Automatic Monitoring of Quick-Types: A tool to Visualise Progress and Detect Cheating

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ABSTRACT

Quick-writes are a useful activity for increasing students' writing fluency. For those who need to take typed exams such as the TOEFL iBT, or use computers in the future for other tasks, a useful variation on this is the quick-type. However, when students are producing hundreds of pieces of writing on a variety of topics each week, it becomes difficult to monitor progress and detect cheating. This paper describes an open-source, cross-platform tool (created initially in response to student self-plagiarism) which analyses quick-types submitted by students via a Google Form and produces two reports: an easily interpreted visual overview of progress for students, and a summary report for teachers which flags possible problems for attention.

INTRODUCTION

Rationale for using quick-types

One way to improve students' writing fluency is a quick-write: writing as much as possible on a familiar topic in a fixed time (Nation & Macalister, 2010, p. 93). In 2013, the author started using a typed version (a "quick-type") instead, initially to help students in TOEFL iBT classes increase their writing score. This was then expanded to all classes: partly because the ability to type at a reasonable speed is useful for many other tasks, and partly because some beneficial side effects emerged. Scribbling a half-hearted quick-write just before the bell rang was no longer an option, which improved quality and encouraged better time management for some. Also, time spent commenting on formatting issues in essay drafts noticeably decreased when students had received some informal in-class feedback on the presentation of earlier quick-types.

Issues with self-plagiarism in quick-types

One problem with quick-types is that they can be easily copy-pasted. In 2014, multiple self-plagiarized quick-types were found in two students' folders at the end of term. The cause seemed to be poor time management: falling behind, then taking short-cuts to catch up while under pressure from end-of-term projects. In Teeter (2015, p. 104), Japanese students sympathetic towards a famous plagiarism case cited "lack of time, pressure to produce results immediately, and lack of enforcement of academic penal codes." Students need to learn both that enforcement is to be expected, and that help (e.g. time management training) is available.

The end of term is too late to help, so issues need to be identified when they happen - preferably earlier, when students *start* to fall behind. However, assuming an

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average 25 students per class and a part-time schedule of 15 classes, a teacher could be handling up to 6000 quick-types per term. Any student willing to self-plagiarize would also be willing to fake a self-monitoring chart, and in-class checks only work if students have no choice of topic and are never absent. As such, this article describes a free, open-source, cross-platform software tool designed to help detect issues as they emerge.

METHOD

Step 1: Setting up the form

The first step is to make a Google Form so students can submit quick-types online. These are easy to create, and many clear tutorials are available. The form described also collects names, numbers, and titles. For a live example, see http://alba-english.com. Links or embedded forms can then be emailed or posted to a course page.

Step 2: Processing data

Essentially, a short chunk from each text is saved and checked against other submissions. For details, please review the source code comments and development history on GitHub (https://github.com/malcprentice/Text-Tools). The teacher report (Figure 1) flags plagiarism, self-plagiarism, and any shortfall in number of submissions or length compared to class averages. A parallel tool (article forthcoming) analyses vocabulary homework.

FIGURE 1
Section from teacher report showing student with duplicate quick-type

● Duplicate Quickwrite: 04/07/2015 13:40:49 Father, mother, younger sister and young
● Duplicate Quickwrite: 11/06/2015 13:45:08 Father, mother, younger sister and young
Number of Reports: 23
Vocab Sets Submitted: 23 (opponent, prominent, fiber, migrate, infer, virtually, license, decision, exploit, diversity, reference, salary, incorporate, persist, reluctance, upper, liberal, determine, deduce, mechanism, bias, obviously, missle,)
Vocab length: 231
QWs: 23 (QW8 , QW18 , QW15 , QW23 , QW22 , QW13 , QW16 , QW3 , QW21 , QW14 , QW6 , QW10 , QW17 , QW24 , QW25 , QW7 , QW12 , QW4 , QW20 , QW11 , QW19 , QW5 , QW9 ,)
QW length: 3903
QW extra: 1 (The website I mostly;)
QW extra length: 183

Figures 2 and 3 show examples of the student progress report dashboard. These are loosely based on the "Signals" project at Purdue University (Arnold & Pistilli, 2012), although this tool is much simpler than most such Learner Analytic systems. The report also contains class news, an automatic vocabulary test, and a summary of submitted work. Counts use the median, as the mean is too easily skewed.

