Writing in tables and lists: A study of Chinese students’ undergraduate assignments in UK universities

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1 Introduction

Chinese people now comprise the ‘largest single overseas student group in the UK’ with more than 85,000 registered at UK institutions in 2009 (British Council, 2010). While there have been many studies carried out on short pieces of writing from this group (e.g. Chuang & Nesi, 2006) and Master’s level theses (e.g. Hyland, 2008), there has been comparatively little corpus research carried out on Chinese students’ undergraduate writing. This chapter explores the writing of 30 Chinese undergraduate students studying in UK universities in the first decade of the twenty-first century. A corpus of these students’ assignments (n=104) from five disciplines (Biological Sciences, Food Science, Engineering, Business and Economics) was extracted from the British Academic Written English corpus\(^1\) (Nesi, et al., 2005).

Additionally, the assignments of 71 first language (L1) English undergraduate students from the same disciplines (295 texts) were also compiled from BAWE to provide a comparison corpus. Unlike many studies of second language (L2) English writing, however, the L1 English corpus is not intended to be normative since both sets of assignments are successful with scores of 60% or higher (equivalent to 2:1 or I class in the UK system).

This chapter concentrates on two features from the writing of each student group: the use of tables, figures, images and diagrams (henceforth collectively referred to as ‘visuels’) and the
use of writing formatted as lists. These features were revealed to be of interest through a keyword analysis which indicated that lexical items such as figure, refer and graph and also numbers were employed significantly more frequently by the L1 Chinese students than by the L1 English students. Counts of tagged visuals and lists in the corpora confirmed this difference, and analysis of the two student corpora by year groups suggested that disparity in the use of lists in particular becomes more pronounced over the three years of undergraduate study. Following the corpus analysis, pairs of texts with the same assignment title by L1 Chinese and L1 English students in each of Biological Sciences and Economics (n=4) were examined in detail to explore the ways in which visuals and lists are used in the writing. It is suggested that these are used by L1 Chinese students as strategies for meeting the many current challenges which confront all undergraduate students in UK universities today, and that these are useful strategies which could be employed by both L1 and L2 English students.

2 Current challenges in assessed writing in UK HE

Undergraduate students in UK Higher Education face a number of challenges in writing university assignments (Lea & Stierer, 2000). Difficulties include tutors’ lack of articulation as to exactly what they require (Crème & Lea, 2003; Lea & Street, 1998; Lillis, 1997, 2001), tutor and students’ different conceptions of what a particular assignment entails (Lea, 2004), and different perceptions of what constitutes ‘good writing’ (Lea & Stierer, 2000). For all undergraduate students, a major strategic aim of assignment-writing is to display disciplinary knowledge in an appropriate form in order to gain marks and ultimately a university degree (Kaldor & Rochecouste, 2002, p. 29-30). However, framing this knowledge is difficult since undergraduates are effectively required to write for a dual audience: assignment rubric may necessitate writing for an audience with little knowledge of the discipline (the imagined
reader of the essay / press release / case study), while the purpose of assessment involves writing for an audience with a high level of disciplinary knowledge (the discipline lecturer / assessor) (see ethnographic accounts of this difficulty in Lillis, 2001).

As well as the longstanding challenge of working out such ‘rules of the academic achievement game’ (Newman, 2001), students are faced with more current challenges. In recent decades UK Higher Education has altered from a ‘conventional single route initiating a cohort of students into the practices of their discipline’ (North, 2005, p. 517) to a model of increasing flexibility of degrees which allow students to combine courses from different areas. Recent research within the area of academic literacies has highlighted the difficulties involved in learning to write in ways prescribed by a particular discipline (e.g. Bazerman, 2001; Hewings, 1999; Lillis, 2001; Rai, 2008). Corpus studies such as Hyland (2008), and ethnographic studies such as Prior (1998) have illustrated the extent to which academic writing varies between disciplines. Indeed, Harwood et al (2004, p. 366) suggest this variation extends beyond whole disciplines to practices in academic writing which differ ‘from department to department, and even from lecturer to lecturer’. Despite this, classes in English for Academic Purposes (EAP) frequently consist of students from a wide range of disciplinary areas yet do not have the resources to distinguish between or practise the writing required within each of these disciplines. Moreover, these classes are frequently only offered to L2 English students.

