



Writing for Algorithmic Audiences

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Abstract

This article examines the role that algorithms may play as audiences when teaching writing on the World Wide Web. It argues that introducing the provisional term “algorithmic audience” reflects three prior conceptions of audience, including concrete situations, discourse community, and participatory audiences. It then offers a three-part classroom approach: identifying the biases of those who design algorithms, managing metadata, and anticipating audience response. I argue that the term “algorithmic audience” may help students to write for audiences beyond the instructor from within the confines of the classroom.

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On the World Wide Web, writers have more work than simply writing. In “When Writing Becomes Content,” Lisa Dush notes that writers act as content producers and possess a wide variety of responsibilities (Dush, 2015). Writers, as content producers, contend with marketing, advertising, and programming. This means they take on multiple roles: circulating content on various social media platforms, monitoring website analytics, curating metadata, managing comments, and recirculating older writing to new venues. As writers perform these activities, moving content throughout the web, who or what are these writers producing content for? What role does the term *audience* play for these writers? In this article, I address an overlooked aspect of these two questions by suggesting that algorithms may form a critical component of a writer’s audience. I argue that teaching students to write for internet contexts should involve considering the role that algorithms may play as audiences. In doing so, I reaffirm the relevance of the term audience for web-writers while introducing *algorithmic audience* as a provisional concept for teaching web-writing.

In general terms, an algorithm is a set of instructions for performing a task or solving a problem. A cooking recipe, for instance, is an example of an everyday algorithm. In the context of this article, algorithms as input/output functions process a text and yield a result. On the World Wide Web, algorithms sort, distribute, and organize websites, writing, and content. In doing so, *algorithms* evaluate, structure, and influence writing and other discursive information. To write for algorithmic audiences means to write for algorithmic procedures, which Kevin A. Brock (2014) describes as “fundamentally involv[ing] a set of operations meant to complete a task. These operations demand the computation of one or more variables for the operations to be successfully examined, undertaken, and completed” (1). For example, Google uses algorithms to structure its search results. Social media companies use algorithms to structure what users see in their newsfeeds. Algorithms frequently order and circulate web-writing, such as what stories are “trending” on various social media platforms. Alternatively, the online retail giant Amazon uses an algorithm to determine what products to show customers as they peruse the website. An individual who writes product descriptions on Amazon

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may conceive of the company's algorithm as an audience. This writer conceives of the various keywords that potential customers would input and the way that Amazon structures its search results. The algorithm is part of this writer's audience. Writers in these contexts are able to design and situate their content in ways that an algorithm can pick up and prioritize.

As sets of instructions and procedures, algorithms are, at their most basic level, a text written by individuals or teams of designers, coders, or content producers. From this perspective, writing for algorithmic audiences means to write not only for the algorithm's input/output functions *but also* for the structure and sociality that goes into that function. If we are to teach students to write and produce content for the Web effectively, then we may consider algorithms as an audience while understanding that this audience can change depending on a host of factors, including nonhuman factors (e.g., changes in code, algorithmic variables, changes in interfaces, and software advances) and human factors (e.g., who writes the code and algorithms, designs interfaces, and decides on software updates and when to implement these updates).

This article is divided into four parts. I first describe algorithmic audience as a provisional attempt to capture the tension between human and nonhuman factors. I offer two examples of writing for algorithmic audiences and then argue for the term's pedagogical value. Second, I lay out how this term is applicable to composition's broader conversations about audience. Third, I describe a classroom approach for integrating writing for algorithmic audiences. Lastly, I identify how algorithmic audiences can move our teaching beyond the platitude of "consider your audience."

1. An Extended Description of Algorithmic Audience

In using the term *algorithmic audience*, I aim to capture the tension between human and nonhuman factors when writing and producing content for the Web. On the one hand, algorithms have no agency of their own because someone or something else authors them. In short, algorithms have no intentions. An algorithm may update the results of its instructions and procedures (through what computer scientists label algorithmic efficiency), but it is ultimately a set of procedures—an idea that digital rhetoricians such [Jim Brown \(2015\)](#) and [Steve Holmes \(2014\)](#) have come to label procedural rhetoric via Ian Bogost's work—that yields results in predictable ways.¹ In spite of their seemingly autonomous response, these results are authored and require people to write the code that produces them. In this sense, to write for algorithmic audiences means to consider the people who design and program an algorithm.

