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Understanding the Writing Habits of Tomorrow's Students: Technology and College Readiness

This article reports on a study analyzing the digital skills of 91 low-income students enrolled in writing remediation. Findings suggest that technological demands widen the equity dimensions of the college preparation gap by aggravating the academic challenges remedial writers already face. Suggestions to support the compound literacy needs of 21st-century students are made.

The proliferation of new information and communication technologies in all areas of contemporary culture is changing the way writing—and subsequently writing education—is conceptualized. In higher education contexts, technology has become "central to the daily routine of university life" (Goode, 2010, p. 583). Research suggests that technological proficiency is as critical to academic success as writing ability (Jones, Johnson-Yale, Millermaier, & Pérez, 2009). With these cultural shifts in mind, we consider how postsecondary institutions might strategize college-level writing by adopting a more protean definition that

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includes technology. What might such a strategy include, and how might it function? These two questions form the focus of this article.

Such questions are particularly germane for the estimated 36 percent of entering students whose assignment to compulsory coursework, also known as remediation, significantly diminishes their likelihood of completing a degree (Aud et al., 2011). The overrepresentation of low-income and minority students in remedial courses raises equity questions amplified by the statistic that just 17 percent of students consigned to remedial English complete a baccalaureate (Adelman, 2006; Bahr, 2010). That both the demographic disproportion and failure rate of remedial writers persist as postsecondary enrollment reaches benchmark highs increases the urgency of the problem (Bureau of Labor Statistics, 2010).

While the intent of our study was to improve the success of students underprepared for college writing, the approach took into account that writing habits in the 21st century have changed. As the business of higher education migrates from page to screen, new concerns pertaining to equitable access and outcomes arise from the disparity in student readiness for the digital demands of college life (Jones et al., 2009; Vie, 2008). We know that technology use has a positive influence on educational attainment (Fairlie, Beltran, & Das, 2010) and that technological proficiency is stratified by gender, race, and class (Warschauer & Matuchniak, 2010). Disadvantaged college students are, for example, less likely than their advantaged peers to access the electronic infrastructures of university libraries or to e-mail professors with questions about an assignment (Goode, 2010). Such digital disinclination signifies more than a simple loss of academic opportunity insofar as both behaviors are now baseline expectations for undergraduate education (Nasah, DaCosta, Kinsell, & Seok, 2010).

The present study takes a broad perspective on college writing to investigate connections between students' offline and online literacy practices. This information is practical to consider if the untenable graduation rates of remedial writers are, in part, attributable to the double jeopardy of underpreparedness in joint literacy domains. That low-income and minority students are more likely to be underprepared in both categories underscores the rationale for this research (Walpole, 2003).

With the understanding that argumentative skills are the keystone of college composition (Slattery, 2010), we investigate students' digital literacies in the context of crafting online arguments. The approach assumes argumentative ability is a mediating influence on dual preparatory disparities. To date, there are no published studies that capture students' digital skills as they cohere with time-honored composition aims. This work addresses that gap by exploring remedial writers' technology

use as it reflects "the ability to access, analyze, evaluate and create" arguments online (Livingstone, 2004, p. 3). The research question guiding our inquiry is: How do students' digital practices support college-level argumentation? In response, we offer a snapshot of digital behaviors by 91 first-generation students enrolled in a precollege writing remediation program. Because the backgrounds of participants suggest both technological disadvantage and poor academic preparation, the data provide a unique opportunity to explore the nuances of literacy practices that low-income students bring to postsecondary settings.

This demonstration of synchronicities between online and offline literacies supports an expanded viewpoint on college writing. Such a viewpoint is a better conceptual fit with 21st century postsecondary demands and implies the utility of pairing digital and traditional writing under a single banner. The logic of inquiry is framed by a sociocultural theory of literacy (Cazden et al., 1996; Street, 1998) that sanctions the intellectuality of digital and customary writing modes alike. The work is a preliminary step toward rethinking how institutions might approach remediation and freshman composition. We examine the possibility that online and offline writing can be complementary activities that service multifarious literacy outcomes for an optimal college readiness agenda.

Our position within the larger debate on digitalization is grounded by an overriding concern to improve educational opportunity for remedial writers. We appreciate the uncertain tenancy of new media literacies in higher learning environments, and we do not wish to frame the work as wholesale advocacy for technology-based reform. Instead we encourage a stance that is appropriately ambivalent given the dearth of research on technology impact in postsecondary settings. In recognition of this empirical insufficiency, the goal here is to contribute information that catalyzes needed discussion surrounding college writing in the information age.

The work is situated against the backdrop of new media scholarship with deference to its extant ideological tensions (Livingstone, 2004). Since space limitations prevent a complete accounting of perspectives, we summarize viewpoints as convergent on a spectrum of technological advocacy that is by no means linear. Rather, new media scholars differ by their attention to issues of amplification and obsolescence (McLuhan & Fiore, 1967). Uncritical proponents emphasize the sophisticated cognitive skills amplified by certain types of online engagement and assume a link between such digital practices and academic outcomes. These researchers focus on educational possibility and support the blanket reorganization of teaching and learning according to new media habits (Ito et al., 2010; Jenkins, Purushotma, Weigel, Clinton, & Robison,

2009). Critical scholars, in contrast, are attentive to the cognitive functioning that is obsolesced by increasing technology use. Critical foci are the identity repercussions of communication technologies and the developmental implications of multiple plugged, unplugged, and digitally tethered selves (Carr, 2008; Turkle, 2008).

Because we are interested in student learning and not technology per se, the assembly of new media pros and cons will be revisited with regard to research implications. Our agenda is the impartial assessment of an opportunity to address the digital and writing dimensions of the preparedness gap cooperatively. The present study probes the latent quality of students' argumentative skills based on *in situ* technology use (Selwyn, 2007). Data derive from profiles authored in a social network environment and illustrate the ways in which writing with screen and pixel reflects writing with paper and pencil.

A major hurdle facing the discussion is the lack of meaningful communication between distinct districts of scholarship. The vocabulary of literacy and new media research does not easily transport to higher education discussions. As such, the auxiliary ambition of this article is to initiate interdisciplinary dialogue. This task relies on the receptivity of the higher education audience to possibly unfamiliar intellectual terrain. We therefore begin with an explanation of online profile authorship.

For readers whose own online experience does not include social networks such as Facebook, profile authorship is the curation (or bricolage) of multimedia materials—digital images, photographs, audio, video, text, colors, and fonts—to proxy identity online (Stern, 2008). In modest terms, profiles are online personal spaces. These spaces offer students an opportunity to value the kind of self-expression that has historically been classroom contraband, evidenced only as the decorative scribbling on textbook jackets or spiral notebook covers (O'Brien, 1998).

