Tutor perspectives on the use of visuals in undergraduate assignments

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The traditional focus within the teaching of academic writing is on linear prose and little research has been conducted on additional semiotic modes. This study explores the use of visuals, layout and list writing in assignments from two student groups: L1 Chinese and L1 English undergraduates in three disciplines (Biology, Economics and Engineering). The paper explores proficient undergraduate assignments drawn from the British Academic Written English corpus, revealing that the L1 Chinese students make significantly greater use of visuals and lists than L1 English students in the same disciplines. The presentation then reports on findings from interviews with tutors and students, exploring their views on the use of visuals and lists in assessed writing. It is suggested that academic writing tutors could provide more guidance to all undergraduate students as to the range of acceptable ways of meaning making within assessed undergraduate writing.

Traditionnellement, l'enseignement de la rédaction universitaire est centré sur la prose linéaire, et peu de recherches ont été faites sur les modes sémiotiques supplémentaires. Cette étude explore l'utilisation d'éléments visuels, la présentation et l'écriture sous forme de liste dans des textes rédigés par deux groupes: les étudiants de langue maternelle chinoise et d'anglaise, dans trois disciplines (la biologie, l'économie et l'ingénierie). Cette présentation explorera des textes compétents d'étudiants issus du corpus ‘British Academic Written English’. On verra que les étudiants chinoises font significativement plus grande utilisation de visuels et de listes que les étudiants anglaises. Ensuite, on va présenter des conclusions basées sur des interviews avec des professeurs et des étudiants. Il sera suggéré que les enseignants de la rédaction universitaire pourraient fournir plus de précision à tous les étudiants, indiquant la variété des façons d’écriture disponibles.
Aim

• Investigate the writing of L1 Chinese and L1 English students in three disciplines (Biological Sciences, Economics and Engineering).

Outline of this talk

1. Establish that there are differences in use of visuals
2. Investigate tutors’ views on this
3. Explore writing tutors’ views
Background: Framing in academic literacies

Deficit approach
• student writing is ‘remedial’, ‘immature’ and contains ‘problems’ or ‘errors’ - especially L2 English student writing (Chen and Baker, 2010; Paquot, 2010)

Vs.

Academic literacies approach
• writing within the academy is a set of social practices in which genre, context and culture are highly significant
• highlights ‘the variety and specificity of institutional practices, and students’ struggles to make sense of these’ (Lea and Street, 2006: 376).
• All student writers are in a constant struggle to establish the preferred ways of making meaning within their particular context (e.g. Lillis, 2006).
The data

The corpora

• British Academic Written English (BAWE) & beyond
• All proficient writing
• 58 texts from L1 Chinese students (107,000 words)
• 202 texts from L1 English students (429,000 words)

Interviews & questionnaires

• Interviews with 20 lecturers in Biological Sciences, Economics and Engineering in 7 UK universities
• Questionnaire responses from 200+ writing teachers
• Questionnaire & interviews with students

ESRC project number RES-000-23-0800
A year 3 Engineering assignment
**Visuals**

*Figure 1*

*Figure 7*

*Figure 8*

Photograph 9 – Tree shrew pollinating the male flower

[Attenborough, 1995]

<table>
<thead>
<tr>
<th>Carbon Content %</th>
<th>Classification</th>
<th>General Classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3-0.4</td>
<td>Low Carbon Steel</td>
<td>General for weld</td>
</tr>
<tr>
<td>0.3-0.7</td>
<td>Medium Carbon Steel</td>
<td>Used for nuts, shafts</td>
</tr>
<tr>
<td>0.7-1.7</td>
<td>High Carbon Steel</td>
<td>Use for applications</td>
</tr>
</tbody>
</table>

Table 1
Lists and ‘listlikes’

Conclusions

The experiment yielded the following conclusions:

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

1. Extraction of corpus linguistic keywords and counts of visuals

2. Thematic analysis of lecturer interviews – some featuring paired texts

3. Quantitative and qualitative analysis of questionnaire responses
# Keywords relating to visuals and lists

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

A word which is *positively* key occurs *more* often than would be expected by chance in comparison with the reference corpus.
Keywords relating to visuals and lists

Biology
- All "Phases" are labeled on the graph. The curve of the Exponential Phase was straight, though some point lay outside this best straight line of fit (0041a).