On the other hand, algorithms are objects distinct from their authors. Because algorithms are fundamentally a set of operations, they can escape the intentions of those who authored them and yield unintended results. They may even make decisions without the consent of those who write them. They have something akin to agency in the sense of having an effect in the world, but without any intention or responsibility for those effects (in both helpful and deleterious ways). That effect comes from algorithms' programmed purpose, production of results.

Let me offer two concrete examples of writing for algorithmic audiences to highlight the human and nonhuman elements of the term. The first involves Facebook's algorithmically driven timeline. The second is publishing videos to YouTube. On platforms such as these, individual contributions are just one among millions, if not billions. Writers need to contend with this obstacle to reach their audience. Thus, when teaching students to write for environments on the Web, we often draw on concepts of distribution and circulation, such as spreading writing within and across social media platforms. Students might write blogs or for hobby websites but they also need to circulate their messages on social media sites, e.g., Facebook, Twitter, Instagram, and Snapchat, in order to build, find, and create a readership.

I choose Facebook because it is a useful starting point for students to circulate their content and due to the site's ubiquity. While many websites have diverse algorithms that prioritize certain characteristics of content, the layout of Facebook's timeline provides an emblematic moment that captures the tension I previously described. Recent posts can be displayed in Facebook's newsfeed (RSS feed), but the algorithm defaults the display to "popular," which emphasizes recent *interactions* with a post. If a student writes a post that receives numerous "likes" on Facebook, for instance, that post will be prioritized in the newsfeed of that student's friends—even if it is not the most recent. The student might also comment on an older photograph with many "likes" in order to push that post back into the newsfeed of their friends. By attending to content in this way, the student demonstrates an awareness of Facebook's algorithm as part of their perceived audience. Teaching this type of awareness and habit means that in addition to teaching students to write

¹ Other authors have focused implicitly on ways that algorithms yield unpredictable results, including [Casey Boyle \(2015\)](#).

The image shows a screenshot of a video upload interface. It consists of three vertically stacked rectangular input boxes. The top box is labeled 'Title'. The middle box is labeled 'Description' and has a small icon in the bottom right corner. The bottom box is labeled 'Tags (e.g., albert einstein, flying pig, mashup)'.

Fig. 1. Basic video labeling when uploading a YouTube video.

for a particular set of readers, we are also teaching for a set of procedures that highlight content for readers. In this example, the student has demonstrated writing for algorithmic audiences by identifying a particular set of algorithmic procedures (i.e., manipulating Facebook’s interface) that will enable their writing to be read more widely (i.e., by other users).

My second example of algorithmic audiences, publishing videos to the platform YouTube, extends content production further, into considerations for metadata. I choose YouTube because it (a) has been the focus of previous composition scholarship (Dilger, 2010; Jackson & Wallin, 2009; Skinnell, 2010), (b) is an accessible way for students to engage public audiences beyond the bounds of a classroom, and (c) is a common platform that writing instructors have encountered in a pedagogical context, whether producing or consuming videos. Let’s posit that students decide to start a YouTube channel for a classroom assignment about public multimodal composing, perhaps documenting campus protests. They receive permissions to post the videos, record the videos, and upload them to YouTube after careful hours of editing. Who is going to watch them? How do they “consider their audience”?

Students can “consider their audience” in two ways. On the one hand, students may consider the various people interested in their protest videos, e.g., other students, faculty, community members, and the media. On the other hand, they can focus on ways to increase the circulation of their videos by thinking through how users *find* their videos. That is, they can think of their audience as *the processes and procedures by which YouTube prioritizes their videos*. This latter perspective asks students to think of YouTube’s algorithms, i.e., its processes and procedures, as their audience. Because students cannot guarantee any particular groups of users will view their videos within the context of a semester’s timeframe, thinking about an algorithm as an audience allows them to take action within the confines of a classroom while still engaging in public rhetoric.

To do so, students in this example ought to label their videos with certain strategic keywords in the title, description, and tags (Fig. 1).

Known as *metadata*, this type of information asks students to consider how their readers would find their content and what kinds of steps they need to take to increase their videos’ circulation. While other compositionists have touched on metadata for the purposes of surveillance (González & DeVoss, 2016) and networks of “women’s pedagogical and administrative contributions” (Grabau, 2013, p. 173), connecting the act of writing metadata as a way of reaching viewers helps to frame the algorithm as an audience.

