4th International Conference on
New Trends in Teaching and Education

18-20 February 2022   Milan, Italy

NEW TRENDS
IN TEACHING
AND EDUCATION

An Analysis of Task Type and Density of Information of Official Academic IELTS Task 1 Graph Writing Prompts

Dr. Hilda Freimuth

Thompson Rivers University, Canada

Abstract.

Research has shown that task type and density of information on graph prompts can influence the interpretation of the graph and possibly test scores. Given this, the author of this study analysed 35 official Cambridge Task 1 academic IELTS writing prompts to determine their level of difficulty for test-takers. The study is based on research that the simpler the task type and the fewer the data points on a graph, the better lexical performance of the test-taker. These two features were therefore closely investigated in the prompts. Findings revealed that data points ranged significantly from seven to sixty-six, with an average of 18.7 per prompt. For this study, prompts with sixteen data points were categorized as 'simple'. The study found that 49% of the official IELTS Exam Task 1 graph writing prompts fell into the category of 'simple' in terms of data points. The study also found that 23% of the prompts consisted of more than *one type* of graph with 54% displaying *more than one graph* in the prompt itself, making it more complex. With this study defining 'simple' as one graph with no more than sixteen data points, only five out of the thirty-five prompts or 14% of the official IELTS exam prompts were categorized as 'simple'. The bar graph made the highest number of appearances in the prompts at fourteen in all, with the line graph a close second at eleven. The pie chart appeared nine times in the prompt and the table eight times.

Keywords: IELTS, academic writing, graph prompts

1. Introduction

The concern for exam bias on the IELTS exam grew out of my time teaching the IELTS and being an examiner in the United Arab Emirates. My students often complained about the unfairness of the exam and that is held a number of biases. This encouraged me to investigate the reading exam for cultural bias back in 2013. Since then, my interest has expanded to other sections of the IELTS exam. This study, in particular, came about after doing research on graph literacy and prompt difficulty. With O'Loughlin and Wigglesworth's 2003 study finding that the simpler the graph task type and the less information represented on it resulted in higher level vocabulary use in written discourses (confirmed by Yu et al., 2007), the question arose: How many of the official academic IELTS Task 1 graph writing prompts actually fall into this category?

2. Methods

The method used for this analysis was simple. The researcher examined as many official academic IELTS Task 1 graph writing prompts as were available to her. This constituted all the official Cambridge exam papers that she could find: Book 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 13. Each writing exam prompt was analysed for graph type (maps and process prompts were *not* included in this study) and number of data points, totalling 35 prompts in all. A table was created to track the information. In the end, the determination of what constituted a 'simple' graph prompt was based on O'Loughlin and Wigglesworth's (2003) study which indicated 16 data points as 'simple'. This study labelled every prompt beyond this as more difficult in terms of data points. It is important to note that the analysis for the type of graph counted the graph type *only once* in multiple iterations in one prompt.

3. Results

The above analysis yielded the following results:

Table 1: Cambridge IELTS Exam writing prompt analysis data

Book + Test	Type of Graph(s)	Data Points
Bk 1-1	Horizontal Bar Graph + Pie Chart	10
Bk 1-3	Vertical Bar Graph + Line Graph	24
Bk 3-1	Vertical Bar Graph + Line Graph	21
Bk 3-2	Horizontal Bar Graph	24
Bk 3-3	3 Vertical Bar Graphs	12
Bk 3-4	Line Graph	14
Bk 4-1	Table	7
Bk 4-2	Line Graph + Pie Chart	22
Bk 4-3	Horizontal Bar Graph	10
Bk 4-4	Line Graph + Horizontal Bar Graph	15
Bk 5-1	Line Graph	18
Bk 5-2	2 Vertical Bar Graphs	15
Bk 5-4	Table	18
Bk 6-1	Line Graph + Table	39
Bk 6-2	Table	18
Bk 6-4	2 Vertical Bar Graphs	16
Bk 7-1	Table	15
Bk 7-2	Line Graph	24
Bk 7-3	Vertical Bar Graph	10
Bk 7-4	4 Pie Charts	18

**4th International Conference on
New Trends in Teaching and Education**

18-20 February 2022　　　　　　Milan, Italy

NEW TRENDS
IN TEACHING
AND EDUCATION

Bk 8-1	Pie Chart + Table	16
Bk 8-2	3 Pie Charts	15
Bk 8-4	Line Graph	32
Bk 9-2	Vertical Bar Graph	24
Bk 9-3	4 Pie Charts	12
Bk 9-4	Line Graph	66
Bk 10-1	2 Pie Charts	12
Bk 10-2	2 Tables	20
Bk 10-3	2 Vertical Bar Graphs	8
Bk 11-1	6 Pie Charts	18
Bk 11-2	2 Pie Charts	12
Bk 11-3	Line Graph	20
Bk 11-4	Table + 2 Pie Charts	12
Bk 13-2	Vertical Bar Graph	18
Bk 13-3	Horizontal Bar Graph	20

The above table was then revised to include only prompts that had 16 or fewer data points:

Table 2: Cambridge IELTS Exam writing prompt with 16 or less data points

Book + Test	Type of Graph(s)	Data Points
Bk 1-1	Horizontal Bar Graph + Pie Chart	10
Bk 3-3	3 Vertical Bar Graphs	12
Bk 3-4	Line Graph	14
Bk 4-1	Table	7
Bk 4-3	Horizontal Bar Graph	10
Bk 4-4	Line Graph + Horizontal Bar Graph	15
Bk 5-2	2 Vertical Bar Graphs	15
Bk 6-4	2 Vertical Bar Graphs	16
Bk 7-1	Table	15
Bk 7-3	Vertical Bar Graph	10
Bk 8-1	Pie Chart + Table	16
Bk 8-2	3 Pie Charts	15
Bk 9-3	4 Pie Charts	12
Bk 10-1	2 Pie Charts	12
Bk 10-3	2 Vertical Bar Graphs	8

4th International Conference on
New Trends in Teaching and Education

18-20 February 2022   Milan, Italy

NEW TRENDS
IN TEACHING
AND EDUCATION

| Bk 11-2 | 2 Pie Charts | 12 |
| Bk 11-4 | Table + 2 Pie Charts | 12 |

A total of 17 prompts were found to match the criteria. This represents 49% of all prompts. The above table was then revised once again to include only prompts that had a *single* graph (regardless of type) for analysis.

Table 3: Cambridge IELTS Exam writing prompt with 16 or less data points and one graph

Book + Test	Type of Graph(s)	Data Points
Bk 3-4	Line Graph	14
Bk 4-1	Table	7
Bk 4-3	Horizontal Bar Graph	10
Bk 7-1	Table	15
Bk 7-3	Vertical Bar Graph	10

A total of 5 prompts remained at the end of the analysis. This represents 14% of all the prompts. This is what constitutes the number of 'simple' prompts.

In terms of graph types and representation, the following data were found:

Table 4: Cambridge IELTS Exam writing prompt graph type appearances

Type of Graph	Number of Appearances
Bar Graph (vertical and horizontal)	14
Line Graph	11
Pie Chart	9
Table	8

From the above table, it is clear to see that the most frequent graph found on the Task 1 writing exam prompt is the bar graph. The line graph is a close second with near equal (but lower) representation of the pie chart and table.

4. Discussion

The results are troubling from the perspective of the test-taker. They indicate that depending on which exam is sat, a different level of difficulty is presented by the IELTS organization. The findings indicate that only 14% of the past prompts can truly be designated as 'simple'. The students that receive these types of prompts according to research (O'Loughlin & Wigglesworth, 2003; Yu et al., 2007) may do better on the lexical component of the writing

4th International Conference on
New Trends in Teaching and Education

18-20 February 2022   Milan, Italy

NEW TRENDS
IN TEACHING
AND EDUCATION

task. Add to this the research that indicates familiarity with graph types (Freedman & Smith, 1996; Pinker, 1990; Shah & Shellhammer, 1999) and subject matter of the graph (Shah & Hoeffner, 2002) also affect production, and you have varied levels of performances by test-takers. In terms of graph type familiarity, a survey conducted by Freimuth (2016) revealed that Emirati students at a preparatory program in Abu Dhabi felt the pie chart to be the easiest to discern. For that particular group, prompts featuring bar graphs, line graphs, or tables may not yield their best performance. To sum up, all of these different aspects may, in fact, affect the validity and the reliability of the IELTS exam.

5. Conclusion

The findings of this study suggest that the IELTS test-taker may have a different experience in the academic IELTS Task 1 graph writing prompt every time they write it. Furthermore, the argument can be made that graphical literacy is a complex cognitive skill unrelated to the written ability of a test-taker. Rather, it falls under the category of mathematical literacy (Ojose, 2011; OECD, 2003). The use of mathematical skills in the production of written discourse may not, then, be the best way to test written English literacy – something the IELTS organization might want to re-consider.

References

Freedman, E.G., and Smith, L.D. (1996). The role of data and theory in covariation assessment: Implications for the theory-ladenness of observation. *Journal of Mind and Behaviour,* vol. 17, pp. 321-343.

Freimuth, H. (2016). An examination of cultural bias in IELTS Task 1 non-process writing prompts: A UAE perspective. *Learning and Teaching in Higher Education: Gulf Perspectives*, vol. 13, no. 1. DOI: http://dx.doi.org/10.18538/lthe.v13.n1.221 2

OECD (2003). Mathematical literacy. [Online]. Retrieved January 28, 2022 from https://www.oecd.org/education/school/programmeforinternationalstudentassessmentpisa/33707192.pdf

Ojose, B. (2011). Mathematics literacy: Are we able to put the mathematics we learn into everday use? *Journal of Mathematics Education*, vol. 4, no. 1, pp 89-100.

O'Loughlin, K., & Wigglesworth, G. (2003). Task design in IELTS Academic Writing Task 1: The effect of quantity and manner of presentation of information on candidate writing. *IELTS Research Reports*, vol. 4, pp. 89-130.

Pinker, S. (1990). A theory of graph comprehension. In Freedle, R. (ed.), Artificial Intelligence and the Future of Testing, Erlbaum: Hillside NJ, pp. 73-126.

Shah, P., and Shellhammer, D. (1999). The Role of Domain Knowledge and Graph Reading Skills in Graph Comprehension. Paper presented at 1999 Meeting at the Society for Applied Research in Memory and Cognition, Boulder, CO.

Shah, P., & Hoeffner, J. (2002). Review of graph comprehension research: Implications for instruction. *Educational Psychology Review*, vol. 14, no. 1, pp. 47–69.

Yu, G., Rea-Dickins, P., and Kiely, R. (2012) The cognitive processes of taking IELTS Academic Writing Task 1. *IELTS Research Reports*, vol. 6, no. 11, pp. 1-77.