Economics
- Actually the total loss resulting from the lower monopoly output (Q M) is the grey triangle. The part of the grey triangle above P C is the loss of consumer surplus (6008q).

Engineering
- According to the program and refer to the figure 4.1.1, it is easy to find… (6107d).
### Counts of visual and list items

<table>
<thead>
<tr>
<th></th>
<th>Tables</th>
<th>Figures</th>
<th>Lists</th>
<th>Listlikes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chi-Biology</strong></td>
<td>15****</td>
<td>25****</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Eng-Biology</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Chi-Economics</strong></td>
<td>1</td>
<td>14****</td>
<td>2*</td>
<td>25****</td>
</tr>
<tr>
<td>Eng-Economics</td>
<td>0</td>
<td>12</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Chi-Engineering</strong></td>
<td>10*</td>
<td>21</td>
<td>7</td>
<td>53****</td>
</tr>
<tr>
<td>Eng-Engineering</td>
<td>7</td>
<td>21</td>
<td>10</td>
<td>24</td>
</tr>
</tbody>
</table>

* per 10,000 words

* p<.05
** p<.01
**** p<.0001
Summary… and some questions

Summary

• L1 Chinese students make significantly greater use of visuals and lists than L1 English students
• All BAWE assignments have been judged proficient
• = > suggests these are different, yet equally valued, ways of writing

Questions

• Are visuals and lists used as *strategies* to meet the challenge of producing extended pieces of writing in unfamiliar genres in L2?
• Perhaps some students are more visually-oriented?
• What do discipline tutors think of this greater use of visuals and lists?
• Do writing tutors teach students how to use visuals and lists as strategies?
Visuals and extended captions in Biology

dois whatever it [takes] to make it clearer… tables, pictures, dividing into subsections… whatever helps you.
(Biology lecturer)
Bulleted lists vs. connected prose in Economics

Lecturer interviewees preferred the Chinese students’ text as it was considered:
• ‘more readable’,
• shows ‘clear logic’
• ‘easy to understand’.

A bulleted list was described as a good communication tool, giving visual emphasis to the main points and gaining the attention of a time-pressed reader.

Using ‘a mix of techniques’ such as headings and bullets is good as it ‘adds variety’.

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### Regression Analysis

**Bivariate Regression**

\[
\text{QTMARK} = \alpha + \beta_{\text{AT}}
\]

The following results are obtained:

\[
\text{QTMARK} = 44.9702
\]

Interpretation for the regression:
- The intercept (44.97) means that students who used the Bt method could get 44.97 in the exam.
- The coefficient of \(\beta_{\text{AT}}\) indicates that each extra lecture attended increases the exam grade by 0.10.

**Econometric Interpretation:**

A coefficient of 0.10 means that students who use the Bt method will spend more time on their studies, leading to a higher exam grade. The t-statistic for this coefficient is 2.34, which is significant at the 0.05 level.

**Multivariate Regression**

\[
\text{QTMARK} = \alpha + \beta_{\text{AT}} + \beta_{\text{ABILITY}} + \beta_{\text{HRSQIT}} + \varepsilon
\]

Modelled by OLS, we get:

\[
\text{QTMARK} = 56.3257 + 0.165949\text{AT} + 0.049506\text{ABILITY} + 0.417558\text{HRSQIT}
\]

Interpretation of the regression results:

1. Refer to “Correlation matrices for these quantitative variables” in the Appendix.
2. Refer to the Appendix for the Econometric regression results table.
3. Refer to the Appendix to find out the multivariate regression results table.

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As reported in question 1, the correlation coefficient was 0.67.