To elaborate on this connection, students might consider how to categorize their campus protest videos, add a location (even if it’s not accurate), enable or disable comments, or allow ratings (Fig. 2).

Students need to consider the menu (Fig. 2) in order to determine to how they might *receive attention* effectively (i.e., what kind of attention? how much attention?). In terms of attention, YouTube’s algorithm ranks certain channels higher for uploading videos with consistent content, meaning that students need to upload multiple videos over the course of time to garner more views and viewers. Likewise, videos that are watched in their entirety, rather than piecemeal, are ranked more highly; students need to produce quality videos from start to finish in order to increase circulation. More engagements with videos, such as comments, like, and shares, ranks videos higher in YouTube’s algorithm and enables more users to view students’ content. To write content on a YouTube channel involves considering YouTube’s algorithm as an audience. These examples show concrete ways that students could write for an algorithm as an audience.

Algorithmic audience, as a term then, is valuable for web-writing because it pairs human and nonhuman factors while retaining a *pedagogical* connection to writing and rhetoric. Through its inheritance of the rhetorical tradition, audience retains a core emphasis on how rhetors conceive of their listeners or readers. In the classroom, audience traditionally stresses how student writers perceive people as their readers. Using algorithmic audience emphasizes that

The screenshot displays the 'Advanced video labeling' interface for uploading a YouTube video. It is organized into two columns of settings:

- Comments:** Includes a checked 'Allow comments' checkbox, a 'Show' dropdown set to 'All', a 'Sort by' dropdown set to 'Top comments', and a checked 'Users can view ratings for this video' checkbox.
- License and rights ownership:** A dropdown menu currently set to 'Standard YouTube License'.
- Syndication:** Two radio button options: 'Everywhere' (selected) with the subtext 'Make this video available on all platforms', and 'Monetized platforms' with the subtext 'Make this video available only on monetized platforms'.
- Caption certification:** A dropdown menu with 'Select one' as the current selection.
- Category:** A dropdown menu set to 'People & Blogs'.
- Video location:** A text input field with a 'Search' button and a link to 'Learn more'.
- Video language:** A dropdown menu set to 'Select language'.
- Community contributions:** An unchecked checkbox for 'Allow viewers to contribute subtitles and closed captions'.
- Recording date:** A text input field with a 'Today' button.
- Video statistics:** A checked checkbox for 'Make video statistics on the watch page publicly visible'.

Fig. 2. Advanced video labeling when uploading a YouTube video.

people (e.g., teachers, student peers, friends) will still read web-writing and content, but other readers exist, including corporate search engines like Google and Bing as well as social media algorithms. Pairing algorithm with audience emphasizes a pedagogical orientation for writing on the World Wide Web.

2. Algorithmic Audience as an Extension of Audience Paradigms

This section situates the term *algorithmic audience* in composition and rhetoric scholarship in order to show how the term reflects our concerns with teaching audience. As a concept, audience has been a crucial component of the composition classroom because teaching audience awareness encourages students to step outside of their perspectives and develop a vision for their argument from the perspective of their readers. Writing for algorithmic audiences, i.e., writing for search engines, databases, and rich site summary (RSS) newsfeeds, reflects this perspective by asking students to write for a reading procedure outside of their own perspectives. This approach extends three theories of audience: (1) audience is an overdetermined term that can usefully be taught through concrete situations; (2) through what we call a discourse community, audiences can influence the writer by influencing the language of a text; and (3) participatory audiences play a role in the creation of writing and content.

First, writing for algorithmic audiences requires writing for specific or concrete algorithms. No approach is singularly correct when writing for algorithms. To write for Google's (PageRank), Facebook's (formerly EdgeRank), or Twitter's ("trending") algorithm means writing with different expectations, purposes, and discourses for each algorithm—and, of course, the biases of people who program and can change algorithms without warning. Writing for algorithmic audiences requires knowledge about specific algorithms *and* the context surrounding that algorithm—an idea reflecting the rich history of teaching audience.