A further challenge for all undergraduate writers is the increase in new genres such as reflective blogs, website evaluations or press releases (Gibbs, 2006; Nesi & Gardner, 2006). While these may not be ‘new’ for all students, they are likely to be unfamiliar to many and often entail writing in a different ‘voice’ and for a different audience to the ‘default genre’ of
the essay (Andrews, 2003, p. 117). An example of an assignment rubric which would probably be new to all students is the following from a History of Mathematics module: ‘It is the early 1830s. Write a letter of advice to a very good student of yours who is about to travel abroad to study Mathematics.’ An effective response to this would entail the selection of appropriate disciplinary knowledge, the choice of suitably advisory language for the intended audience, and an awareness of letter-writing conventions; this is very different to relaying the same information within an essay or report format. Among the reasons for the change to a broader range of genres are the widespread use of electronic resources, shifts in the exam: coursework balance, and increasing employer and student demands for real-life tasks (see Leedham, 2009 for fuller discussion).

The greater demands in terms of the number of written genres inevitably place strain on students, with L2 English students from different cultural backgrounds particularly likely to struggle. For example, the large cohort of L1 Chinese students with a secondary education from the People’s Republic of China\(^2\) are accustomed to short answer questions and the traditional written essay (Cross & Hitchcock, 2007) rather than the plethora of new genres encountered in UK universities. Challenges such as a lack of clarity in assignment rubric, the increase in interdisciplinary degrees, and the rise in innovative assignment types present difficulties for all undergraduate students in the UK, and add significantly to the existing pressure of producing extended writing for L2 English students.

3 Data and methodology

The majority\(^3\) of the assignments in this study are taken from the British Academic Written English (BAWE) corpus (see Heuboeck et al., 2008). Both L1 Chinese and L1 English
corpora in this study contain proficient undergraduate assignments from five disciplines (see Table 1).

<table>
<thead>
<tr>
<th>Discipline</th>
<th>L1 Chinese corpus</th>
<th>L1 English corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of assignments</td>
<td>No. of words</td>
</tr>
<tr>
<td>Biological Science</td>
<td>18</td>
<td>33,633</td>
</tr>
<tr>
<td>Business</td>
<td>20</td>
<td>33,303</td>
</tr>
<tr>
<td>Economics</td>
<td>20</td>
<td>38,086</td>
</tr>
<tr>
<td>Engineering</td>
<td>20</td>
<td>35,627</td>
</tr>
<tr>
<td>Food Science</td>
<td>26</td>
<td>30,267</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>104</strong></td>
<td><strong>170,916</strong></td>
</tr>
</tbody>
</table>

Table 1  Number of texts, wordcounts, and average wordlengths in each discipline

These five disciplines were selected as they contain relatively high numbers of assignments by L1 Chinese students, from a range of individuals and across the undergraduate year groups. All five are towards the ‘hard’ end of the ‘hard / soft’ continuum of disciplines (see Becher, 1989). One reason for L1 Chinese students favouring ‘hard’ disciplines when studying internationally is that language plays a lesser role than in the ‘soft’ disciplines of, say, History or Philosophy. This view is expounded by Neumann et al. who point out that in the ‘hard’ sciences:

> a skill with deploying facts and figures counts for more than elegance of writing style: many students survive scientifically-based courses with very little need for skills in prose exposition (2002, p. 412).

The two corpora of L1 Chinese texts and L1 English texts can also be analyzed by year group (see Table 2).
Table 2 shows how the average length of assignments in words (as counted by WordSmith Tools software, Scott, 2008) rises for each successive year group, since students are required to write longer assignments over time. However, the average wordlength of assignments by L1 English students is slightly longer than that of L1 Chinese students. It seems plausible that the latter group take longer to write in prose and therefore tend to submit assignments of shorter lengths while still within an acceptable range (see also Mauranen, 1993, p. 32).

In comparing the writing of the two student groups, this chapter makes use of corpus linguistics for keyword analysis and counts of tagged features in the sets of assignments overall, and employs close reading of two texts in Biological Sciences and two in Economics in order to examine visuals and lists in whole assignments more closely. Finally, information from discipline interviews collected alongside the BAWE corpus is considered as these give pertinent comments on the relevance of visuals and lists in assignment-writing.