**Econometric Interpretation:**

The dummy variable coefficient on HRSQIT of 0.41 means that if a student attended the lecture, they would score a proportion of 0.41 more than if they did not. The coefficient of 0.17 on the ABILITY variable means that if you are a 2002 student, you will score a proportion of 0.17 more than if you were a 2001 student. Finally, the coefficient of 0.05 on the ATT variable means that if you attended 5 more lectures, you would get a 0.05% increase. The t-statistic for this coefficient is 2.34, which is significant at the 0.05 level.
Themes from lecturer interviews 1

Importance of visuals

• Diagrams and formulae are ‘the spine of the essay’ (Economics)
• The ‘challenge’ is ‘to marry the diagrams with the text’ (Economics)
• Including visuals helps students gain better marks as it avoids having to describe - and risk introducing errors (Biology)
• Marks for presentation may include the assessment of diagrams, tables and overall layout (Engineering).

Being concise

• Preference for ‘precision, incision, concision’ (Economics)
• ‘there’s never been a penalty for an essay that’s too short’ (Biology)
• Good writing is ‘clear’, ‘concise’; dislike of ‘verbosity’ (Engineering)
• British ss ‘use too many words’ - ‘don’t use 10 when you can use 5’.
• Proforma may say ‘include a table here’. May be given font sizes, margin size, line spacing, ‘so people can’t cram in words’.
Bulleted lists are ok
• …but the words have to be ‘particularly good’
• ‘easier to mark if bullet points’
• in exams, bullets are ‘ideal’ not paras. ‘no need to dress it up as an essay’. Be straightforward. (Engineering)
• ‘Gives visual emphasis’.
• ‘essay questions allow you to hide the things you don’t know.’ (Economics)

‘Maths-oriented’ and ‘journalistic’ students in Economics
• 2 types of student – ‘maths-inclined student who would be happy putting bullet points instead of prose’ and students who are good at writing prose but ‘not as strong mathematically’.
• students see essays as a ‘refuge from problem-solving questions’
Yet...

- ‘graphic literacy’ and use of lists are seldom taught in writing classes – *why?*

- Most applied linguists are ‘trained in the humanities, where words are central to disciplinary values and argumentation’  
  [Johns (1998:183)]

- Tutors may ‘find themselves relying on disciplinary norms they are familiar with’  
  [Gardner and Holmes, 2009: 251]

- There’s often a concentration on ‘linear text’  
Survey of writing tutors

- 219 responses
- 87% of respondents teach in universities
- 60% have been teaching for 10 years +
- 50% + have a Masters degree in Applied Linguistics or Education
- 20% teach at foundation level, 36% UG in-sessional, 34% postgraduate
- Teach a mix of L1 English only, L2 English only, and both L1 and L2 English students
Teaching the use of visuals

Writing Tutors’ views

- ‘The visuals are too complicated and student specific for me to know thoroughly and they know them better.’
- ‘I don’t know much about their individual subjects - just general knowledge or what I pick up from them.’
- ‘On the preessional course in the UK I taught on, lists were certainly discouraged and little explicit attention was paid to integrating visuals into writing.’
- ‘We are often quite detached from the disciplines because our students go into so many different spaces after completing foundation’
- ‘Some students are permitted to use these features and some not, so for this reason it is not sensible to teach them.’
- ‘I have students do an ethnography of writing in their field, so that they can answer these questions.’
Implications for teaching writing

• remain open-minded as to what might be acceptable in different disciplines;
• broaden the range of genres practised;
• include visuals and lists in academic writing classes;
• help students to research writing in their discipline (cf. Johns', 1997, plea for students to become researchers of their disciplines' practices; consider data-driven learning using corpora such as BAWE for particular discipline features?);
• collect exemplars of the writing their students are asked to produce;
• move beyond lexicogrammatical considerations such as the acceptability of *I* or the choice of passive or active voice to considering assignments holistically (e.g. Is it ok to use a table to display results or should these be given in prose? Can the conclusion be presented as a bulleted list? If images are given, can a lengthy caption be included?);
References