Lisa Ede and Andrea Lunsford's canonical "Audience Addressed/Audience Invoked" (1984) advocates for such a specific context by moving *audience* beyond a static abstraction. As Ede and Lunsford write, "One way to conceive of 'audience,' then, is as an overdetermined or unusually rich concept, one which may perhaps be best specified through the analysis of precise, concrete situations" (1984, p. 168). To teach audience, whether as a construct of the writer or as a writer contending with actual readers, means to teach students how to negotiate the specificity of situations and deliberate on writing concrete particulars. The original address/invoke paradigm formulates audience as a balancing of the writers' perception of the concrete reality of their readers and the rhetorical role the writers' want their readers to adopt (address and invoke are both constructions of the writer).

Like the canonical address/invoke paradigm, writing for algorithmic audiences asks writers to interact with specific, concrete readers—or, more precisely, specific reading patterns and procedures. While the original address/invoke paradigm was inadequate for algorithmic audiences because it did not *involve* real readers, other scholars have updated the address/invoke paradigm, updates that enable it to have shared resonance and application to algorithms. In “Representing Audience,” (1996) Ede and Lunsford expand the paradigm by accounting for ideological and institutional power relations. Likewise, Robert G. Roth’s “The Evolving Audience” (1987) and Robert R. Johnson’s “Audience Involved” (1997) added real readers to the address/invoke paradigm because they did not see enough change in, or collaboration with, actual audiences. Roth employs “evolving” and Johnson uses “involved” to describe audiences who are no longer the construct of the writer but are concrete specific readers (or groups of readers).

Writing for algorithmic audiences reflects this updated, nuanced address/invoke paradigm by attending to the various perceived and real algorithms, along with power relations. For instance, writers can’t address or invoke Google’s PageRank in the abstract. Web-writers need to involve an algorithm in their writing processes, see how it evolves (Roth, 1987), and account for various institutional influences on the algorithm (Lunsford & Ede, 1996). They need to write, build, interact, and develop web-content in order to discover the ways PageRank detects that writing; they need to consult with (“involve”) the algorithm as an audience and revise it based on the results discovered.

The second way writing for algorithmic audiences can be viewed as extending composition’s conceptions of audience is that algorithms influence the language writers use to produce text, an idea echoed in the term discourse community. Discourse community is metaphor² for the way a community exerts influence over the way individuals conceptualize and express ideas. The metaphor has been helpful for describing particular groups of communities who have specialized ways of thinking, acting, being, and believing—or“(writing)-doing-being-valuing-believing combinations” (Gee 1990, p. 142). The influence of an algorithm parallels the influence of discourse community.

When writing for Google’s PageRank algorithm, for example, effective writers are met by expectations and demands of how that algorithm will “read” (process) their content and writing to order its results on Google’s homepage. Like a discourse community, PageRank does not *force* writers to produce content in certain ways. Rather, if a writer demonstrates PageRank’s values, then the writer will reap rewards—much like a writer illustrating the values within a discourse community. Because writers know that PageRank will value websites written in certain ways, they might consult Google’s *Search Engine Optimization Start Guide*³ (SEOSG), which lays out ways to write and design content so that PageRank will place their website’s content higher in its search results. The SEOSG, which is more explicit than a discourse community, provides a description of PageRank’s and, partly, Google’s values.

While I cannot touch on all of the values presented in SEOSG, I will briefly touch on the way PageRank can influence titles and writing habits. For titles, the SEOSG states that writers should (a) “accurately describe the page’s content,” (b) create unique title tags for each page, and (c) “use brief, but descriptive titles” (5). For general writing practices, the SEOSG urges writers to (a) “write easy-to-read text,” e.g., labeling images, writing without spelling and grammatical mistakes, (b) “stay organized around a topic,” (c) “create fresh, unique content,” and (d) “create content primarily for. . .users, not search engines” (15). According to the SEOSG, PageRank values accurate, unique, and brief titles as well as writing that is focused, not repetitive, and aimed at users not algorithms (there is a bit of irony here). Like a discourse community, PageRank actively shapes the rhetorical language and conventions as the writer produces content, designs the website, and writes individual webpages. And, as with a discourse community, a writer can choose to ignore PageRank’s values, perhaps discovering latent values which Google’s designers are unaware. Or the writer may choose to write for another algorithm—a different discourse community.