In corpus linguistics, a word is described as ‘key’ if it ‘occurs more often than would be expected by chance in comparison with the reference corpus’ (Scott, 2008b), rendering keyness a way of discovering differences between corpora. The ‘reference corpus’ in this

<table>
<thead>
<tr>
<th>Yeargroup</th>
<th>L1 Chinese corpus</th>
<th>L1 English corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of assignments</td>
<td>No. of words</td>
</tr>
<tr>
<td>Year 1</td>
<td>38</td>
<td>46,212</td>
</tr>
<tr>
<td>Year 2</td>
<td>31</td>
<td>51,747</td>
</tr>
<tr>
<td>Year 3</td>
<td>35</td>
<td>72,957</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>104</strong></td>
<td><strong>170,916</strong></td>
</tr>
</tbody>
</table>

Table 2  Number of texts and wordcounts in each yeargroup
case is the larger collection of L1 English assignments from the same five disciplines. Keywords were extracted for each of the discipline subcorpora using WordSmith with a setting of $p=0.001$ (e.g. the writing of the L1 Chinese students in Biological Sciences was compared with the writing of L1 English students in Biological Sciences). The keyword analysis indicated that visuals and numbered lists are one area of difference between the student groups; I then looked at these tagged features in the texts to confirm this difference.

In the BAWE corpus, certain non-prose features are ‘tagged’, that is, either the features are omitted and replaced by a computer-readable label or ‘tag’ (e.g. appendices) or the beginnings and ends of features are marked (e.g. headings). Of interest in this study are tagged tables, figures, and lists. In BAWE tagging, a ‘table’ consists of any graphic presented using rows and columns while a ‘figure’ covers any graph, diagram, image, picture, or drawing; both tables and figures are omitted and replaced with a tag when assignments are converted to plain text for inclusion in the corpus. Prose formatted as a list is tagged at the beginning and end of the list but the list items are left intact within the corpus. The BAWE mark-up distinguishes between prototypical ‘lists’ where each list item consists of a word or noun / verb phrase, and ‘false’ lists which consist of ‘paragraphs of running text carrying list-like formatting’ (Ebeling & Heuboeck, 2007). These ‘false lists’ are termed ‘list-likes’ and are presented as a list in the assignment, yet contain larger units of text per list item (see example in Figure 1). Common to both lists and listlikes is the distinct formatting of items with bullets, numbers, hyphens or other means.
Conclusions

The experiment yielded the following conclusions:

- The efficiency of a single stage centrifugal pump at high pump speed (3000 RPM) is better than at low pump speed (2000 RPM).

- The input power with high pump speed increases faster than the one with low pump speed as discharge increases.

- The relationship between total head and discharge is not affected by pump speed, but higher pump speed provides higher total head.

Figure 1: Example text containing three listlike items from an Engineering assignment

Following the extraction of keywords and tagged features from the corpora overall, the second stage in the analysis was carried out, namely a close comparison of pairs of assignments in Biological Sciences and Economics. Since BAWE texts were collected at just four universities (Warwick, Reading, Oxford Brookes and also at Coventry towards the end of the project), there are a small number of texts by L1 Chinese and by L1 English students from the same university, same module and which answer the same assignment question. As all BAWE texts were awarded high marks, a comparison can be made of the proportion of visuals and lists to prose in each text.

Finally, the discussion is supported through data from selected semi-structured interviews with discipline lecturers. These were carried out alongside the collection of assignments for the BAWE corpus. Both interviews and corpus compilation are part of the ESRC-funded project ‘An Investigation of Genres of Assessed Writing in British Higher Education' (Nesi et al. 2005). As a researcher on this project I carried out almost one-third of the interviews and have access to data from all 58. Of these, 7 interviews are with Biological Sciences or Economics lecturers and provide some insider knowledge on student writing within these disciplines.
4 Findings and discussion

4.1 Corpus analysis

The initial keyword analysis of each L1 Chinese discipline with the equivalent L1 English discipline as a reference corpus suggested visuals and lists to be a fruitful area for further exploration (see Table 3 for keywords relating to visuals and lists given in decreasing order of keyness for each discipline).

