

(D) Students compose the first draft followed by self-feedback (twice). This group will be referred to as the **SS Group** throughout the paper.

Each group consisted of 25 students. All 100 students produced a first draft, each based on the topic “Should genetic modification be approved?” and subsequently did two more drafts, in the order that they were placed, as outlined above. As pedagogical intervention, students and the lecturer were required to give simple, open-ended, written feedback based on *content, grammar, vocabulary, coherence and mechanics* (i.e., spelling, punctuation, etc). Students were allowed to take the drafts home to give feedback, for their friends or themselves, over a week. They were not expected to address all areas in the essay, and were allowed to choose to comment on any of these areas as much as they wanted to.

The terminology for the other classes is similar (i.e., TP 1-TP 25 for the TP class, PTV 1-PTV 25 for the PTV class, and SS 1-SS 25 for the SS class). One important research question to be addressed was whether there would be a change in the percentage of certain types of clauses among participants. Another research question to be addressed was whether such a change was likely to occur in one group in comparison with other groups (in other words, a between-participants comparison). In order to overcome experimental bias and to ensure reliability and validity, names of students were omitted when the processes were double counted by a colleague. Students were requested to journal their thoughts, an idea highly advocated by Chew (1995), in order to raise awareness of on-going socio-cognitive processes that occur while drafting, and some of their journals are reflected upon later, as metacognition creates a sense of agency in writers (Goh, 2012).

### *Non-directional t-test and ANOVA*

Both t-test and ANOVA are non-directional for this study because, although studies have been performed on peer and teacher drafting, there were hardly any studies based on tests administered in the area of change in clause-types during the drafting process. Hence, values are reported for non-directional t-tests and ANOVA tests at the two-tailed 0.05 level.

### *The t-test for Within-Participants*

The t-test was conducted on each group of participants to examine whether there was any significant difference in change of clause-types in each of the groups (McCall, 1998). The t-test formula for a correlation sample was applied for each of the four groups because these were the same students whose essays were examined as they progressed from Draft 1 to Draft 3.

It is interesting that test fairness is usually viewed as an additional test quality, and not an integral part of test development (Kunnan, 2010), although it is advisable to check minimally for areas such as physically or mentally impaired students or issues of race or ethnicity. There was a handicapped student in my class and he participated anyway, but his data was not analysed with the rest to ensure some form of equality in the backgrounds of research participants.

### *The One Way ANOVA for Between-Participants*

The One-Way ANOVA (McCall, 1998) was conducted on the four groups of students to determine whether there would be statistically significant differences among the four groups in their progress of material and relational processes, from Draft 1 to Draft 3.

### *Reliability*

Reliability refers to whether measurement procedures assign the same value to a characteristic each time it is measured under essentially the same circumstances (McCall, 1998). The reliability of the study has been ensured by getting a colleague to count the number of clauses in each of the hundred essays and tally them against the author's number. There was about 90 percent inter-rater reliability, as the marks given by each rater were very close (within 5 marks range) per essay.

### *Validity*

The study is validated by checking the verbs in the clauses against those mentioned in Halliday (2004) so that, as far as possible, these verbs are correctly interpreted in terms of the right experiential categories. To further ensure validity, the students' essay question, time limit for writing the essay, and instructions for feedback are consistent throughout four groups. A research assistant helped to double-check the time and proof-read the instructions across the four groups. The assistant also helped to code the transitive verbs against the non-transitive ones.

### *Bias Checking and Fairness*

Both the research assistant and the author did a pre-test and a post-test to ensure that the student-teachers in all four groups were the same standard, i.e., their language proficiency standard in terms of writing were in the bandwidth of IELTS 5. The marks of pre-tests and post-tests were marked blind (i.e., without consulting or showing results to the other rater) to ensure that there is a form of bias checking.