The third way the term *algorithmic audience* draws on and extends composition and rhetoric’s conception of audience is through the participatory role readers may play in the creation of writing and content. In addition to media critics like Henry Jenkins and Philip Napoli, Elizabeth M. Weiser, Brian M. Fehler, and Angela M. González’s *Engaging Audience: Writing in an Age of New Literacies* (2009) brings to light issues of interactivity between writer and audiences in the 21st century. In this edited collection, Ede and Lunsford update their canonical piece a second time with a short text, “Among the Audience,” (Lunsford and Ede, 2009) that asks the field to consider audience in light of

² Joseph Harris (1989) has critiqued the concept of discourse community as being “little more than a metaphor” (15) and Mary J. Reiff (1996) has argued James E. Porter’s (1992) use of discourse community in *Audience and Rhetoric*—one of the most extensive texts about discourse community in composition—problematically portrays members of a discourse community as being too “homogenous” and text-based (Reiff 1996, p. 109).

³ <http://static.googleusercontent.com/media/www.google.com/en/webmasters/docs/search-engine-optimization-starter-guide.pdf>.

readers' participatory role in interactive media, and the rest of the collection responds to this call. Algorithms add to the perspective of participatory audiences by incorporating audience response—i.e., comments, call-and-response writing, discussion forums, and “qualitative affordances” of social media platforms such as likes, shares, and retweets—into elements that writers might anticipate and predict (Tarsa, 2015, p. 22).

Algorithms do so by reorienting feedback from participatory audiences into results. They treat concatenations of readers', viewers', and listeners' feedback in predetermined systematic ways that organize feedback. The participatory response of readers consequently becomes a concern for writers contending with current and prospective audiences because that response could change the way algorithms process writers' texts. As an example, when Facebook's defunct EdgeRank algorithm picks up a writer's content, more readers may have the opportunity to read it; understanding the algorithm as a possible audience in this way is a crucial writerly habit. EdgeRank accounts for the ongoing reception of texts posted, reacted to, shared, and circulated on its site from composite audiences⁴ in the “ u_e ” of the following equation:

$$\sum u_e w_e d_e$$

(u_e = user affinity, w_e = weight of content, d_e = time decay or lapse)

To briefly explain this notation, user affinity measures interactions between users. If two users are in a relationship or tag each other as related, user affinity increases. User behaviors such as commenting, clicking, liking, sharing, or tagging a post will also yield higher user affinity. Weight of content (w_e) means that certain types of writing are more important than others (i.e., a photo with text is weighted higher than a photo alone, comments are worth more than likes, sharing photos and videos are worth more than links, etc.). Time decay (d_e), in the context of Facebook's environment, means that recent content is more valuable than older content. Writing, e.g., content, with higher (1) user affinity, (2) weight of content, and (3) time decay will appear to more Facebook users.

In terms of participatory audiences, the algorithm incorporates the responses, feedback, and reactions of readers (u_e). To write a popular status update on Facebook, for instance, not only requires an effective post at a good time of day, but also requires that other people like, comment, share, and react to it. Further, the designers of Facebook constantly tweak(ed) EdgeRank, which in turn means that writers looking for audiences on Facebook need to monitor and observe the extent to which they effectively communicate to readers. To write for EdgeRank as an algorithmic audience thus means to write in ways that anticipates, and accounts for, audience participation.

Algorithmic audience, as a term, thus extends three of composition's theories of audience, e.g., concrete situations, discourse communities, and participatory audiences, into 21st century writing contexts. The term takes prior concerns with teaching audience and applies them to 21st century pedagogical issues. Writing for algorithmic audiences powerfully integrates production, distribution, and circulation while developing an ongoing sense of managing those aspects and updating one's writing accordingly.

3. Writing for Algorithmic Audiences in the Classroom

Having described how algorithmic audiences extend three conceptions of *audience*—specific audiences, discourse communities, and participatory audiences—I outline a classroom approach that integrates writing for algorithmic audiences. This approach might be part of a broader unit on teaching audience awareness or its own unit in an upper level English class (as it was in my classroom). My three-part approach draws upon Estee Beck's (2015) understanding of both nonhuman and human factors for classroom audiences: “Because networked culture is as much about the hardware, software, and immaterial algorithms as it is about the people and the cultural codes embedded within those systems, a theory that moves past a binary between humans and objects as tools helps usher in new lines of research and conversations about object agency” (2015, p. 135). Beck's approach accounts for both algorithms and their designers. I will describe each part of this approach conceptually and then offer teaching examples for each concept.