Profiles are the virtual equivalents of textbook jackets and spiral notebook covers. They are blank canvases that students transform over time with unique visual and textual markers, and they are highly personal. The profile writing process unfolds as layers of digital embellishment accumulate over the course of an instructional interval, possibly a semester or—in the case of this inquiry—a four-week intervention. Because each profile signifies the way its author chooses to represent himself or herself online, all profiles are identity arguments (Döring, 2002; Walker, 2000). The key theoretical and technical details of profile authorship will be explained more fully in the sections on theoretical frameworks and methods respectively. Until then, the abstraction of profiles as virtualized identity arguments ought to suffice.

The article is organized into four sections. First, we explicate the theoretical framework. Second, we disclose methods and introduce a taxonomy of digital media practices to describe the data. Third, we demonstrate the argumentative skills invoked by profile authorship by drawing connections between three digital literacies and three traditional composition skills: thesis statement construction, evidence citation, and academic voice. The concluding discussion assesses the implications for an expanded conception of college writing and offers suggestions for future research.

Framework

A sociocultural perspective of literacy suggests writing in online environments develops the same argumentative skills used to compose college papers. Support for this line of reasoning rests on a theoretical model that may be new to a higher education research audience. The model is new literacies theory.

New Literacies Theory: Definitions and Contexts

The term *new literacies* is a referent for a sociocultural standpoint that views literacies as: (a) plural, (b) hybrid, and (c) co-constitutive with student identity (Gee, 2000). This view is different from the iconic notion of the scholar confronting the proverbial blank page in isolation. The solitary writer image exemplifies what theorists refer to as the autonomous model (Street, 1998), a conceptualization of literacy that positions writing as a neutral skill and college-level ability as the preordained outcome of exposure to formal education. This "blank page" perspective underlies compulsory remediation strategies that prescribe more instruction to improve writing ability. The autonomous model, however, no longer suits higher education in the digital age.

A new literacies perspective signifies research that works from the opposite vantage point (Coiro, Knobel, Lankshear, & Leu, 2008). To be sure, writers, at some point, face a blank page (or screen). However, to the blank page, writers inevitably bring multiple literacies developed for and within communities situated by social and temporal contexts that help construct and shape identity. Although these provisos have always been true, they are more significant today because of technology. Historically, undergraduates needed only to write papers in order to be successful, but higher education's current environment requires students to navigate administrative services and learning communities that exist entirely in cyberspace. Today's library catalogs, for example, are accessible via electronic infrastructure. Course registration is an online pro-

tocol sanctioned by a number of digital preconditions including having and using log-in credentials. E-mail is a primary way students communicate with professors outside of class, and completing assignments increasingly involves uploading documents to an online server. Computers are no longer a futuristic choice proffered by technology enthusiasts; they are the mainstream access route for resources and communication within academe.

As detailed below, new literacies is a more accurate conceptual model given the diversity of literacy situations college students face today. The usefulness of a new literacies framework to college writing advances from three successive points: plurality, hybridity, and identity. We expound on the implications of these tenets separately with the understanding that they overlap and inform one another.

Plurality. As referenced above, there are different kinds of writing practiced in different settings for different purposes. The caveat, however, is that not all types of writing are acceptable in all cultural contexts. Accordingly, new literacies theory defines discourse on two levels: one that is procedural, the other that is ideological (Gee, 2008). Both levels are important to the pending investigation of students' digital practices.

The procedural level is related to medium (Van Deursen, Van Dijk, & Peters, 2011). Traditional writing (obviously) relies on textual basics such as writing sentences and formatting paragraphs. While these textual basics carry over to digital writing situations, an entirely new set of basic skills—intrinsic to the Internet—are subsequently needed to write online. Using a web-browser is as basic to digital writing as spelling and grammar are to college composition. They are technical skills without which writing proficiency is embargoed.

The ideological level of discourse invokes cultural precedent. Until now, only one kind of writing—the multipage paper—had been necessary to succeed in college. Plurality was inconsequential to higher education because other discourses were not used (or valued) for academic pursuits. By default then, the discourse of undergraduate education became synonymous with college composition.

Today's undergraduates, however, must be procedurally competent in two discourses. Multipage papers are still the cornerstone of college coursework, but online communication is critical to nearly all other university affairs. Institutions now face the question of whether formal sanctions are appropriate not only to signal digital literacy expectations externally but also to reshape academic support internally. The subsequent notion of hybridity offers possible resolutions.

Hybridity. Hybridity suggests that there are synergies between these plural discourses (Street, 1998). By hybridity, we mean a set of cognitive competencies that subsume presentational mode. That is, the manner of production—pencil or pixel—is subsidiary to a hybrid or "transferable skill set" (Luckin et al., 2009, p. 57). Such a definition is not simply a theoretical argument away from the previous interpretation of literacy as a largely unitary and dislocated act. Instead, hybridity focuses on the content-related skills that interlace two or more discourses together.

The hybridity assumption is simple: A general skill set envelopes how writers implement procedural conventions online or offline. Consider, for example, these college writing skills: thesis statement construction, evidence citation, and academic voice. The ability to write a thesis statement is subsumed by the capacity to abridge an argument. The ability to cite evidence is ancillary to the capacity to justify claims, and the ability to write with a stable academic voice is a protraction of showmanship skills that engage audience interest. In each instance, the ability to write using composition basics—thesis statements, citations, voice—is contingent on the capacities to abridge, justify, or showcase an argument.

Hybridity supports the inference that—despite procedural differences—online and offline discourses share the same argumentative competencies. The implication for writing instruction is that discourse pairings invite a comparative approach that filters college-level thinking regardless of its printed or pixilated incarnation. The assumptions of plurality and hybridity outlined above are ultimately linked to the last theoretical point about identity.

Identity. Identity connotes that how people use language reflects who they are in specific contexts (Gee, 2008). When one writes argumentatively (as is the expectation in college), every statement not only reflects the written text on the page but also the author. The argument itself is a form of identity that shapes and gets shaped by the author's dexterity (or lack thereof) with words and sentences. The statement "Shakespeare is the world's superlative playwright," then, is different from "Shakespeare is a smart dude"—not simply because the words are different but because the former suggests an identity befitting academic culture while the latter does not.

Because of technology, however, one academic identity is no longer sufficient. The statement "Shakespeare is the world's superlative playwright" works on paper but falls flat in, for example, the kind of online discussion that is increasingly required for class participation (Dziuban, Moskal, & Hartman, 2005). A better digital rendition would

include an embedded link. Written in html code, the statement becomes: "<ahref='http://www.bardweb.net/man.html'>Shakespeare is the world's superlative playwright." The demonstration is slightly exaggerated because students do not actually write html code *verbatim.* They do, however, need to use online software platforms that mediate html code writing. The point is that fitting in academically requires students to write differently online than they do offline. Two discourses are needed to meet the literacy demands of contemporary academe. If yesterday's college writers were paper authors, today's college writers must be online/offline discourse navigators.