<table>
<thead>
<tr>
<th>L1&amp; discipline</th>
<th>Chi-Biol</th>
<th>Chi-Bus</th>
<th>Chi-Econ</th>
<th>Chi-Engin</th>
<th>Chi-Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selected keywords</td>
<td>#</td>
<td>growth</td>
<td>#</td>
<td>#</td>
<td>curve</td>
</tr>
<tr>
<td>table</td>
<td>curve</td>
<td>eq.</td>
<td>referring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>data</td>
<td>refer</td>
<td>according</td>
<td>statistical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>equation</td>
<td>model</td>
<td>figure</td>
<td>deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>figure</td>
<td>per</td>
<td>output</td>
<td>numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>graph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Keywords relating to visuals and lists

A greater reliance on tables and figures by the L1 Chinese students was hypothesized from the presence of keywords such as table, refer, figure, and curve. This was confirmed through examination of concordance lines (e.g. ‘the raw data curve in figure 3.6’, ‘referring to diagram 4’). The greater use of numbers (indicated both in WordSmith and Table 3 through the hash symbol ‘#’) was also followed up through concordance line searches and seemed to be in part due to the use of numbered lists in the L1 Chinese corpus (e.g. ‘There are 3 generic ways of changing the structure of a market: 1. building a new or modified set of players in a market, 2. eliminating players in a market’ (text 7021a)) Numbers are also used by both student groups and particularly the L1 Chinese group, for labelling tables and figures, within equations, in reference denotations, and within percentages and other data.
The existence of this group of keywords, however, does not in itself mean the L1 Chinese students use a greater number of visuals and lists in their assignments, and the next stage in the analysis was to count tagged features in order to determine comparative usage. Table 4 gives the number of tables, figures, lists and listlikes used by each student group in the five disciplines, with results normalized to counts per 10,000 words.

<table>
<thead>
<tr>
<th></th>
<th>Tables</th>
<th>Figures</th>
<th>Lists</th>
<th>Listlikes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Biol</td>
<td>15****</td>
<td>25****</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Eng-Biol</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Chi-Econ</td>
<td>1</td>
<td>14****</td>
<td>2*</td>
<td>25****</td>
</tr>
<tr>
<td>Eng-Econ</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Chi-Bus</td>
<td>2</td>
<td>2</td>
<td>6*</td>
<td>129****</td>
</tr>
<tr>
<td>Eng-Bus</td>
<td>6**</td>
<td>6**</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>Chi-Food</td>
<td>20*</td>
<td>6</td>
<td>5</td>
<td>82****</td>
</tr>
<tr>
<td>Eng-Food</td>
<td>14</td>
<td>6</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Chi-Engin</td>
<td>10*</td>
<td>21</td>
<td>7</td>
<td>53****</td>
</tr>
<tr>
<td>Eng-Engin</td>
<td>7</td>
<td>21</td>
<td>10</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 4 Use of tables, figures, lists and listlikes per 10,000 words

Table 4 suggests there are both disciplinary differences in the use of visuals and lists, and also differences between the two student groups. Thus, for each student group Biological Sciences, Food Science and Engineering contain greatest use of tables, yet in each case the texts by L1 Chinese students have a higher count than those by L1 English students (e.g. Chi-Biol has a normalized count of 15 tables per 10,000 words while Eng-Biol contains 5). For the category of ‘figures’ the disciplines of Biological Sciences, Economics and Engineering show the highest usage, and again the texts by L1 Chinese students contain identical or higher
counts. The normalized counts for lists are lower, since a ‘list’ comprises a potentially lengthy sequence of short items. The clearest picture of difference between the two student groups comes from the use of listlikes, where, in all disciplines excepting Biological Sciences, the number of listlikes used by each L1 Chinese discipline is significantly greater (p=.0001).

Disciplinary differences in these features are to be expected, since for example Biological Sciences entails the understanding of images of natural phenomena, and Business is likely to involve reports with list type writing, yet it is less clear why the student groups should also differ in their usage of these features. One possible explanation is that using a table, figure, list or listlike to present information in an assignment is an attractive option for L1 Chinese students as this reduces the quantity of connected prose required. A great deal of information may be given succinctly in a table or figure, resulting in shorter assignments. Lists and listlikes reduce the need for connecting chunks and again reduce the wordcount. The higher use of visuals and lists thus partly accounts for the lower wordcounts of L1 Chinese students’ texts noted in section 3. More positive explanations for the differences are that visuals and lists are viable alternative means of giving the required information, that they do so concisely, and that they perhaps help more visual readers to process information. Since all assignments in this study are deemed by discipline lecturers to be of a proficient standard, the strategies of using tables, figures, lists and listlikes appears to be, at the very least, an acceptable way of presenting information.