⁴ By composite audiences, I mean “. . . people differing character, loyalty, and functions” who express themselves online (Perelman and Olbrechts-Tyteca 1969, p. 21). While Frank Myers (1999) has picked up on composite audience in terms of political argumentation and Mike Duncan (2011) in terms of polemical ambiguity, compositionists and rhetoricians have only recently started to think about the ways imagined and actual audiences are composites in online environments (Breuch, 2015, p. 121).

To briefly offer context to this pedagogy: I taught an upper level English course titled, “Internet Rhetoric and Writing,” in the fall of 2015. In this class, students engaged with readings about commenting culture, trolling, and representations of race and gender while designing their own websites. The goal of this class was to encourage students to produce, circulate, and manage content on a consistent—daily or weekly—basis. Content for websites was up to them; they developed topics ranging from television show reviews (both written and podcast form), technology reviews, videogame tips, flash fiction blogs, fashion advice (this student won an internship in the UK for this blog), salsa dance culture, and career-oriented professional portfolios. In order to assist students’ in conceptualizing audiences, I created a two-week long unit titled, “Writing for Algorithms.” This unit came during the latter third of the class so that students had already created a significant collection of content. This unit is the basis for the approach I offer in this article.

The first part of this classroom approach asks students to consider the designers and programmers of algorithms when they write for the Web. The second part asks students to manage and curate data that algorithms can process, such as tagging, search functionalities, and qualitative affordances. The third part of the approach asks students to develop an anticipatory and imagined perspective for algorithmic audiences. After these each part, I discuss the specific assignment given to students. The approach consequently develops an awareness of algorithmic regulation, which [Steve Holmes \(2014\)](#), by way of Tim O’Reilly, argues “uses real-time measurement to determine whether certain outcomes are being achieved and, in turn, relies on algorithms (rules) to make adjustments based upon the received data.”

3.1. *The values and ideologies of algorithms’ designers and programmers*

The first aspect of writing for algorithms asks students to identify and investigate the values of an algorithm’s designers, programmers, and architects. Many companies offer a sense of their values and ideologies through marketing and advertising. Other, more concrete, examples can be found, including the aforementioned SEOSG. Google offers the SEOSG as a guide for writing content but it also reflects the values of PageRank’s designers and engineers. Considering the non-neutral input/output structure of algorithms through various documents helps students recognize that algorithms are subjective.

I ask students to research and read documents like the SEOSG, terms of service agreements, white papers, corporate statements, and other mundane grey literature⁵ companies publish in order to assist students in identifying the values of designers, the engineers who write code, and denaturalizing algorithmic equations. By denaturalizing the ideologies, institutions, people, and technologies that factor into the results of algorithms, students can effectively critique the way their web-writing is read and received by audiences.

Contending with the values of the designers and programmers crucially deciphers the inherent bias of algorithms by helping to reveal the black box⁶ culture of internet culture. Journalism critic [Chava Gourarie \(2016\)](#) points out that algorithms “encode human bias” and have “inherently unfair design ties” because they look for patterns in their input. In my class, we looked for such “tics.” Such pattern-recognition calls attention to writing that doesn’t fit a designer’s or a programmer’s preconceived notions—writing at risk for being abused or ignored. Writers who do not produce text that fits the pattern identification of algorithms are thus at risk—writers who are too frequently women, people of color, and other individuals that computer programmers, often white men, do not consider.

In my classroom, students attempt to have their websites ranked highly by PageRank (from “googling” their name or a phrase associated with their website). This approach connects the production, distribution, and circulation of writing within ideological frameworks that may be overlooked in social media venues or other popular internet environments. Students critique their own websites, often noting that in order to satisfy the values of PageRank, they had to sacrifice elements of their personal writing styles. Students examine how the changes made to their websites’ architecture (known as meta-descriptions and meta-tags in HTML) alter Google’s search results, which yield ideological discussions of algorithms.

I use Gourarie’s three-step process for buttressing discussions of these experiments. Gourarie understands this algorithmic subjectivity in the following ways: “Algorithms can generally be broken down into three parts: the data that goes in; the ‘black box,’ or the actual algorithmic process; and the outcome, or the value that gets spit out,

⁵ Grey literature is a category of self-published writing, typically from a company, that is written from the perspective or persona of an institution rather than individual.

