

GENRE ANNOTATION

In order to investigate how NLP writing analytics might vary by genre, we annotated authentic coursework writing data collected from participating university students during Years 2 and 3 of the study (N=1,058) according to an assignment taxonomy developed iteratively in conjunction with one of our advisory board members, Dr. Norbert Elliot, who has an expertise in writing studies.

Developing and learning the assignment taxonomy involved an iterative process of annotation and protocol adjustment based on relevant literature [1] [2] and input from Dr. Elliot. As an initial step in preparation for the genre annotation, the research assistants compiled all of the assignment descriptions shared by university faculty whose students were participating in the study. These materials were then shared with Dr. Elliot, who proposed an initial assignment classification taxonomy involving an analysis of *aim* and *audience*. Minor changes were made to the protocol following a rapid annotator calibration task in which the research assistants annotated and discussed a subset of assignment descriptions. The final taxonomy for annotation included three categories (referred to as “bins”) used to broadly classify the dataset. A description of each bin is provided below.

Bin 1 contained writing assignments with the aim of *persuasion*. Given the transactional nature of persuasive writing, these assignments were written primarily for external audiences – either a named hypothetical audience outside of the classroom (e.g., a prospective employer, a politician) or (implicitly or explicitly) for the instructor. These assignments contain substantial argumentative language, with the explicit aim of persuading the reader.

Bin 2 was used to categorize writing assignments ranging from *informative* writing to *exploratory* writing (i.e., analysis without explicitly stated argument). Like Bin 1, these compositions were written primarily for an external audience “outside of the classroom” or for the instructor. Examples include expository essays, literary analyses, literature reviews, and compare/contrast essays. The key features of these essays are that (1) they do *not* involve explicit persuasion, and (2) they are written for an external audience (i.e. an audience other than the self).

Bin 3 was used to classify writing assignments with a *reflective* aim. These writing submissions targeted the *self* as the primary audience (though in virtually all cases, the *instructor* served as an inferred, secondary audience). Examples from these data included memoirs, self-reflection letters, and personal narratives. The reflective nature these assignments is signaled by characteristics such as a high frequency of personal pronouns.

In addition to sorting assignments into the three bins, we also captured other aspects of writing submissions that could be used as additional filters during analysis, including:

- External source requirement: If the original assignment description was available, annotators indicated whether external sources were required.
- External source use: Regardless of explicit source requirements, annotators indicated whether students incorporated outside sources in their writing submissions. For the purpose of genre annotation, annotators treated both explicit references and citations as evidence of use of outside sources.
- Assignment version: If multiple versions of an assignment were submitted, annotators labeled the versions as “Draft”, “Final”, or “Possible Duplicate”. If only one version of an assignment was submitted, this was automatically labeled as “Final”. If the same student submitted identical versions of an assignment, each was flagged as a “Possible Duplicate”.

Prior to coding the full data set, three research assistants calibrated by annotating a subset of writing assignment descriptions (N=16) provided by university faculty whose students participated in the study. Annotators 1 and 2 agreed on 94% (15/16) classifications, Annotators 1 and 3 agreed on 81% (13/16) classification, and Annotators 2 and 3 agreed on 75% (12/16) classifications. All annotators assigned the same “source use” tags to all 16 assignment descriptions. Disagreements were resolved during an adjudication meeting among the three annotators and a follow-up conference call with Dr. Elliot, who provided further heuristics to support annotation decisions. For all but two disagreements, annotators were able to arrive at unanimous assignment classification decisions after a brief discussion of the protocol and assignment descriptions. Dr. Elliot adjudicated the two outstanding disagreements, and offered further insight into how to conceptualize and detect writing assignments in which the “self” serves as the primary audience.

Once training was complete, the three research assistants proceeded to annotate their own data sets. Data collected during year 2 (Fall 2017 and Spring 2018 semesters) were divided among annotators by institution, with each annotator coding the data from two universities. Data collected during year 3 was divided equally among annotators, since all Year 3 data (from the Fall 2018 semester) was sourced from the same university. In total, annotator 1 coded 27% of the data (N=290), annotator 2 coded 29% of the data (N=305), and annotator 3 coded 44% of the data (N=463). Annotators reconvened periodically to discuss essays that were difficult to classify within their own data sets, and to reaffirm their understanding of the protocol.

REFERENCES

- [1] D. Melzer. *Assignments across the Curriculum: A National Study of College Writing*. Logan, UT: Utah State University Press, 2014.
- [2] W. Ong, “The Writer’s Audience is Always a Fiction,” *PMLA*, vol. 90, no. 1. pp. 9-21,

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