Analyzing the corpora by yeargroup shows the use of listlikes to be significantly higher for the L1 Chinese subcorpora in all yeargroups (p=.0001) and also reveals this way of
presenting information to be used increasingly over the period of undergraduate study (Figure 2).

![Figure 2: Listlikes by yeargroup](image)

It seems that the L1 Chinese students increasingly write in bulleted or numbered items rather than paragraphs of connected prose as a presentation style in their writing. It may be that they adopt these strategies more and more in order to meet the challenge of writing increasingly lengthy assignments in a variety of genres. It is not possible, however, to ascertain from this corpus study whether L1 Chinese students tend to opt for assignments in which the rubric encourages this style of writing, or whether they simply choose to answer assignments in this way.

### 4.2 Close reading

Thus far, the use of visuals and lists in assignments has been contrasted through the total number of tables, figures, or lists used within a discipline by each student group. This is a very rough measure, as the number of occurrences of a feature does not indicate the length, complexity, or significance placed on these by the writer. The analysis in this section focuses
on the space given to visuals and lists as a proportion of the whole assignment, in order to gauge their dominance. Two pairs of texts, from Biological Sciences and from Economics, were found which in each case answer the same question. The Biological Sciences texts illustrate the differing use of visuals in each student group, and the Economics texts show how similar answers to a series of questions can be given in list format or as connected prose. The pairs of texts are discussed below.

4.2.1 Biological Sciences

The two texts discussed in this section were written by third year Biological Science students from the same university, and are taken from a module entitled ‘Development’. The title of each assignment is ‘The role of maternal effect genes in the development of the nematode Caenorhabditis elegans’; each text was awarded over 70%. Both texts contain an abstract, are written in an impersonal style, and one text is produced as two columns; these features suggest the writers may have wished to emulate a journal article. The two assignments contain approximately the same number of words when counted through WordSmith (WS) after the removal of visuals and their captions (see Table 5).
Table 5  Comparison of two Biological Sciences assignments

Table 5 includes counts for the number of tables and figures in each assignment, and also gives an indication of the proportion of each assignment comprising visuals (as a percentage of the whole text). The figures for both texts are mainly in colour, though may have been printed out in black and white for submission to the tutor. The category of ‘figures’ includes images and cross-sectional diagrams of the organism, and process diagrams of its lifecycle and the reproductive process. In both assignments, tables and figures are referred to in brackets at the end of information-giving sentences (e.g. ‘both functions of somatic gene silencing in nuclei and stability and expression regulating of maternal RNAs in cytoplasm assist in preserve the germ cell fate. (Figure 17)’ (text 0434a)).

Both writers seem to integrate visuals effectively with their writing, using them to both support and extend their prose descriptions. Some of the visuals in the two texts are labeled as adapted from secondary references; others do not contain references though this does not necessarily mean they are devised by the student. Frequently, particularly for text 0067b, a figure includes over 100 words of explanatory prose within the caption; however captions are omitted in BAWE tagging, rendering the comparative wordcounts achieved through
WordSmith less accurate. While figures and tables appear to be an important part of each assignment, there is nevertheless a great difference in both the total number used and in the proportion of the assignment pages occupied by visuals.

The high use of tables and figures by the L1 Chinese writer increases the number of A4 pages filled to 15.5 (excluding 3.5 reference or blank end pages), compared to the 9 employed by the L1 English writer (though the use of two columns by this writer condenses the prose).

Figure 3 shows the beginning of each assignment, with title, abstract, and introduction.
such as images and layout in meaning making (for an overview of multimodal analysis see Jewitt, 2009). More detailed analysis of the effectiveness of visuals would necessitate both lecturer and student’s involvement in explaining the purpose and source of each table, figure, image or diagram.

4.2.2 Economics

The two texts in Economics are again from the same university, same module ('Econometrics 1') and have the same title ('Assignment 1'). The assignment asks students to analyze the exam marks of three undergraduate cohorts, and to answer six questions using the data tables provided (note that neither student reproduces these data tables in the body of their assignment). The first question of the assignment asks for the main features of the data in a table of descriptive statistics. This is followed by sections requiring students to carry out tests such as regression analyses on the data (questions 2-5). Finally, students are asked to construct a model of exam performance, drawing on their answers to previous sections (question 6).