⁶ For an extended discussion of the term “black box,” see [Frank Pasquale’s *The Black Box Society* \(2015\)](#).

be it a prediction or score or price.” By denaturalizing and interrogating the black box of algorithms as alterable human constructs, we can attend to algorithms as persuadable, subjective writing activities rather than objective features of internet communication. By offering students ways to identify the biases of those who produce algorithms, writing instructors can effectively assist student writers to see that writing for algorithmic audiences involves a rich understanding of the way culture becomes infused into seemingly objective writing activities like search engine optimization, website development, and circulation of content. Raising awareness of algorithms as dominant ideological structures can assist students in identifying the power structures that undergird the dissemination of web-writing.

As a concrete example of pedagogy, I ask students to write reflections that I call *algorithm narratives*, which discuss students’ efforts to identify the values and ideologies of a chosen algorithm. I task students to research their chosen algorithms in three ways: by drawing on academic and online resources, by performing qualitative research by contacting the companies that program the algorithms, and by conducting first-hand experiments with the algorithm(s) to determine what kind of writing and content it favors. Most students chose to write about relatively well-known algorithms, such as Google’s PageRank and Facebook’s EdgeRank, although some chose to write about more opaque algorithms like those on dating websites. Students frequently noted in their narratives that companies are loathe to share their values for both proprietary and public-relations reasons. They frequently remarked that “black boxes” are meant to stay closed and mysterious. Their algorithm narratives document these difficulties while providing a concrete way to access issues that are often intentionally obscured.

3.2. Management of Metadata and Analytics

Analyzing the data that goes into an algorithm assists students with developing concrete writing practices—what we might call technical literacies—for how an algorithm reads and processes text. Interrogating the components of web-writing assists students in seeing how metadata, such as tagging, search functionalities, and qualitative affordances, can function as input that students should integrate into their conceptions of audience. When developed in concert with one another, these components illustrate that writing for algorithmic audiences involves managing and monitoring web-writing.

Identifying how algorithms read metadata, e.g., data that provides information about other data, assists student writers in producing texts for algorithms because it helps to describe context for texts. While metadata has been around since before the advent of the web, notably through the card catalogue system in libraries, it has become significantly more widespread with the prominence of internet searches. In the context of web-writing, metadata includes the language of a webpage (e.g., HTML, JavaScript, CSS) and what kind of information the author(s) has deemed relevant (i.e., keywords). Identifying metadata and its relationship to how a text is discovered and distributed therefore involves attending to the writing around a text as well the text itself.

Tagging, search functionalities, and qualitative affordances, as types of metadata, are examples of the writing surrounding a text. When an algorithm indexes a text, it also indexes the input of readers, who may tag that article or post with additional information, thereby adding more input to an algorithm for which writers did not account. Search functionalities are often based around the order and structure of websites. Likewise, qualitative affordances will shape how algorithms process a text. In rhetorical terms, the *arrangement* of a website and *delivery* of the site’s content is crucial to how algorithms determine their results.

I encourage students to produce, curate, manage, and monitor this kind of metadata in addition to the web texts they create. To ensure their content is read, students sign up for a program that tracks their website’s analytics (page views, duration of page views, etc.). I task students with writing weekly progress reports to their peers about their website’s activity and comments, which are a concrete type of metadata that can accompany initial texts. In sharing these reports during class, students help one another find ways of circulating their content that are effective for their specific purposes. A circulation strategy students frequently discussed in their reports leveraged commenting in blog or online article comment sections and on social media threads. They would find an article relevant to their content and write a short comment along with a hyperlink (the URL) back to their own website. This activity generally drove up their metrics and metadata, e.g., page views, and frequently allowed them to garner participatory audiences, via comments, for their websites. These reports and activities aim to inculcate a heightened awareness of search engine and algorithm biases as well as strategies for managing information *surrounding* their writing. Developing metadata awareness assists students in deciphering how to manage and monitor their websites from a holistic perspective.