Summary of New Literacies Theory

The principles of plurality, hybridity, and identity are the scaffolding of new literacies theory. Plurality supports the recognition that today's college writing involves composing papers and authoring content online. Hybridity suggests an underlying skill set that is transferrable to offline and online writing situations. Identity accentuates the cultural membership signaled when writers adhere to both discourse conventions.

These admittedly abstract ideas are important because they help redefine college writing in terms that are more authentic to the literacy expectations of modern institutions. In the remainder of this article, we discuss the application of new literacies theory to a study of 91 students enrolled in a writing remediation program. Data from the project demonstrate how online writing reflects the traditional writing that has always been expected, but for which college students are increasingly underprepared. With the principle of comparison in mind, we commence to the practicalities of method.

Method

The study occurred within a summer-bridge writing remediation program that provided academic and social support to assist low-income, first-generation students' transitions to college. Although all students (N = 91) had been accepted to four-year institutions, their graduation from under-resourced high schools implies they are less likely to be academically prepared and less likely to persist than students from advantaged backgrounds (Strayhorn, 2011). The ethnic distribution of the cohort also suggests these students will be consigned to remediation in proportions greater than their privileged peers (Attewell, Domina, Lavin, & Levey, 2006). The demographic breakdown of the sample is as follows: 70 percent Latino, 16 percent African American, and 14 percent Asian/

Islander. Not unexpectedly, the collective of socioeconomic, familial, ethnic, and academic indicators are associated with technological disadvantage (Goode, 2010).

By assessing the variations of digital skill low-income students bring to postsecondary settings, the study aimed to capture the digital dimensions of academic underpreparedness and educational inequality that hinder college success. We provide thick description of low-income students' digital literacies as a complement to extant research that has identified this proficiency gap (Hargittai, 2010). Because students were enrolled in writing remediation during data collection, we were able to explore a relationship between online and offline literacy preparedness.

The remediation program took place Monday through Friday for four weeks during which students received 80 hours of classroom writing instruction. As part of the program's requirements, outside of classroom hours, students were asked to author an online profile. The resulting 91 online profiles represent each of the 91 students enrolled in the program. The profiles are made up of text, image, audio, and video posts. Note that the activity of profile authorship is referred to as *posting. Posting* is the technical term for making one's writing visible to a reader, but the distinction is semantic. Writing is posting; posting is writing (Kress, 2003). By either label, online writing is choosing and posting digital content.

Data Collection

The mechanism for data collection was a social network platform. While Facebook is possibly the most well-known social network brand, there are hundreds of lesser known platforms that utilize similar principles: Users create profiles to access an online community, service, or information (Boyd & Ellison, 2008). Each platform differs slightly in the way profiles are visually exhibited. Facebook profiles, for example, conform to a basic blueprint: a royal blue page header and a white background. In contrast, Twitter allows users to customize their backgrounds and color schemes, but authorship capacity is otherwise restricted: Posts are limited to 140 characters, and display is uniformly chronological. The differences between Facebook and Twitter, however, are merely cosmetic, as both platforms (and the hundreds not mentioned here by name) provide online writers with a blank virtual canvas.

For the study, we chose a platform that allowed us to create a closed online community in which each student could author a profile with minimal restrictions on personalization. To capitalize on the argumentative nature of profile authorship, students were directed to create profiles that emphasized those aspects of identity associated with being a

college writer. The data are not arbitrary but strategic to developing an identity argument (Nelson, Hull, & Roche-Smith, 2008).

Data Analysis

To make sense of the identity arguments embedded in each profile, data interpretation reflected a bricolage of qualitative techniques to support discourse analysis (Gee, 2008). We tailored the approach to suit data characteristics that are best explained by the metaphor of art curation. The role of profile author is akin to that of an art curator whose job requires gathering, organizing, and hanging various image, print, audio, and video elements for exhibition (Hall, De Roure, & Shadbolt, 2009). The gallery metaphor is useful because it intimates how reading a profile is like attending an art show. Unlike a college paper that directs a reader through an argument sentence by sentence, a profile's identity argument has no linear order. Readers, like gallery patrons, are free to wander the space recursively. We also kept in mind that, unlike art curation (that culminates with an exhibition), profile authorship is unconcerned with conclusive presentation. Rather, profiles are identity works in progress.

To accommodate these data characteristics, we used discourse analysis to examine the quality of students' online profiles as evidence of digital skill. Conventional discourse analysis is concerned with "language beyond the sentence" (Carrell, 1982, p. 479), but we used its techniques to interpret digital writing *beyond the post.* Our analytic goal was to distinguish between profiles that are "well-constructed as opposed to those that are jumbled and incoherent" (Brown & Yule, 1983, p. 124).

To draw comparisons, we first needed to analyze what each student intended to convey on his or her own profile (Trappes-Lomax, 2004). This process involved reviewing over 1,987 multimedia posts. By media type, the data represent 696 textual posts (436 blog entries, 60 discussion threads, and more than 200 wall comments), 511 audio posts, 774 image posts, and 67 video posts. The analyses involved close reading of each profile's assortment (the composition) of posts to determine themes related to identity. Once themes were established, we looked at the profile's "thematic organization" to identify convergences amid content and curatorial technique (Gee, 2008). We also used "cohesion" and "discourse organization" as comparative strategies to increase interpretive reliability (Upton & Cohen, 2009). The process culminated when we reached saturation on a recurring insight, understood to be the profile's core identity argument.

The next phase of analysis evaluated these core identity arguments as

proxies of digital writing skill. We developed a rubric to rate individual posts according to standards of written argumentation. Because data presentation offers deliberate transparency surrounding this method, further explanation only detracts from the specificity of demonstration.

Data Presentation

Our presentation of data uses a vocabulary for online writing that corresponds to the three argumentative conventions introduced in the previous section. We have established that abridgement is linked to thesis statement construction, justification to evidence citation, and showmanship to academic voice. To extend the heuristic to digital discourse, we borrow from a glossary known as the new media literacies that describes the ways abridgement, justification, and showmanship manifest online. The three new media literacies that correlate to abridgement, justification, and showmanship are (in order): visualization, appropriation, and performance. The following brief theoretical sketches serve as preamble until finer details are warranted by demonstration.

Visualization. Visualization is a reductive competency that mirrors the abridgement skills necessary to compose a written thesis statement. The difference between thesis statement construction and visualization is clear-cut: Instead of condensing an argument to a single sentence, visualization condenses an argument to a single image.

