

PROBLEMS

Students write in environments permeated with digital technologies. Such environments are economic because of the way digital technologies substitute capital (computers and computer programs) for labor (the various tasks we used to perform that are increasingly performed for us by computers and computer programs), but also partly because writing itself is a technology, and all technologies are economic in that they replace labor with capital.

I here examine how value is appropriated in the inputs and outputs of the classroom economic cycle of production, distribution, use, and reproduction. Those inputs and outputs include digital capital and digital labor, which can be tracked and accounted for in ways that reflect their diverse forms of economic value.

The IRB-approved 2015–2016 (n=389) study I describe here offers an account of how I used a suite of digital tools to track and account for student labor and capital inputs and outputs to the economy of the digital writing classroom, including Eli Review (elireview.com), 750words (750words.com), and Toggl (toggl.com). 750words helps students to track their own writerly productivity in relation to others. Toggl is an activity timer that students use to monitor and record the time they spend on various tasks.

Such self-monitoring and reporting operates in the tradition of time-use studies both within and beyond composition, and has produced empirical evidence offering initial possible answers to the question: how does effort in writing affect student performance? The question of effort is a question about labor. Digital labor aggregates into digital capital. Writing teachers and writing students use digital capital to help them produce better writing in their digital environments. The study's use of digital technologies to capture how that happens suggests some problems that arise for composition in considering best practices in digital writing instruction. The questions I ask today have to do with composing labor, digital technologies as capital, and the place of time, effort, and reflection in facilitating learning.

DEFINITIONS

Stephen J. Kline defines technology as

- hardware or artifact (e.g., laptops as material objects);
- socio-technical system of manufacture (e.g., laptops' fabrication and supply chains);
- knowledge, technique, know-how, or methodology (e.g., laptop familiarity, programming, and technical manuals); and
- socio-technical system of use (e.g., laptop culture and governance).

Those diverse definitions of technology operate in a diverse economic landscape. Feminist economics, which argues against the contemporary conception of a monolithic market-based capitalist economic landscape and argues instead for a diversity of forms of economic labor, enterprise, and transaction, to include not just market activity but slave, gift, independent, feudal, and other forms, offers us an expanded sense of the forms of value operating in writing studies beyond simple market value. I use the Marxist feminist perspective of J. K. Gibson-

Graham to pursue a broader understanding of the diverse valuations of the contributions of human actors to the production of writing as well as the diverse valuations of the contributions of technologies, activities, and institutions to the production of writing. Writing is a technology in all four of Kline's senses, and technology's defining function is transforming labor into capital, and so writing operates as economic but in an economic sense that is broader than just the market: I am concerned not simply with commodification for market-based purposes.

Feminist economist Duncan Ironmonger uses time-use diaries to complicate the traditional and reductive binary of "work" as economic activity versus "leisure" as non-economic activity by using the third-person criterion that "If a third person could be paid to do the unpaid activity of a household member, then it is 'work'; so clearly cooking, child care, laundry, cleaning and gardening are all work. . . . On the other hand, it would not be sensible to hire someone to watch a movie, play tennis, read a book, or eat a meal for you" (40). Ironmonger notes that "The time spent in education by attending classes, studying and doing homework could quite properly be regarded as a productive investment in skills" and points out that education is not something that "you could usefully pay someone to do for you," but also that it is "clearly not leisure" (42). Where does the work of writing and learning fit into Ironmonger's scheme?

Economists are not the only ones using time-use diaries. Bill Hart-Davidson notes one "by-product of the phenomenon of all facets of the writing process—from composing to reading—taking place in digital environments is that writing researchers now have access to very rich, time-indexed sequences of events" (168). Time-use studies deployed in the context of digital technologies allow us to more fully account for the value of writing. In fact, Hart-Davidson continues, "If we consider 'moments of contact' with a text to be the subjects of a time-indexed study of the writing process, for example, we could construct fascinating accounts of how [a text] came to be, how it circulated during the drafting, review, and revision stages. . . , and how it will travel to the screens and desktops of others, perhaps becoming part of other texts" (169).

Those accustomed to market-based understandings may caution that such time-use monitoring lends itself to surveillance and capitalist exploitation, as with Karl Marx's observation that "During the 15 hours of the factory day, capital dragged in the worker now for 30 minutes, now for an hour, and then pushed him out again, to drag him into the factory and thrust him out afresh, hounding him hither and thither, in scattered shreds of time, without ever letting go until the full 10 hours of work was done." However, a diverse economy allows us to see situations in which workers can appropriate the value of their own labor rather than simply being exploited by the capitalist. As Danielle DeVoss and Jim Porter point out, "Economics has to do with money, but not only money. It has to do more broadly with value, exchange, and capital; with production and consumption of goods; with giving, receiving, and sharing" (194), or, in the definition I extend from Marx, the production, circulation, use, and re-production via labor and capital of artifacts, processes, and systems of value. The value of written work can be appropriated by the writer, and the value of learning work by the learner.