### *Power and Sample Size*

The sample size is one hundred, as there are 25 students in each group. The process that led to the decision to use that size was mostly logistics as the average size of classes ranged from 25 students. Since the alpha level used in the study was 0.01, it is significantly more powerful than one at 0.05, so the risk of Type 1 error is not high. The confidence level is 99%. The lowest possible sample size for such a test is 20 to 30, but the author decided to use a sample size of 100, and an alpha level of 0.01, to increase the power of the statistical test to the 0.99 level. The author performed the t-test for within participants only for material and relational clauses as there was hardly any addition or deletion of other clause types to warrant a statistical test of this level.

In terms of descriptive statistics, the PTV group showed the highest amount of improvement from pre-test to post-test. The pre-test topic was "Only women should be allowed maternity/paternity leave. Discuss" and the post-test topic was "Do you agree with a woman's right to have an abortion?". There was a mean score of 10 relational clauses and 10 material clauses for PTV feedback, and the post-test score was 18 relational clauses and 10 material clauses. This means a total of 8 relational clauses for PTV students. However, for the PT, TP, and SS groups, there was no mean increase in either type of clauses when it came to post-test marks despite the fact that there was an equivalence in terms of both

relational and material clauses (all around 10 per essay). This was truly surprising as the pre-test scores of all groups were very similar. This could mean that verbal comments were very useful for increasing the number of relational clauses in PTV students' work, i.e., giving feedback verbally on top of the peer and teacher written feedback.

## Results

The data collected was analyzed statistically in the following manner: First, all clause types, such as material, mental, relational, verbal, existential and behavioural clauses in each essay were identified and the number per essay was noted.

The SPSS program was used to run both tests described below.

The t-test for within-participants compares two means from the same participants (McCall, 1998). This is the rationale behind administering the test to observe whether the writing process of the participants within the experiment has an effect on the participants within each group. If the mean of material clauses in new essay drafts was consistently an average of 4-7 clauses more than the mean of material clauses in old essay drafts, a good way to compare the means is to use the minimally sufficient t-test to see if that difference is significant.

$$t_{\text{obs}} = 17.68 > 3.250, (p < 0.01) \text{ where } df = 24$$

The results for drafting are statistically significant for the PTV group (See Table 1). Hence, there is a significant difference in the drafts for this group. The magnitude of this effect is reasonably great (at 99% confidence level), showing that students are likely to be consistently aware that a scientific expository essay might require some description of *doing* (see below for actual examples). This result hints at possible positive drafting effects that take into consideration changing or adding material clauses. However, the t-test for relational clauses proves that results are statistically not significant, which means there is cause for concern as to whether students are strong at improving the factual or argumentative aspect of the essay  $t_{\text{obs}} = 1.29, < t = 3.250$  ( $p$  is  $< 0.01$ ), where  $df = 24$ . Even at the 95% confidence level,  $t_{\text{obs}} = 1.29$  is still less than 2.262. The effect size is 0 in this case. This is despite the rise in a few relational clauses amongst the students during the drafting process. However, this  $t$  value for relational processes is still higher than other groups, where there is zero or one change in mental, verbal, behavioural and existential process in this data set.

The One-Way ANOVA for between-groups (McCall, 1998) is also administered between the groups of students to address Research Question 2. Its purpose is to observe

whether there is any statistical difference, where material clauses are concerned, between PTV and other groups, since the other groups of students only yielded an average of 0-3 material clauses per group.  $F = 22.14 > 4.38$  ( $p < 0.01$ , confidence level 99%) where  $df_{\text{between}} = 3$ ,  $df_{\text{within}} = 96$ . The results for drafting are statistically significant for the PTV group as compared with other groups. However, the improvement in relational clauses is not statistically significant.  $F = 0.42$ . This value is less than  $F = 2.86$  at the 0.05 level or  $F = 4.38$  at the 0.01 level, where  $df_{\text{between}} = 3$ ,  $df_{\text{within}} = 96$ .

## **Discussion**

Inferential statistics are reported for material and relational processes. There is a statistically significant increase in material processes within the PTV group. As explained in the Results section, the PTV group has a statistically significant  $t = 1.35 < t = 3.25$  where  $p$  is at the 0.01 level or  $t = 2.262$  where  $p$  is at the 0.05 level. The author did not find any statistically significant increase in relational clauses in any group. The PTV group turns out to be statistically different from other PT, TP and SS groups in that its ANOVA value is  $F = 54.79$ , a significantly high value level where the  $F = 4.38$  [ $df_{\text{between}} = 3$ ,  $df_{\text{within}} = 96$ ],  $p$  is less than or equal to 0.01. This indicates a significant rise in material processes, but not relational or other clauses.