Both assignments contain appendices, though as these were not submitted to BAWE by the author of text 0155a they are not included in the current analysis. In line with the mean average wordcounts in Economics given in Table 1, the assignment by the L1 Chinese student is around 500 words shorter than the L1 English student’s text (see Table 6). Each student’s assignment was awarded over 70%.

<table>
<thead>
<tr>
<th></th>
<th>L1 Chinese, 0155a</th>
<th>L1 English, 0202j</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of pages excluding refs</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>No. of tokens (in WS)</td>
<td>3,731</td>
<td>4,242</td>
</tr>
<tr>
<td>No. of formulae</td>
<td>19</td>
<td>6</td>
</tr>
</tbody>
</table>
No. of lists 2 0
No. of listlikes 28 0
Lists and listlikes as proportion of whole text 90% 0%

<table>
<thead>
<tr>
<th>Table 6</th>
<th>Comparison of two Economics assignments</th>
</tr>
</thead>
</table>

The most notable difference on reading through the two texts is the layouts. The L1 Chinese student’s work consists almost entirely of a series of lists and listlikes, organized under the 6 question headings, whereas the L1 English student’s assignment is mainly written in connected prose, again beneath the 6 question headings.

Text 0155 is set out as a report, with a brief, 3-line ‘introduction’ followed headings consisting of the question number and a meaningful title (e.g. ‘1. Main features of the data’). Within each of these sections, points are given as a bulleted list; frequently this list includes further items given within lists. On occasion, list items are not separated by bullets or similar formatting (and so would not be included in the BAWE listlikes count), but consist simply of a series of sentences which each begin on a new line. The text is broken up throughout with the writer making use of italics or emboldening to highlight lines containing formulae; bold is also used for subheadings and key concluding points (see example text in Figure 4).

- **Comparisons of data across various groups**

**Pure Economics degree vs. non pure Economics degree:** Students doing pure Economics degree scored 66.23 on average, while students doing a mixed-Economics degree scored 61.68 (very significant).

**Female vs. Male:** The average female students got 63.8, compared to 65.4 for male students.
### UK students vs. non-UK students:
On average, UK students gained 64.63 while non-UK students gained 66.38.

### Number of parents who attended university:
Those students whose parents never attended university achieved 64.12 on average, those with one parent attended university achieved 64.99 averagely, and those with both parents attended university achieved 65.59 on average.

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**Figure 4**  
Extract from text 0155a

The high use of lists throughout this assignment serves to organise the text, reducing the need for connecting words and phrases. For example in Figure 4, the possible ways of grouping the data are simply listed as headings (e.g. ‘male vs. female’); this use of headings and layout removes the need for linking phrases such as ‘The next group considered is’. Sometimes, the reader has to interpret the relevance of each piece of information in a list; for example in the final list item of Figure 4 we have to compare the numbers given to extract the intended meaning that students with two parents who attended university achieved a higher score than those with one or none (cf. Hinds’ 1987 notion of reader / writer responsibility). The final paragraph to this assignment is headed ‘comments on the model’ and impartially restates the main points and the evidence on which these are based. A more personal note is conveyed in the penultimate section to question 6 in which the writer says ‘I am concluding to the best of my ability, that the optimal function should be of a linear form’.

In contrast to the lists used in 0155a, text 0202j consists largely of paragraphs of sentences linked with however, unfortunately, in all cases and so on. There is a discursive introduction which sets out the rest of the text: ‘in this project I shall firstly analyze various factors… I shall then regress and analyse… before concluding….’. The main headings relate to the assignment outline (i.e. ‘Question 1’) and within these some limited use is made of
subheading; the prose is also punctuated by occasional formulae. However, the overall effect is of a continuous piece of writing with signposting used effectively to guide the reader through (see extract from Question 1 in Figure 5).

To make some comments about these results, we need to break this up into sub-samples. Firstly we can break it up according to sex, as Siegfried and Strand did. For males, table 2 shows that the mean score is 65.4%, which is higher than the corresponding score for females of 63.75%. This agrees with Siegfried and Strand’s paper which claims males do better than females. However the standard deviation for males is lower than for females, 12.64% compared to 14.02%.