METHODS

My study asked students to use Eli Review to track and account for how they value one another's feedback and emulate one another's approaches to digital writing assignments. 750words helped students to track their own writerly productivity in relation to others. The third

component of the software suite was the activity timer Toggl (toggl.com), which students used to easily monitor and record the time they spent on tasks.

The data I present here is from an upper-division course in WSU's Digital Technology and Culture major called Information Structures, which "examines how the social, cultural, legal, economic, and political roles of information and data structures relate to research with and on electronic and digital sources and subjects. More specifically, it asks you to examine how research functions in the information age after Edward Snowden: not only the searches and research that you do, but the research that is done to and on you. That examination investigates possible parallels among academic research, market research, security research, and government surveillance." The course asked them to turn in weekly writing assignments, due Mondays, that we would give feedback on in class, compose revision plans for Wednesday, and turn in revised writing on Fridays. The course also required students to track informal writing, drafting, and note-taking in 750 words, and to track the time they spent on any projects they were interested in using Toggl. Finally, they wrote a start-of-semester reflection on their expectations that they revisited in reporting digital data about their work habits in an end-of-semester reflection.

My research questions:

- Does average word count given go up by date over semester, and for whom? I tracked that against performance on the final project, since weekly writings were intended to use feedback for revision and incorporation into final projects.
- Does ratio of word count received to word count given approach 1, and for whom?
- Does ratio of average word count in criteria-based comments approximate average word count in contextual comments?
- Do any of these metrics correspond to words produced in 750 words or to time tracked in Toggl or Blackboard Learn? In other words, do metrics of time on task and words produced correlate at all to improved performance over the course of a semester?

I received considerable data-wrangling assistance from my wife, data analyst Lauralea Edwards, who created a table using student IDs as manifested in writer IDs and commenter IDs, with word count received as writer and given as reviewer using Excel's VLOOKUP function, cross-indexed to date of feedback. Lauralea also created a pivot table using review date and average comment word count index to writer ID. We then created a ratio of words given to words received and graphed those ratios over time against final project grades. All of that data was represented visually in Tableau. Finally, Lauralea calculated a very weak correlation on words given and words received in contextual comments.

CONCLUSIONS

My early findings are not determinative, and require more research. In Toggl, students tracked a variety of activities that were important to them. Blackboard Learn's robust paradata time-tracking capabilities found what one might expect: highly motivated students spent more time in Blackboard. 750 words showed me that I needed to define the assignment more carefully and make a better case for its value: while it is emotionally satisfying to see one's progress in reaching a daily goal and seeing an unbroken string of goals met, almost all students' regular writing declined in word count over the semester. Part of the problem was that 750 words and Eli Review were both used as sites of composing, and duplicated some of each others' work. In Eli

Review, we noted that receiving few words is weakly correlated to writing few words, or in other words, the ratio tends to be around 1 when word counts in comments given were low. We also found much more variability in terms of the relation of word count to performance on final projects for the middle band of performers.

If we're helping writers become better at the complex and diverse activities and processes of writing, rather than producing better artifacts of writing, then the most important things to attend to are the processes rather than looking at product-oriented measures of evaluation. As Kathleen Yancey has demonstrated, reflection on writing processes promotes knowledge transfer.

The data I've just shown when shared with students generated considerable student enthusiasm, but it's also easily appropriated as so-called "data exhaust" of student labor. As Jessica Reyman has shown, "If user data is posited as a neutral by-product of a technological system, it becomes impossible for users to claim ownership or control of it. . . Data becomes, at its inception, free to be appropriated and controlled by those responsible for the technology and not by users" (527). Such circumstance would seem to be a different form of exploitation from that critiqued by Marx, but just as pernicious when the value of the work of writerly production performed by students gets appropriated without their consent. Bruce Schneier has observed that "in the US today personal information about you is not your property; it's owned by the collector" (Schneier 195). Lisa Dush has observed the beginnings of a similar tendency for writing on digital networks, which she notes "are too vast, too dispersed, and too diverse to presume to know, especially in advance of a composing task: they favor adaptation over prediction. Content creators iteratively assess audience, using analytics tools" (177), resulting in forms of writing that are conditional, commodified, networked, and computable.

If commodifying student data is problematic, and if students produce data through their own labor, then I seek what Kim Christen calls "the possibilities of alternative access regimes that are neither oppressive nor controlling, but based on divergent social and ethical systems and ways of imagining information and its movement between various groups of people" (2878) in her Mukurtu indigenous CMS that will "allow any community to define their own access parameters and protocols for sharing" (2888). Christen's project is one of data sovereignty, and I would call for the same data sovereignty for students in their use of digital data analytics: in other words, I'm calling for students' right to their own data. I would welcome seeing the developers of digital writing tools incorporating the ability for students to easily download, own, and manipulate the user data and analytics generated by their labor.

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