Appropriation. Like the ability to use supporting evidence effectively in a college paper, appropriation is the online version of argument justification. Composition arguments remain faithful to text and offset evidence with quotation marks. Online arguments, in contrast, can be justified by text, image, audio, video, or hypertext (also known as links).

Performance. Performance is an online protraction of argumentative showmanship. The expectations of showmanship, however, are different online than offline. Whereas showmanship in composition indicates a stable academic voice, online showmanship is signaled by dexterity with multiple voices.

Before data are presented, a brief review of key concepts is in order. First, the goal of this article is to demonstrate how digital conventions exhibit the same higher-order thinking skills expected in college composition. We use new literacies theory to argue that writing is not limited to alphabetic modes (Kress, 2003). Rather, in online environments, posting images, audio, and video files are efficacious forms of writing that, like alphabetic writing, can support college-level argumentation. The study draws explicit parallels between three online writing conventions known as the new media literacies and three offline writing conventions that are hallmarks of college composition. Visualization mir-

rors thesis statement construction, appropriation emulates evidence citation, and performance cultivates voice.

Profiles

In this section, we survey the 91 profiles according to visualization, appropriation, and performance. As noted, each new media literacy is underwritten by an argumentative strategy that correlates to a composition skill. Visualization is akin to thesis statement writing ability, and both rely on abridgement. Appropriation replicates evidence citation, and both are used to justify argumentative claims. Performance reflects the normative assumptions of online showmanship.

The organizational approach offers three different impressions of the data that strategically exhibit three different types of argumentation used to write/post online. Because this demonstration involves close reading, we evaluate student proficiency levels for each new media literacy successive to data presentation. This structure permits us to focus the concluding discussion on a fulsome assessment of students' digital competencies.

Visualization

Visualization is an inductive capacity that mirrors the abridgement skills necessary to compose a thesis statement. As discussed, a thesis statement condenses the intellectual reasoning of an argument to a single sentence. A well-crafted thesis statement is both a roadmap for an essay's logic and a template for the author's academic voice.

Visualization is defined as "the ability to translate information into visual models and understand the information visual models are communicating" (Jenkins et al., 2009, p. 4). In offline composition, writing is restricted to text. On the internet, however, images are the dominant mode of expression. Online writing uses pictures to convey meaning (Kress, 2003). Accordingly, digital literacy relies on the ability to interpret and manipulate the messages embedded in visual information. That images abridge complex ideas more efficiently than text suggests their incomparable argumentative value (Messaris, 1998).

Demonstrating Visualization. For our purposes, visualization is operationalized by the posting of a profile picture. A profile picture is the "primary identity marker for a user's profile" (Strano, 2008). The profile picture is a kind of identity thesis statement. A good profile picture visually summarizes the uniqueness of its author and provides a tonal template by which the remainder of media posts can be understood. There are 91 profile pictures, a one-to-one correspondence with each of the 91

students in the sample. What follows is a survey of the ways students abridge their identities as profile pictures.

Analyzing Profile Pictures. Two general types of images are used as profile pictures: avatars and photo-portraits. Avatars are non-literal references to self, such as drawings or objects. Nine students posted avatars. The imagery ranges from quirky cartoons to art-oriented symbols such as an easel or a music cleft. Photo-portraits involve literal representations of the corporeal author via photographs. Beyond the similarity of their reliance on the physical self, the 82 photo-portraits convey a wide variety of identities realized by an equally wide range of visualization techniques. We describe profile pictures according to relationships and temperaments.

Relationships. The profile pictures differ in the way they either explicitly or implicitly signal a relationship with other people, places, or things. Twenty-four profile pictures are of the author in the company of one or more companions. While the companions vary by age, gender, and even species, each confer importance to a friendship, a romantic partnership, or a family member. Romantic partnerships, for example, are visually suggested by either hand-holding or the accoutrements of prom night—tuxedos, taffeta, and corsages. In the remainder of portraits where the author is solo, eye contact signals a relational intention toward audience. In 58 profile pictures, direct eye contact with the camera addresses readers more formally than the 24 candid pictures where eye contact is absent and the tone is relaxed. A playful awareness of audience, for instance, is communicated by a student who intentionally averts eye contact by using his knee to hide his face. The profile picture reads like a good-natured teasing, "You can't see me!"

Temperaments. As is partially evidenced above, each profile picture expresses an emotional temperament. In demonstration, we detail the visual cues used to articulate four dispositional traits: introspection, joy, humor, and melancholy.

Twelve profile pictures represent students in a state of introspection. Lighting is a key indicator of mood in this grouping. One darkly lit female student's eyes are closed, and her chin is tilted down to the ground. The image's color saturation has been altered to accentuate shadows and decrease luminosity. The image transmits an unmistakable aura of deep, meditative spirituality. A more cheerful shade of introspection is evident where bright sunlight washes out a smiling student's face as she enjoys the sun's warmth. Her gaze is toward the window such that the tone of the introspection is one of optimism. Another student used aerial perspective and color to enhance mood. The camera floats above the student's face, eyes closed, ears plugged with iPod buds. A muted color

palette relays the soothing sensation of being lulled to sleep by music (see Table 1 for a selection of profile pictures by temperament).

Joy is expressed in 13 profile pictures. The thrill of flight is conveyed by an image of its author airborne on a soccer field while teammates marvel. Another simulates joy with digital effects. Patterns of orange light circle the student as if he is being swarmed by fireflies. The student's effervescent grin cues enchantment.

Seven profile pictures evoke a comedic disposition. A colorful slice of pepperoni pizza is the visual focus of an otherwise black and white portrait. In the photo, the student selflessly offers the audience a taste. The mischievous grin on his face bids condolences for the missing bites. Another student gives a thumbs-up in front of a leaning clock tower. The camera angle creates the optical illusion that the tower is being held in stasis by the student's thumb.

Two profile pictures foment sorrowfulness. In one, the author's frown is juxtaposed against the backdrop of a lively lunch culture. The other is a fuzzy portrait, eerily reminiscent of a mug shot.

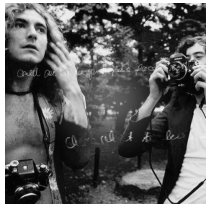
Making Sense of Visualization and Profile Pictures. We assess students' visualization skills as marginal, basic, or exemplary according to the intricacy of the relationship and sophistication of tone evoked by the profile picture. Marginal performance indicates an image that is nondescript. Basic visualization suggests a profile picture that communicates a straightforward relationship and temperament. Exemplary visualization implies an image that is intricate and conveys relational and emotional complexity.