Figure 5 Extract from text 0202j

A comparison of Figure 4 and Figure 5 illustrates the more discursive nature of 0202j. Text 0202j first introduces the need for ‘sub-samples’ within the results, and then guides the reader through these (‘firstly we can break it up according to…’). Figure 5 also shows how the writer of 0202j broadens the discussion out from the given data, making links with other texts (‘This agrees with Siegfried and Strand’s paper…’). While text 0202j brings in additional voices through citation, it displays a more minimal approach than 0155a to providing background information to calculations (e.g. see Table 6 to compare the number of formulae for each text).

The signposting shown in Figure 5 continues in later sections of 0202j; for example ‘given my results from previous questions and previous research, I am now going to try and formulate a model of exam performance…’ and ‘let us turn back to graph 3 of appendix 1.’ The final paragraph of this assignment begins ‘in conclusion’ and reiterates the writer’s views on the model. Unlike the writer of text 0155a, the L1 English writer of 0202j restates the
main results while also conveying the achievement of the assignment: ‘I have calculated a model of exam performance based on a number of variables, as given above’. The writer relates these variables to ‘theory from economists such as Romer’ and also to their ‘own experience’, whereas the 0155a writer restricts their description to the provided data.

Overall, the L1 Chinese writer gives their responses to the 6 questions within the assignment succinctly and with little metatext or comment but focuses instead on the calculations. In comparison the L1 English writer guides the reader through the work and reflects more on the process (cf. Mauranen’s discussion on Finnish and Anglo-American writers’ strategies in addressing the reader, 1993, p. 188-9). As with the Biological Sciences texts, it seems that the two Economics students have each achieved a creditable mark in the same assignment through different means, since giving an answer within bulleted lists is clearly acceptable, as is providing a response in prose form.

4.3 Interviews with lecturers

The BAWE lecturer interviews included questions relating to the role of assignment-writing in the department, valued features of undergraduate assignments, and the writing needs of L2 English students. Interviews with lecturers in Biological Sciences (n=4) and Economics (n=3) shed some light on the different strategies employed by the students in 4.2, particularly with regard to the use of figures and tables. Lecturers in both disciplines commented on the importance of visuals, suggesting that typically at least one in three pages of an assignment should contain a visual of some kind. One Biological Sciences interviewee thought that including diagrams in their work helps undergraduates to gain better marks since they can refer to these rather than having to describe everything and risking the introduction of errors. Students are, however, ‘incredibly reluctant’ to construct their own diagrams (Biol-int-2) and
tend to use existing ones taken from websites. While this is acceptable, it is preferable if students at least devise their own accompanying caption. In both disciplines, mislabeled axes on graphs were mentioned as a particular dislike. The choice of data used in a report is seen as being of great importance since this tells the lecturer ‘a great deal about what they are thinking’ (Biol-int-1). Two of the three interviewees in Economics commented on the challenge involved in analyzing visuals in prose. While the pair of Economics assignments discussed in 4.2 do not include visuals, the main task appears to be the interpretation of a dataset given in graphs and other visual forms.

In Biological Sciences, the ability to be concise was mentioned with one lecturer commenting that ‘there’s never been a penalty for an essay that’s too short’ (Biol-int-2). In an echo of Neumann et al’s remark (2002, p. 412) on the skill in ‘deploying facts and figures count(ing) for more than elegance of writing style’, one lecturer commented on it being easier to gain a good mark with a low language level in a laboratory report than in an essay. Interestingly, one interviewee stated that essential oral instruction on assignment tasks is often given out in lectures, meaning that a reliance on assignment rubric cannot give the whole picture as to how and why students construct their texts in particular ways.

The only comment given pertaining to lists was from one Economics lecturer who stated a dislike of written work in note format rather than complete sentences. However, the lists and listlikes presented in text 0155a contain full sentences given as lists, rather than as sentence fragments so would presumably not be viewed in this negative way.

Finally, one Economics interviewee highlighted the number of L2 English students and staff, commenting that ‘you might well find a graduate teaching assistant from Mexico teaching a student from China or Africa’ (Econ-int-1). This is an important point since assignment
markers may have a different L1 and cultural background to both the student and the module writer.

5 Conclusion

This chapter has shown that there are differences in the use of visuals and lists between L1 Chinese and L1 English students in undergraduate assignments within the same disciplines in the BAWE corpus. The contrast in use of listlikes is a particularly stark difference between the two groups and diverges further over time with L1 Chinese students increasingly adopting this form of presentation. Employing visuals and lists may be strategies for L1 Chinese students who have to meet the challenges of producing multiple, extended pieces of writing within unfamiliar genres in their L2. As such, these strategies allows students to present their findings and views clearly and effectively, while reducing the quantity of connected prose they have to produce. Presenting through visuals and within lists may also be used as strategies by other L2 English writers, though further research on student writing across L2s and disciplines would be needed to explore this.