This addresses research question 1, which questions a rise in any of the processes involved. Material processes are clearly the only clause-type that manifests a statistically significant rise, while the change in other processes (including relational clauses) fails the significance test, addressing research question 2. The PTV group clearly shows a statistically significant difference in improving material clauses as contrasted with other groups. However, the same cannot be said of other clause-types. As there is hardly any study of this nature in the literature other than content-versus-form feedback, the author can only state that the sizes of effects reported pertain only to this study. One feature of this methodology is a-priori, and a second feature is that it is a double-blind research design; both my colleague who helped to count the number of processes and the research participants are blind (uninformed) where the research design and its goals are concerned. These two features strengthen the research methodology to support the conclusions that are yielded. The study's limitations and suggestions for improvement, on the other hand, are discussed at the end of this paper.

*Material Processes*

Material processes are those of *doing* whereby a person or thing does something which may “in turn be performed by another person or thing” (Halliday, 1985). These processes are often represented by dynamic verbs such as *eat/inject/get*.

*Extract from PT1*

Scientists	have successfully <b>grown</b>	Vegetables	without the need for soil.
Actor	Material Process	Goal/Range	Circumstance

*Extract from PT3*

They	<b>Inject</b>	syrups	into live chickens...
Actor	Material Process	Goal	Beneficiary

According to Christie (1986: 227), material processes are frequently observed in narratives. The greater use of material processes in a scientifically-based expository essay may seem difficult to explain at first, but it may improve the essay’s quality and readability. For instance, material processes improve the vividness of the “genetic modification” process during the reading process; e.g., in one’s mind’s eye, one is able to picture the insertion of chemicals into genes or the prevention of blindness by vitamin A as an agent simply because one\* chooses to present the information in the following manner: Actor – Participant - Goal (Circumstance). On the other hand, if one\* chooses to present the information in a relational manner (see Grammatical Metaphor), the writing would sound more formalised and scholarly, but a slight trade-off might be a difficulty in picturing the process of A doing something to B, which is a very transparent style in scientific/expository discourse.

After the examination of the drafts, one can see that an increase in a particular process is often dependent upon the changing of content, i.e., on the discourse-semantic stratum. The reason is that good peer or teacher feedback often elicits examples and further elaboration on the subject, and this usually means that more content is added. For instance, examples on the process of genetic modification, when elicited, involve phrases such as “inject syrups into live chickens”- (PT1-Draft 1), or effects of genetically modified food e.g., “Vitamin A can help to prevent blindness” (SS1-Draft 2/3). Let us look at the moves from first to final draft of a paragraph of a PTV student. In Draft 3 of the PTV essay, it can

be seen that the student elaborated the process of shifting DNA from a plant or bacterium and compared it with the process of cross-breeding. Such instances of addition of scientific processes are consistent throughout all PTV essays. On the other hand, addition of relational clauses is sporadic or used to support the processes which contain the material processes, such as the underlined example of relational clause shown in draft 3 below.