3.3. Anticipating Audiences

Based on managing metadata and analytics, students may consider how algorithms and their results could change over the course of time. They imagine how to write for audiences across geographical and geopolitical cultures in the present and future. This pedagogy adopts what communication scholars [Eden Litt \(2012\)](#) and [David Russell Brake \(2012\)](#), by way of Ervin Goffman, have labeled imagined audiences in electronically mediated environments like chat rooms and social media. Compositionist [Lee-Ann Kastman Breuch \(2015\)](#) has picked up on an actual/imagined tension with respect to reaching global audiences while meeting local audiences' needs (using Minnesota's website of the 2010 Affordable Care Act). Imagining audience(s) across space and time for internet environments requires *anticipating* how audiences might read and distribute texts.

As part of writing for algorithmic audiences, anticipating audience participation assists students with understanding how algorithms incorporate texts into results. Because the operational logics and regulations of algorithms are ongoing, writing for them involves not publishing and distributing once but in a continuous manner. The implication here is that timing matters in a recursive manner, as algorithms yield different results on different days, times, and places. Students anticipate how readers will read in not only one future but at different times and places in many futures.

In terms of examples, I encourage students to circulate their writing multiple times so that algorithms would pick up their content. Because one link, post, or tweet often gets lost in the overload and time decay of newsfeeds and timelines, my students consider *when* students would distribute their writing (e.g., when to tweet, when to post a blog post), the *frequency* of distribution (how often to publish for audience), and the *reception* of that distribution (i.e., who has commented, what kinds of comments were received, what were the qualitative affordances received). Students share content on Twitter with an assortment of hashtags, hoping that targeted, imagined audiences would retweet content. In order to manage online discussions, students develop commenting policies for their websites to combat the misogynistic, homophobic, and racist vitriol that often appears in comment sections. As I mentioned previously, they often comment on relevant blogs and websites that aligned with their purposes with a link back to their websites—a crucial strategy for building a readership. In this sense, students anticipate the various ways their content may be delivered and re-delivered, with the possibility for endless circulation.

In keeping a focus on circulation, I ask students to imagine audiences through *usability testing*. Students rewrite content—blogs posts, podcasts, videos—after initial production in order to vary their results if algorithms do not display their content to audiences effectively. They optimize the website's architecture (titles of webpages, HTML tags, paragraph structures, sentence syntax, and word choice) according to the algorithm they imagine writing for—often the SEOSG so that PageRank would yield their website higher in its rankings. Usability testing functions as a way to evaluate the extent to which they anticipate their audiences effectively—something that is extraordinary difficult to do in composition classrooms where instructors are often an authoritative audience.

I ask students to keep a log documenting the changes they make to their websites and how those changes alter where their websites fall within search results. In these entries, students often hypothesize how small tweaks in content or different types of content, e.g., text, images, and video, could change search results. Then students make those edits to observe changes in actual search results. I ask them to document their content changes through alphabetic text and series of screenshots. This documentation process encourages students to think of a website as a changing ecosystem rather than a static document or space.

4. A Classroom Solution to “Consider Your Audience”

This last section addresses the way that writing for algorithmic audiences may assist writing instructors with building audiences outside the classroom that can nevertheless be addressed from within the classroom. To write for audiences beyond the teacher has long been a source of consternation for classroom-based writing instruction, as [Robert Brooke and John Hendricks' Audience Expectations and Teacher Demands \(1989\)](#) eloquently tackled. That is, students in the confines of a classroom only seem to have one audience: the instructor. As a provisional solution, algorithmic audiences can assist teachers and students with escaping this problem of audience in the confines of a classroom. When writing for algorithmic audiences, the algorithm becomes an audience that yields a result. This allows students to escape the influence of the instructor as the audience for student writing. Through peer collaboration, students can help one another to write for algorithms because they can see the different outputs an algorithm may yield. It remains

up to them and their instructor how to interpret this output and to avoid pandering. But revising for algorithms occurs outside of instructor evaluation.

Algorithmic audiences are thus highly relevant to compositionists because they can help instructors to push students beyond the platitude “consider your audience.” Algorithms change our approach to writing by asking students to evaluate the reception of a text *during the production process* of that text (i.e., what will the algorithm yield when it processes a student text?). They reframe the reading of texts as an ongoing process that not only requires editing but an updatable, malleable form of revision involving monitoring and managing of content that occurs on a *continuing, emergent* basis. They encourage students to write not only for a pre-existing audience but also to find and anticipate an audience repeatedly. While algorithmic audiences ought to be part of a broader pedagogy for teaching audience awareness, the concept can assist with resolving the classroom problem of writing for audiences outside a classroom from within the confines of that classroom.

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