Marginal Visualization. Forty-one percent of the cohort are consigned to this rating because their profile pictures are generic. There are 37 characterless photo-portraits in which each student wears a modest smile, less an expression of happiness than a convention of picture taking. The only variation amid these portraits is the framing angle. In 20 pictures, crooked framing disrupts what otherwise mimics school portraiture. Although tilted framing mitigates an institutional temperament, these images remain generic. The temperament is affable but bland, and there is little that distinguishes these images from one another.

Basic Visualization. Thirty-one percent of the profile pictures convey a basic relationship and straightforward emotional temperament. Twelve feature one or more companions, but the relationships, at best, translate superficially. The prom pictures, for example, insinuate romance, but there is a conspicuous lack of physical contact between the couples, and the sentiment is cliché. Four graduation photos indicate a celebratory temperament amid friends but little else. Overall, authorship is

TABLE 1

Selection of Image Data by New Media Literacy

Visualization					
Temperament	Meditative	Optimistic	Tranquil	Playful	Comedic
Profile Picture					
Appropriation					
Consumer Identity	Rockabilly Music	Musical Theater	Classic Rock	Junk Foodie	Vegetarian
Found Media					
Performance					
Multimodal Voice	Painter	Activist	Gamer	Musician	Botanist
Supporting Artifact					

nominally present, but lacks vibrancy. Also in this category are the avatars that transmit some key aspect of identity, but the statements are one-dimensional and lack personalization.

Exemplary Visualization. Twenty-eight percent of students employed a coalescence of visual strategies to abridge a complex identity statement. Students in this category strategized lighting, props, and photo-editing to orchestrate compelling relationships and unique temperaments. Each are richly expressed visual ideations of self in which the authorship choices are unmistakable.

Appropriation

Appropriation is "the ability to meaningfully sample and remix media content" (Jenkins et al., 2009, p. 4). In argumentative terms, appropriation is the online version of justification. Regardless of discipline, justifying an argument is de rigueur in college. The types of evidence vary by discipline. For an English composition, students use quotations from a literary work. For a laboratory report, students draw on data from a scientific experiment. In digital environments, students *appropriate* media from across the Internet.

Demonstrating Appropriation. The posting of "found media" mirrors the function of evidence citation in college composition. Accordingly, appropriation is governed by basic argumentation principles: The evidence should minimally cohere with other identity characteristics argued in the profile.

Analyzing Found Media. Less than half the profiles (43 of 91) use appropriation to support identity. Twenty-six students appropriated images such as logos, postcards, cartoons, and bumper stickers to justify identity claims. Twenty-two appropriated text by quoting excerpts of either prose by famous authors or lyrics by famous songwriters. Seventeen students appropriated YouTube videos. Although the 402 commercial songs in the dataset meet the criterion of found media, we bracket them from survey because the extreme disproportion of their occurrence suggests an unreliable association with authorial intention.

The appropriations thematically support ethnic, political, spiritual, and consumer-oriented identities. These categories help demonstrate how found media serves a dual argumentative purpose: The justification of personal traits also situates the author within a culture-sharing group.

Ethnicity. Although ethnicity figures prominently into the identity arguments of 13 students, only two used appropriation to support claims. One student justified her bilingual identity by posting a Spanish language Enrique Iglesias music video. The other student justified her Latina heritage by appropriating an image baring the flag of Peru.

The same student appropriated a postcard series of Peruvian landscapes within a photo album entitled: "Some stuff about my country."

Political. Ten students appropriated images aligned with basic humanitarian causes. An animal rights activist posted a cartoon image of a dog speaking from a podium to a human audience: "I've called this press conference to announce that given the current state of the planet, we are no longer man's best friend." A feminist posted a cartoon depicting seven iconic Disney princesses acting more like adolescent boys than priggish royals. Snow White, for example, uses her thumb to curl the tip of her nose up like a pig's, while Cinderella sticks her tongue out. The remaining appropriations speak to different civil liberties.

Spiritual. Twenty-three students appropriated textual quotations that are affirmations of spirituality. Both the quotation's content and its source strengthen the profile's identity argument. Consider the divergent identity implications suggested by the following pair of spiritual affirmations. The first is a biblical passage appropriated from Hebrews 5:8: "I learned obedience through the things I suffered from." While the content espouses obedience (and by extension humility) as a spiritual framework, the source transmits a cultural affiliation with Christian fellowship. In contrast, the statement of cultural belonging implied by the second affirmation is different because of the source. "We were born to make manifest the glory of God that is within us" is a passage by Marianne Williamson, founder of the interfaith-based Peace Alliance movement. This appropriation implies a less traditional religious affiliation than the first student who cites scripture. The remaining affirmations represent a wide variety of identities represented by as wide a variety of sources: three writers, an athlete, a comedian, an artist, an entrepreneur, a psychologist, a psychic researcher, two musicians, and three rock bands.

Consumer. Consumer trademarks are a motif in 11 appropriations. One student justified her self-proclaimed status as a junk foodie by appropriating an image of an unopened bag of Ruffles potato chips. A vegetarian supported his disdain for the fast food industry with an image of a cow—branded with McDonald's golden arches—holding a sign that reads: "I am not a hamburger." The remaining identity claims imply movie, television, and music fandom. Four differentiate cultural memberships based on genres of commercial music. One student posted an advertising image of a Murray's Pomade tin to justify his rockabilly identity. The allegiance is repeated in a series of swing band posters that feature musicians sporting perfectly quaffed pompadours. Another student's affinity for musical theater is justified by a television show logo: "Glee." A third student confirms loyalty to classic rock with an image of

Led Zeppelin's singer and guitarist (see Table 1 for a selection of appropriations that justify consumer music identity claims).

Making Sense of Appropriation and Found Media. Students' appropriation skills are assessed as marginal, basic, or exemplary. Marginal appropriation implies evidence that is arbitrary because its relevance to the overriding identity argument is arcane. Basic appropriation indicates evidence that is thematically consistent, but its significance to the core identity argument is unclear. Exemplary appropriation, like exemplary citation, implies evidence that is meaningfully integrated into an argument.

Marginal Appropriation. Of the students who appropriated media, 54 percent demonstrated marginal skills because a lack of authorship yielded interpretive ambiguity. In 10 cases, meanings are tenuous: A soccer poster, for example, likely conveys a sports enthusiast. In 12 cases, the message is cryptic: One student, for instance, appropriated a postcard of a lighthouse without explanation.

Basic Appropriation. Twenty-three percent of the students who appropriated media demonstrated basic skills. The appropriations in this group merely develop the profile's ambiance but do not concretely justify identity claims.

Exemplary Appropriation. Twenty-three percent of students demonstrated exemplary skills because the co-opted media tangibly justifies a contiguous identity claim within the profile.