Figure 1: An example of how PTV students added material clauses when drafting

Draft 1 of a PTV student	Draft 3 of a PTV student.
<p>GM foods stand for genetically modified foods (<i>relational</i>). What do we understand from the terms genetically modified? (<i>mental</i>) Through the modification of genetics, scientists have been able to produce food of better quality (<i>behavioural</i>), that give higher yield. With the exponential increase of the world population, and the numbers of famine around the world (such as North Korea and countries in Africa). The damage to the environment through traditional farming methods that required (<i>behavioral</i>) large amount of pesticides and herbicides. It is a logical conclusion (<i>relational</i>) that to ensure (<i>mental</i>) the world get feed (<i>material</i>), GM foods is a must.</p>	<p>GM food stands for genetically modified food (<i>relational</i>). What do we understand from the term “genetically modified”? (<i>mental</i>) The process of genetically modifying plants, uses the shifting of DNA from a plant , a bacterium or even an animal to another plant (<b><i>added material clause</i></b>). <u>This is similar (<b><i>added relational clause</i></b>) to the way a farmer uses cross breeding (<b><i>added material clause</i></b>) to produce better tasting food (<b><i>added material clause</i></b>) Through GM, scientists produce (<b><i>added material clause</i></b>) food of better quality, food that gives higher yield. With the exponential increase of the world population, and the numbers of famines around the world (such as North Korea and countries in Africa). It is a logical conclusion (<i>relational</i>) that to ensure (<i>mental</i>) the world gets feed (<i>material</i>), GM food is a must.</u></p>

*Relational Processes*

Relational processes are often known as processes of ‘being’. They have the meaning that something is. They often appear in clauses whereby a thing is being identified or its attributes are being described. Alternatively, it could be a “*possessive-have*” relational clause.

Relational processes are “unlike material clauses but like mental ones, in that relational clauses prototypically construe change as unfolding inertly, i.e., without an input of energy” (Halliday and Matthiessen, 2004: 211). The present-in-present tense verb is a highly marked form; for instance “being” is largely restricted to relational clauses other than *is/are* and its various forms described earlier. Relational processes, like mental ones, might be classified as “states” rather than dynamic ongoing processes which involve input of energy. While states are often represented by relational clauses in the form of stative verbs such as “*is/was/has*”, dynamic processes are often represented by material clauses in the form of action/dynamic verbs such as “*eat/inject/get*”.

Consider the examples of attributive and identifying processes found in the data.

*Extract from TP1: Attributive (Descriptive) Relational Clause*

For example, a lot of genetically-modified crops	<b>Are</b>	insect- and disease-resistant.
Carrier	Pr: intensive	Attribute

*Extract from PTV3: Attributive (Descriptive) Relational Clause*

It	<b>is</b>	not easy to do so.
Carrier	Pr: intensive	Attribute

*Extract from PTV1: Identifying Relational Clause*

Genetic modification	<b>is</b>	a set of laboratory techniques that alter the genes of living things –such as plants, animals or micro-organisms.
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Token (Holder of identity)	Pr: intensive	Value (that which stands for being defined)
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*Extract from TP1-Draft 3: Identifying Relational Clause*

Genetically modified food	<b>is</b>	another paramount choice for us.
Token (Holder of identity)	Pr: intensive	Value (that which stands for being defined)

Although the author expected relational clauses to increase statistically the way it did for material clauses, there was no significant difference for any of the groups, not even PTV. The result was  $t = 1.29 < t = 3.25$  at the 0.01 level. This is despite the fact that relational processes constituted about 40.58% of all processes in the texts. Relational processes formed the largest of all processes. The proportion of relational processes correlates positively with the extensive use of grammatical metaphor/nominalised clauses. This process, causing written texts to “sound heavy and serious” (Eggins, 1994: 63), is enabled by relational processes which often appear in the intensive form ‘x is a’ or the possessive form ‘x has a’. Gill (1989: 203) suggested that relational processes are produced by writers in newspaper stories, causing events to appear as though they were facts of society. The ESL students were quite competent in the portrayal of their topic as sounding “heavier” or more formal than another genre of writing i.e., newspaper tabloids or narratives (Lu, 2006).

#### *Other processes*

There was hardly any increase in other types of clauses, such as mental, behavioral, verbal and existential processes. Out of the entire data set, there is only one or zero mean change in these other clause types for all groups, which does not warrant any statistical test. Examples of use of these other processes are extracted and illustrated below.