FIGURE 2
**Dashboard for a high-performing student (week 6)**

Reports submitted	13	🟢	Most students currently have 13
Total QW length:	2190 (+ 1650 in extra QW)	🟢	Keep going!
Extra QW:	12	🟢	Your extra points so far: 4
Vocab count:	224	🟢	Your extra points so far: 2

FIGURE 3
Dashboard for a low-performing student (week 6)

Reports submitted	6	🔴	Most students currently have 13
Total QW length:	545	🔴	Keep going! Don't forget typing practice! To catch up to the class, aim for 1728 by report 13
Extra QW:	0	🟡	Your extra points so far: 0
Vocab count:	66	🔴	This is report 6. You should have AT LEAST 90 words.

The report count equals the quick-type count, as one is required for each submission. The colour thresholds take into account extra quick-types, so slow writers can reach green by doing additional practice. Colours are normalised to submission count, so students behind on reports can still be green on relative length. Targets ("Aim for 1728 by report 13!") are hidden for students above the median, as a goal below current attainment is unlikely to motivate. The target then becomes scoring points for extra quick-types (Figure 4), which count towards participation (15% of overall grade). No ranking or bonus points for length are currently given, but could be added.

FIGURE 4
Current student view of extra points

Points
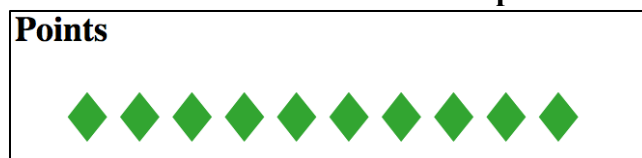
Step 3: Sharing

The third step is to publish the student reports. The format has been kept deliberately simple (JavaScript only) to allow various zero-cost, user-friendly sharing options. Several options were tested in class, of which the easiest for teachers to set up and for students to access was a Dropbox shared folder ("How do I share," n.d.). All class members can access the folder, so the system generates pseudonyms to allow anonymity.

Step 4: Use in class

Students should be encouraged to check their reports regularly, by occasionally reviewing them in class. Teachers can deal with issues by giving feedback to the class in general, giving targeted feedback using pseudonyms, or having a quiet word with individuals. More formal meetings/training are also an option.

RESULTS

Strengths

The system caught around 4-5 duplicates per class early in term. Some seemed accidental and were covered by group feedback ("Check your list before submitting", "Do not click submit twice"). Others suggested possible cheating and students were given individual feedback emphasizing that copying was easily detected and not acceptable. The rate of detection declined to around one every two weeks by mid-term. In terms of accuracy, a manual check of a sample of 100 entries by 10 students chosen from three classes (around 6% of all quick-types submitted at the time) found no false negatives - no duplicates were found that the program had missed.

Weaknesses

There were a handful of false positives (quick-types detected as duplicates which were in fact not), mostly when TOEFL iBT topics were used as prompts. Formulaic sequences (e.g. "The second reason why X should Y is...") used on specific topics will innocently produce occasional identical clauses, so there is no easy technical solution. The word "CHECKED" was manually added to these phrases to simply remove them from results.

CONCLUSION

In conclusion, the tool described has made tracking student progress much easier. Cheating and accidental duplication is detected, students who fall behind are flagged early for intervention, and students can easily judge their own progress compared to the class. However, the tool is still in development and is not yet user-friendly: initial set-up is difficult and there is no visual interface. Readers are invited to contact the author if they have suggestions or would like to assist in testing.

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