Performance

Performance is "the ability to adopt alternative identities for the purpose of improvisation and discovery" (Jenkins et al., 2009, p. 4). In offline composition, persuasiveness is associated with a stable academic voice. In online writing environments, however, performance espouses a converse showmanship strategy. Compelling online arguments are sustained by the convergence of multiple voices to a consistent point. Hence the ability to "move fluidly and effectively between roles" (p. 4) is a performance hallmark.

Demonstrating Performance. Clarification of the criteria used to identify performance is in order. Only data that directly archive performance are surveyed. We do not consider declarative statements such as "I play guitar" to be a musical performance. Performance must be instantiated by documentation such as a videotape or still photos of an actual recital. Because text is a record of writing performance, text performances are evaluated by their adherence to discourse and genre conventions. This means an academic voice must be *performed* by posting an essay. A poetic voice must be evidenced by a poem and so on.

Analyzing Voices. Across the dataset, performance is archived in text, image, and video. Eighty-six students posted text performances. Twelve students documented performance with an image. Two students posted videos that showcase musicianship.

Academic Voices. In fulfillment of curricular requirements, all but five students performed a traditional academic voice by posting an essay to their blog. The majority of students also developed more nuanced educational identities by performing voices not officially sanctioned by institutional culture. Nineteen students conveyed educational intentions in a casual tone. For example, one student supplemented his essay with a flippant declaration: "Third Revision!!! Yes People I did a Third Revision!!!" Academic informality is also performed in this invitational post: "Here is my [essay], so if you read it let me know what you think of the context, and what you think about the writing style. I will take into account your feedback, thank you." Six students used an informal voice to recommend academic books.

Seven students developed academic identity using ungrammatical (cf. Morgan, 1998) voices. An academic confession, for example, is rendered all the more credible by its grammatical errors: "But writing is something I know I need help on and having a heads start before I go to college is great." The remaining ungrammatical voices demonstrate educational aspirations and student resiliency. One student paid homage to her alcoholic father: "I be waking to the sounds of him throwing up blood and vomit in the early mornings . . . My father always hoped I would achieve more than he did by graduating from high school, going to college, and having the life he never had." Another student wrote: "Third year in United States I missed my mother. I was scared and nervous because all the students knew English . . . They thought that we were idiots . . ." An additional eight students performed a bilingual student identity by posting in either French or Spanish.

Creative Voices. By layering nonacademic voices upon their core academic performances, the identity arguments become increasingly complex. Twenty-nine students performed creative voices that complement academic identity with claims of artistic status. Poetry was performed by seventeen students. Five authors adhered to the formal conventions of haiku and sonnet. The rest performed lyrical prose such as: "The smell of gun powder after shots are fired. Cold nights at home without a heater. The smell of grandma's favorite perfume."

Twelve students embellished creative claims with image and video performances. Three visual artists posted images of their work. Two musicians archived performances on video. A gamer posted screenshots of her Pocket Legends avatar complete with specs as is custom-

ary gamer etiquette (Robison, 2008). One student performed a hairstyle with before and after photographs. Three students performed the voice of a political activist via images that document their participation in marches. One student corroborated botanical talent with a harvested rose blossom (see Table 1 for a selection of performance artifacts by multimodal voice).

Making Sense of Performance and Student Voices. In assessing students' performance skills as marginal, basic, or exemplary, we focus on the way an identity argument is either nurtured or dislocated by an accumulation of voices. Marginal performance indicates a negligible quantity of voice(s) and an identity that is consequently monotone. A basic performance suggests the presence of multiple voices, but the voices do not cohere, and the effect is disjointed. Exemplary performance indicates multiple voices that function like a chorus to express a complex identity portrait.

Marginal Performance. Twenty-seven percent of the cohort performed an identity argument that is hollow. The five students who refrained from text performance altogether occupy this category by default. An additional 20 students performed only a formal academic voice by way of the essays attached to their blogs.

Basic Performance. The majority of performances, 52 percent, inhabit this category. These students demonstrated an ability to perform/write using the conventions of at least two, often three, discourses. Thirty-five students performed a trio of identities, but the voices do not harmonize to develop an identity message that gives more than a superficial impression of disjointed traits. The performances lack organization.

Exemplary Performance. Less than 20 percent performed an exemplary recital of identity where the collective of voices are complementary and the profile argument is richly developed. The quantity and quality of voices as well as their logical configuration within the profile determine exemplary standing. It is worth noting that students in this group also demonstrated exemplary skills in the other two new media literacies.

Discussion

Implications are addressed in terms of improving postsecondary opportunity for students who are underprepared for composition writing. Discussion involves weighing the theoretical advantages of a dual-discourse approach to writing remediation against the litany of computer-usability concerns raised by the data. In light of the digitalization debate and its cautionary inferences, we defer resolutions. Instead, we advocate

directions for research to guide the development of policies that support the compound literacy needs of low-income students.

Why Online Literacies Matter to Offline Literacies

Digital practice is an invisible component of the writing challenges students face in order to graduate (Goode, 2010). The data suggest students who are underprepared according to traditional writing criteria face additional barriers to academic success because of low computer skills. The implications are twofold. First, underpreparedness may be systemic across discourses. Second, today's remedial writers may be challenged by a kind of literacy double jeopardy that is unique to the 21st century. Weak composition and computer skills may conspire to obstruct academic achievement. Unless remediation attends to this modern spate of literacy underpreparedness, student outcomes are unlikely to improve.

In review, theoretical support for a paired discourse approach to writing remediation is found in a framework that defines literacies by plurality, hybridity, and identity (Gee, 2000). Plurality legitimates the integration of digital and traditional literacy practices under a broad college writing header. Hybridity focuses attention on a skill set that bridges online and offline writing domains. Identity emphasizes the cultural membership signaled by writers who successfully perform the different kinds of writing expected in classroom and virtual settings.

The presentation and analyses of students' visualization, appropriation, and performance skills elucidate the parallels between digital writing and college composition. The implication is that underdeveloped argumentative skills constrain writing quality in online and offline situations concurrently. Understanding what constitutes a good thesis statement or a good profile picture is inconsequential if students lack the ability to abridge an argument. Citing evidence effectively offline or appropriating evidence successfully online is impossible if students lack a basic understanding of argument justification. Writing with an academic voice presupposes that students understand the role showmanship plays in producing college-level work.

Although these parallels represent one explanation for poor writing quality across discourses, the depth of digital weakness found here implies there is much more at stake than underdeveloped argumentative skills. The majority of students demonstrated such low new media literacies that dire usability concerns are raised. Visualization, appropriation, and performance represent basic Internet survival skills (Eshet-Alkalai, 2004). We explore not only the extensiveness of technical

concerns implied by the data but also the interdependence of online and offline literacies. For remedial writers who are also digitally underprepared, this interdependence necessarily encumbers college readiness unless computer skills simultaneously improve.