Despite the widespread use of visuals in several disciplines within undergraduate writing by both student groups in this study, ‘graphic literacy’ is seldom taught or even discussed in EAP classes. This may be partly due to EAP tutors’ lack of awareness of writing across the disciplines; Johns (1998, p. 183) points out that most applied linguists are ‘trained in the humanities, where words are central to disciplinary values and argumentation’ (see also Woodward-Kron & Jamieson, 2007). Thus in writing centres and EAP classrooms, tutors may ‘find themselves relying on disciplinary norms they are familiar with’ (Gardner and Holmes, 2009 p. 251); these norms are likely to include a concentration on ‘linear text’
(Johns, 1988, p. 183) rather than on the interaction of visuals with text. This privileging of continuous prose over the use of graphs, diagrams, and images disadvantages not only those students who need to acquire competence in the production and comprehension of visuals in disciplines such as Biological sciences and Economics (cf. Kaldor & Rochecouste, 2002), but also those who may be more visually-oriented or who may find it preferable to provide part of their response through graphical means.

Although Johns’ paper was written over 20 years ago, her plea for EAP teachers to make greater use of visuals in the classroom appears to have had little impact with Tribble (2009, p. 416) concluding in a recent review of EAP textbooks that ‘for students who face the challenge of writing extended, factual, evidence-based, and disciplinarily specific texts, there is still relatively little on the market’. At the same time, interpreting visuals is becoming increasingly important with the advent of Web 2.0 as students are required to interpret data not only in their academic disciplines but also in newspapers, magazines, and in personal spheres such as financial information (Sorapure, 2010).

Writing an undergraduate assignment using lists and listlikes is seldom discussed, again this is due in part to EAP tutors’ backgrounds in discursive, essay-oriented disciplines. However, as both student groups in the corpora received high marks this is clearly an acceptable strategy. While university writing workshops are provided for L2 English students in UK universities and a small group of often self-selected L1 English students, they are not routinely encouraged for all undergraduates. It is likely that all students could benefit from guidance in the transition from secondary school to university-level academic writing (cf. Gourlay’s 2009 discussion on the ‘struggle’ of this transition). EAP classes could be used to provide help in enculturating all students into discipline-specific writing, to explore the ways
in which genres may differ, and to equip students with strategies for coping with the
increasingly varied assignment requirements at university level. Using visuals to present and
extend data, and employing lists are two such strategies which both L1 and L2 English
students could usefully acquire.

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The data in this study come from the British Academic Written English (BAWE) corpus, which was developed at the Universities of Warwick, Reading and Oxford Brookes under the directorship of Hilary Nesi and Sheena Gardner (formerly of the Centre for Applied Linguistics [previously called CELTE], Warwick), Paul Thompson (formerly of the Department of Applied Linguistics, Reading) and Paul Wickens (Westminster Institute of Education, Oxford Brookes), with funding from the ESRC (RES-000-23-0800).

The student groups are termed ‘L1 Chinese’, to refer to students with a wide variety of Chinese dialects and who were educated at secondary level wholly or mainly within the People’s Republic of China, Hong Kong or Taiwan, and ‘L1 English’, denoting students whose L1 is English and whose secondary school education was wholly or mainly within the United Kingdom.

95 texts are BAWE assignments by L1 Chinese students within the 5 disciplines; these were supplemented by a further 9 texts from additionally-collected data (Leedham, forthcoming) in order to increase the number of L1 Chinese texts and thus the generalisability of the study.

In the BAWE corpus a ‘discipline’ is framed in terms of a subject taught within one university department (Heuboeck, Holmes, & Nesi, 2008).

The L1 Chinese corpus does not contain sufficient variety of texts by individuals to warrant a division by both discipline and year group.

Figures used are from Rayson’s Log Likelihood calculator:

* 95th percentile; p<.05; critical value = 3.84

** 99th percentile; p<.01; critical value = 6.63

*** 99.9th percentile; p<.001; critical value = 10.83

**** 99.99th percentile; p<.0001; critical value = 15.13