*PTV1 (Draft 3): Mental Process*

They	<b>think</b>	that	we	are	at the starting line for genetic modification....
Sensor	Mental Process	Textual Theme	Subject	Finite	Adjunct

*TP2 (Draft2): Behavioural Process*

They	<b>vomit</b>	
Behaver	Behavioural Process	

*PTV1 (Draft 1): Verbal Process*

I	<b>will say that....</b>	<i>genetic modification should be approved</i>
Sayer	Verbal Process	Verbiage

*(19) SS7-Draft 2/3 Existential Process*

There	<b>are</b>	<i>many benefits of making genetic modified food.</i>
Existential Subject	Existential Process	Existent

In many of these cases except for PTV 1, the processes remained unchanged. PTV 1 did change “I will say that” to “In my opinion, genetic modification should be approved”. This illustrates one of the few cases where the student realized he was writing in a conversational rather than an academic tone. However, after peer and teacher feedback, he changed it to “in my opinion”. Unfortunately, it was not the case that similar changes have been made for other students within the PTV or outside the PTV group. Most of the time, verbal, existential, relational and mental processes are not changed in a statistically significant manner, despite drafting. They remain the same, so much so that it is unlikely that a t-test will yield any significant results.

Interpretation of the findings of the six processes earlier would not be complete without the actual comparison and contrast of implementation of processes during the drafting process. One wonders how PTV students can completely swing from adding

material clauses consistently in a particular group, and yet seem oblivious to adding other process types consistently. The statistically significant result of  $t_{obs} = 17.68 > 3.250$ , ( $p < 0.01$ ) where  $df = 24$  suggests a concentration on adding material processes to newer drafts, at the expense of perhaps ignoring other processes.

As the author examined students' written comments for their peers, she noticed that many of the peers wrote: 'this is a scientific essay, so write more scientific processes'. When the teacher feedback was given, there was an equal mix of such comments with comments such as changing "I think" to "I believe", a more epistemic option of upgrading mental clauses. Other comments also included the possibility of changing material clauses to relational ones. Refer to Figure 1. For instance, instead of writing *It is a logical conclusion(1 relational clause) that the world get feed (1 material clause)*, the teacher suggested that it would be better if the material clause was changed to *The world would be a much better place if people were well fed (2 relational clauses)*. Some of these suggestions sometimes remain unchanged, more often in the PT, TP and SS groups than the PTV group. The random and inconsistent upgrade to relational clauses in the PTV group is insufficient to warrant a significant result or effect size in the drafting process. These results are extremely important to us as EFL teachers. It highlights the fact that one may focus on many aspects of feedback, but students choose to work on certain aspects of feedback as opposed to others which could be more important. Superficially, *Discuss the advantages and disadvantages of genetic modification* looks as though it would require some material clauses to inject scientific aspects so that the essay would develop a scientific genre. However, what is required is also the expository aspect of the essay, whereby there is hardly any significant improvement despite drafting. This is not to say that students did not include thoughtful mental projections such as *I believe*, or *I support*, in fact a couple of them upgraded these expressions from *I think* and *I feel*. However, the ability to change some unnecessary material clauses to relational ones, as in the case illustrated above of *get feed*, remains much to be desired.

### **Implications for Pedagogy**

After the study was implemented, the author instructed all students to write a journal based on drafting (see journal extracts below). This was an example of a student TP1 who wrote about difficulties of using 'strong and powerful words' to convey her view. In fact, she had read magazines such as Newsweek and knew she was expected to produce persuasive statements and facts (often denoted by relational clauses). However, she acknowledged

being weak at writing factual essays. She also tried to include more scientific processes, and perhaps this was to make up for the inability to include more factual statements in the essay. Another student, SS1, wrote about the fact that she found many grammatical errors and changed them all to the right ones. This implied that the first mistakes that students looked out for need not be something at the genre level which might improve the overall expository “feel” of the essay. Many of the ESL students were first and foremost concerned with surface errors, rather than errors at the conceptual level. This explains why despite two drafting attempts, there was not much improvement in the content aspects of the essay.

*Selected Journal Thoughts by TP1*

‘I am weak in writing factual/argumentative essays because I could not use strong and powerful words to convey and support my view (I read some magazines like Newsweek...and I know my standard...haha...), thus I could not produce very persuasive statements and facts..... I also tried to include more scientific processes to describe the genetic modification process better.’