Note that for each new media literacy, marginal and basic skill ratings imply a limited scope of digital behaviors and a dearth of the kind of risk-taking and experimentation associated with digital proficiency (Greenhow, Robelia, & Hughes, 2009). For these reasons, we equate only exemplary skills with college readiness.

Why Visualization Matters. Seventy-two percent of the cohort did not demonstrate visualization proficiency. While posting a profile picture may seem academically trivial, the skill it invokes is critical to online functioning because the Internet is a visual medium (Hocks, 2003). The ability to decode images is paramount in cyberspace where graphical interfaces typify web-based environments (Kress, 2003). A student who has difficulty with visual lexicons, for example, will have trouble interpreting directional icons and traversing e-menus. Weak visualization stifles the efficiency with which students navigate the Internet and hinders access to its academic resources. Students whose visualization skills are underdeveloped are therefore at a technical disadvantage.

In addition to efficiency concerns, the data suggest knowledge gaps. The most effective demonstrations of visualization are the profile pictures that were digitally altered to increase argumentative value. Students who did not know how to operate image-editing software (or even know that such software exists) did not have access to this resource. The principle enforced here is that digital ability is contingent upon understanding what computers *can* do (and *how* they do it). If students do not possess a basic awareness of what is technologically possible, they will not be able to use technology to perform elemental functions for academic purposes.

Why Appropriation Matters. Of the 43 students who appropriated media, 77 percent did not demonstrate proficiency. As a gauge of technological skill, appropriation signifies the ability to conduct online information searches. Because information retrieval is inescapably linked to technology use (Bellard, 2005), online search behaviors impact writers regardless of medium. If students are not agile Internet searchers, their capacity either to appropriate media for online writing situations or to find credible sources that support traditional composition is constrained. Information discernment is also captured by appropriation. College writers must be able to sift through electronic clutter to choose information that fulfills an argumentative purpose. Understanding basic Boolean techniques that filter information, for example, im-

proves search accuracy and supports online and offline writing quality (Fernández-Luna, Huete, MacFarlane, & Efthimiadis, 2009). Arguably, conducting efficient online queries is a harbinger of college readiness.

Notably, the majority of students abstained from appropriation altogether. Given otherwise full participation in all other skill categories, this finding signals what researchers call "computer avoidance," a behavior associated with digital inexperience (Mcilroy, Sadler, & Boojawon, 2007). For the 48 students who did not appropriate any media, the implication is that they have limited if not questionable Internet search practices.

Why Performance Matters. Unlike paper-based writing, digital writing is not confined to two dimensions. In cyberspace, literacy is a multidimensional proposition where the rules of knowledge creation and consumption reflect *hypertextuality* (Riffaterre, 1994). For one thing, users are not expected to write (or read) sentences in a linear order. Embedding (or clicking on) links—formally known as hypertext—involves zigzagging across sundry textual and visual domains.

Performance reflects the circuitous literacy patterns endemic online and signals acclimation to cyberspace norms (Spiro, Feltovitch, Jacobson, & Coulson, 1991). Seventy-nine percent of the cohort did not demonstrate competency in this category. Low levels of performance imply not only an unfamiliarity with "the unique *rhetorics* of interactive communication" (Buckingham, 2006, p. 268) but also a disinclination to access links. Findings suggest minimal levels of Internet experience and an underdeveloped capacity to benefit from hypertext resources (cf. Eshet-Alkalai, 2004).

Addressing Digital Literacy Concerns

We have drawn explicit parallels between three discourse conventions associated with college-level writing and three new media literacies identified by digital scholars as core competencies. Findings demonstrate not only the snare of disadvantages associated with weak digital skills but also the constraints on college writing implied by online inefficiencies. The viewpoint that college writing is a dual discourse enterprise represents an ideological disconnect with academic tradition. Only a generation ago, one did not need to consider new media literacies because writers largely wrote as they had for centuries. The technologies had progressed—from quill to typewriter to word processor—but the mode of meaning representation remained two-dimensional text. Online technologies, however, have expanded the spatial and modal possibilities of literacy. As a result, engagement with technology fundamentally alters how students construct their identities as writers (Buckingham,

2008). The quality of engagement, however, varies significantly, and the identity implications are not inexorably beneficial. The data suggest a cautionary tale in which digital underpreparedness poses a hidden threat to students whose degree prospects are already severely reduced by underprepared composition skills.

Ideological controversy notwithstanding, the moral of such a story is elusive without empirical guidance. It is clear that digital skills are important to students' academic well-being. It is also clear that the digital environments of higher education have introduced a new form of inequality that heightens extant access barriers. Yet because these are emerging technologies, it is not clear how to address the disparity and if simply adding online discourse to the college writing menu will improve student outcomes. Argumentation, by pencil or pixel, is one currency students need to succeed in higher education, but we cannot claim that developing digital literacy makes students better compositionists (or the other way around).

As acknowledged at the outset of this work, there are important concerns surrounding the unintended consequences of technological engagement. While it is hard to imagine an approach to writing remediation that fares worse than the 17 percent attainment outcomes of the current model, we do not endorse curricular roulette. Neither do we consider that a technology makeover is valid to meet the literacy preferences of so-called digital natives (Bennett, Maton, & Kervin, 2008). If anything, findings negate the notion that incoming students are digital wunderkinds. The data support the supposition that digital disparities intensify an already formidable college preparation gap.

College writers in the 21st century face an academic culture that is markedly different from the conditions their predecessors encountered. For students to fulfill their role as online/offline discourse navigators, a college readiness agenda that is attentive to both composition and digital discourses is warranted. The optimal shape of such an agenda, however, is yet uncertain. More research that investigates this frontier of digital literacies (and how they interact with traditional writing education) is necessary to prevent further widening of the preparation gap.

Future Directions

The so-called "digital turn" (Mills, 2010) in sociocultural literacy research over the past decade provides theoretical support for merging composition with digital skills instruction. Nonetheless, there is a dearth of studies that investigate new media writing with remedial student populations. Research to discern the efficacy of technology as a remediation strategy is needed. Studies that track achievement based on new media

writing instruction will be useful as will studies that examine the influence of digital underpreparedness on students' composition skills. We encourage applied work regarding the impact of hybrid literacy strategies across online and offline discourse situations.

There is also a need for research that is attentive to the risks of technology use in education settings. Remediation research recognizes the importance of identity to improving students' writing (Gutiérrez, Morales, & Martinez, 2009; Lowenthal & White, 2010). The finding of mutuality between identity and literacy development in these studies has important implications in light of digital scholarship that indicates virtual selves are tied to real life identity formation (Bargh, McKenna, & Fitzsimons, 2002; McKenna, Green, & Gleason, 2002). Additionally, the influence of self-efficacy on writing improvement (Pajares & Valiante, 2008) suggests that the discursive possibilities examined in this article are subsumed by psychosocial issues. Ultimately, we need to better understand how technology, literacy, and identity intersect.