*Selected Journal Thoughts by SS1*

‘We have to do the second draft for our essay on genetic modification of food. With the help of the checklist that our teacher gave us, I tried my best to amend as much as I could. I found many grammar mistakes and changed them all to the right ones. I had added more contents into my essay’

Patterning of process type is sensitive to register, although the principles which might account for register are indeed very complex (Matthiessen, 1993, cited by Williams, 1999). Williams suggested that material processes were selected in procedural type texts such as cooking recipes. His five-month research also showed that over time, the children’s understanding of processes had evolved to a more sophisticated level. They could discriminate between processes and, if necessary, revise an initial analysis by one of their peers to produce a more adequate one. The young students had their own simpler way of coding their understanding of the processes. For instance, if a participant says something it becomes the basis for changing an analysis called “Material” to “Verbal”; the existence of something is a reason for changing from an initial description of Material to Relational (Williams, 1999: 119). Though this is not entirely accurate (the existence of something should strictly be an existential process), my opinion is this is already a great step taken by young students toward their understanding of processes. It may not be a fool-proof method,

but it certainly manifests awareness of the categorisation process, a facility that adult students should be more capable of achieving than young students. The fact that young students could master the recognition of process types to a certain extent suggests that it is not impossible for adult students to learn this categorisation and apply it to writing.

Though it is difficult to imagine improving experiential content of a group of students at tertiary level wanting to improve English proficiency, one could attempt to make it easier by not introducing meta-language of functional grammar to them. The reason why one advocates the teaching of elementary systemic functional grammar to language learners is the fact that Williams, in a later paper cited in Butt et. al., (2003), has found that language learning activities designed around the categories of Process, Participant and Circumstance very effective. Sometimes, colour and shape are used to symbolise and reinforce the meta-language. However, it is often indeed time consuming to carry out these activities in a language classroom headed by institutions who are concerned that the core syllabus should be followed. An awareness of a sizeable number of material clauses might heighten students' awareness that a description of a scientific or narrative process is ongoing. An awareness of mental processes such as *I think* or *I feel* might enable students to realise that they are projecting their thoughts more often than necessary, thus over-peppering the interpersonal flavour in the exposition, causing it to sound unnecessarily "spoken" or reflective.

Implications for pedagogy thus include the following pointers which may be well worth pursuing as an ESL teacher:

- a. Do students use a standard scoring guide such as the ESL Composition Profile by Jacobs et. al. (1981). Both scoring guides are multiple-trait assessment guides which could be released to students as a form of standardisation to write comments on such areas as coherence, vocabulary, content, grammar and mechanics. This might help students to focus on different aspects of the essay when giving peer feedback, thus standardising feedback areas.
- b. The scoring guides mentioned earlier are indeed effective, but it would be useful to include a genre-based checklist to raise awareness of the use of certain types of verbs. An example of an SFG checklist (see figure 2 below) offered below helps students to focus on genre aspects of the essay; for instance, are there too many material processes in the essays in contrast with relational clauses?
- c. Students should be encouraged to keep a journal of their drafting (and not merely writing) process. The content of their journal should focus on what they hope to include in their

new draft, and to give reasons why. They should also be able to write about their sense of pride and identity as writers with regard to their writing at different stages of drafting. Perhaps ESL teachers are able to set their own guidelines for journal writing focused on this area.

<b>An Examination of Verb Types in Drafting</b>		<b>Yes</b>	<b>No</b>
1.	1. Are there enough “factual verbs” (relational processes)? Relational verbs are encouraged in expository genres.		
2.	2. Are there enough “doing verbs” (material processes)? Material clauses are encouraged in scientific and narrative genres.		
3.	3. Does the essay contain enough noun forms (process of nominalisation) and therefore sound formal enough?		
4.	4. Do the essays have too many “mental” or “behavioural” verbs such as “I think” and “I feel”? If so, they should be reduced and replaced by “I believe” and “I support the idea” to reflect the academic voice of the author.		
5.	5. Do the essays contain many “say” or “retort” verbs which belong to the verbal process? If so, they should be reduced and possibly be replaced by “argue” and “state”.		
Additional Comments:.....			
.....			

*Figure 2: Systemic Functional Checklist for Drafting and Writing: Appropriateness of Genre*

### **Recommendations and Suggested Improvements**

In this study, though the four groups are compared in terms of clause types as a result of different feedback orders, one has yet to ascertain whether the successful increase in material clauses for the PTV group is due to additional verbal feedback or the verbal feedback alone. Ideas for future research include the following: (a) to conduct contrastive studies to ascertain if written or verbal feedback is more effective in essay drafting; and (b) to replicate this research on primary and secondary students in order to observe the experiential use of clauses in expository writing.

The results alert us to the fact that PTV students improve in adding material clauses. One could perhaps draw a conclusion that they become increasingly aware of the scientific genre as they add more material clauses. However, the insignificant rise in relational clauses makes us aware of the fact that when not given specific guidelines about what to look out for, ESL students might have the idea that making an essay more factual/expository in a scientific genre means adding more material clauses. Teachers and peers could help in being more specific about guiding students e.g., they could use mental words such as “I believe/support.....” to demonstrate their stance. In addition, relational clauses with attributive and identifying properties could be introduced to the curriculum. Students could be made aware of the fact that relational clauses form a large percentage of academic discourse, by asking them to count number of is/are/have verbs in formal genres. These are some contributions to the present curriculum that can improve drafting and writing.

Finally it could be useful to develop prompts that would guide writers to enrich content, consider reader expectations and work critically with diverse rhetorical structures. For instance, students could be divided into groups whereby scientific writing versus normal expository/factual writing is examined comparatively, to ascertain an awareness of a rhetorical approach towards different genres. However, in order for agreement of what truly constitutes epistemic or scientific writing to be achieved, the group must first come to a convergent agreement on what actually constitutes such types of writing, and convergent discussions of this nature could be a challenge (Kapur, Voiklis, & Kinzer, 2011). Transitivity types or other systemic or non-systemic tools could be used to gain results on students’ socio-cognitive processes in drafting.

## **Conclusions**

Though it is difficult to imagine improving experiential content of a group of students wanting to improve English proficiency at tertiary level, one could attempt to make it easier by not introducing meta-language of functional grammar to them. Below is a table adapted from Butt et. al. (2003: 78), which are examples of experiential questions that can be used to probe the structures of a clause. What is the process? What work is it doing? Is it telling about a material or physical action, or is it relating (i.e., identifying or describing), saying or sensing?

1. Who or what is doing the action, relating, saying or sensing?
2. Who or what is being done to or related to, said/said to or sensed?
3. Is the saying or sensing clause projecting another clause? Is this clause direct (or quoted) speech or is it indirect (or reported) speech? Is this clause direct (or quoted) thought or is it indirect (or reported) thought?
4. When, where, how, why, with whom or what, for how long has all this been going on?

The lack of a statistical difference for relational processes to increase in drafting is a clear indication that teacher and peer feedback is required to be clearer where relational clauses are concerned. For instance, teachers could show more sample models of expository writing that requires supporting statements and thesis statements, most of which have a relational “be” or “have” verb. Teachers could point out the identifying and attributive functions of these types of clauses or get students to count how many of them there are in relation to less needed processes such as the verbal and existential processes.

## Endnotes

i. Material clauses construe the procedure as a sequence of concrete changes in the trees brought about by the person being instructed – the implicit “you”. The source of energy bringing about the change is typically a participant – the Actor (Halliday and Matthiessen, 2004: 179). The obligatory components of material processes are an ACTOR (the doer) and a PROCESS (the act of doing something). Material processes are often found in parts of the text when a description of the process is carried out: for instance, when the student writer is explaining the process of genetic modification.

ii. Relational processes are processes of being and have the meaning of “something is” (Halliday, 1985: 112). There are two types of relational process: the attributive and the identifying. Relational processes comprise three main types:

- (1) intensive “x is a”
- (2) circumstantial “x is at a” (This includes *is in, on, for, with*)
- (3) possessive “x has a”

Each of the type is associated with two distinct modes:

- (a) attributive “a is an attribute of x”
- (b) identifying “a is the identity of x”

Adapted from Halliday (1985: 112)

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