The integration of communication technologies with academic culture suggests that the writing habits of tomorrow's students will be navigational across myriad discourse situations that do and will yet exist. We recommend higher education's research agenda adjust to reflect these shifts. With only 17 percent of students enrolled in English remediation earning a degree, there are no reasonable grounds to preserve tradition, and yet a dearth of research leaves no better choice (Adelman, 2006). Even if remedial writers do manage to graduate, unless they can navigate online and offline discourses, they will still not be prepared for the technological demands of the modern workforce (Kaminski, Switzer, & Gloeckner, 2009).

Writing habits in the new millennium have changed, but college writing ideologies have not kept pace. The interval delays literacy support for low-income students who arrive at tertiary settings without basic digital skills. Given the connection between technological proficiency and modern academic tasks, a forward-thinking model of college writing is in order. Inferences regarding technical possibilities—both romanticized claims and dystopic concerns—do not serve the needs of education policy makers (DiMaggio, Hargittai, Neuman, & Robinson, 2001). How institutions formally respond to the new forms of inequality that surface in the wake of digitalization will influence how college writing is ideologically defined in these nascent years of the electronic information age. For now, writing preparation and remediation to support the bifurcated literacy needs of all tomorrow's college students resides at a crossroads.

References

Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college. Washington, DC: U.S. Department of Education.

Attewell, P., Domina, T., Lavin, D. E., & Levey, T. (2006). New evidence on college remediation. *The Journal of Higher Education, 77*(5), 886–924.

Aud, S., Hussar, W., Kena, G., Bianco, K., Frohlich, L., Kemp, J., & Tahan, K. (2011). *The condition of education 2011* (NCES 2011–033). Washington, DC: U.S. Department of Education.

Bahr, P. R. (2010). Revisiting the efficacy of postsecondary remediation: The moderating effects of depth/breadth of deficiency. *The Review of Higher Education, 33*(2), 177–205.

Bargh, J. A., McKenna, K. Y. A., & Fitzsimons, G. M. (2002). Can you see the real me? Activation and expression of the "true self" on the Internet. *Journal of Social Issues, 58*(1), 33–48.

Bellard, E. M. (2005). Information literacy needs of nontraditional graduate students in social work. *Research Strategies, 20*(4), 494–505.

Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology, 39*(5), 775–786.

Boyd, D., & Ellison, N. (2008). Social network sites: Definition, history, and scholarship. *Journal of Computer Mediated Communication, 13*(1), 210–230.

Brown, G., & Yule, G. (1983). *Discourse analysis.* Cambridge, UK: Cambridge University Press.

Buckingham, D. (2006). Defining digital literacy. What do young people need to know about digital media. *Nordic Journal of Digital Literacy, 4*(1), 263–276.

Buckingham, D. (2008). Introducing identity. In D. Buckingham (Ed.), *Youth, identity, and digital media* (pp. 1–24). Cambridge, MA: The M.I.T. Press.

Bureau of Labor Statistics. (2010). *College enrollment and work activity of 2009 high school graduates.* Washington, DC: U.S. Department of Labor.

Carr, N. (2008). Is Google making us stupid? Why you can't read the way you used to. *Atlantic Monthly, 302*(1), 56–63.

Carrell, P. L. (1982). Cohesion is not coherence. *TESOL Quarterly, 16*(4), 479–488.

Cazden, C., Cope, B., Fairclough, N., Gee, J., Kalantzis, M., Kress, G., . . . Nakata, M. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60–92.

Coiro, J., Knobel, M., Lankshear, C., & Leu, D. (2008). *Handbook of research on new literacies.* Mahwah, NJ: Lawrence Earlbaum Associates, Inc.

Dimaggio, P., Hargittai, E., Neuman, W. R., & Robinson, J. P. (2001). Social implications of the Internet. *Annual Review of Sociology,* 307–336.

Döring, N. (2002). Personal home pages on the web: A review of research. *Journal of Computer Mediated Communication, 7*(3). Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2002.tb00152.x/full

Dziuban, C., Moskal, P., & Hartman, J. (2005). Higher education, blended learning and the generations: Knowledge is power—no more. In J. Bourne & J. C. Moore (Eds.),

Elements of quality online education: Engaging communities (pp. 85–100). Needham, MA: Sloan Center for Online Education.

Eshet-Alkalai, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia, 13*(1), 93.

Fairlie, R. W., Beltran, D. O., & Das, K. K. (2010). Home computers and educational outcomes: Evidence from the NLSY97 and CPS. *Economic Inquiry, 48*(3), 771–792.

Fernández-Luna, J. M., Huete, J. F., MacFarlane, A., & Efthimiadis, E. N. (2009). Teaching and learning in information retrieval. *Information Retrieval, 12*(2), 201–226.

Gee, J. (2000). Teenagers in new times: A new literacy studies perspective. *Journal of Adolescent & Adult Literacy,* 412–420.

Gee, J. (2008). *Social linguistics and literacies: Ideology in discourses.* New York, NY: Taylor & Francis.

Goode, J. (2010). Mind the gap: The digital dimension of college access. *The Journal of Higher Education, 81*(5), 583–618.

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age. *Educational Researcher, 38*(4), 246–259.

Gutiérrez, K., Morales, P. Z., & Martinez, D. C. (2009). Re-mediating literacy: Culture, difference, and learning for students from nondominant communities. *Review of Research in Education, 33*(1), 212–245.

Hall, W., De Roure, D., & Shadbolt, N. (2009). The evolution of the web and implications for eresearch. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 367*(1890), 991.

Hargittai, E. (2010). Digital na(t)ives? Variation in Internet skills and uses among members of the "net generation." *Sociological Inquiry, 80*(1), 92–113.

Hocks, M. E. (2003). Understanding visual rhetoric in digital writing environments. *College Composition and Communication, 54*(4), 629–656.

Ito, M., Baumer, S., Bittanti, M., Cody, R., Herr-Stephenson, B., Horst, H. A., . . . Pascoe, C. (2010). *Hanging out, messing around, and geeking out: Kids living and learning with new media.* Cambridge, MA: The M.I.T. Press.

Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century.* Cambridge, MA: The M.I.T. Press.

Jones, S., Johnson-Yale, C., Millermaier, S., & Pérez, F. S. (2009). U.S. college students' Internet use: Race, gender and digital divides. *Journal of Computer-Mediated Communication, 14*(2), 244–264.

Kaminski, K., Switzer, J., & Gloeckner, G. (2009). Workforce readiness: A study of university students' fluency with information technology. *Computers & Education, 53*(2), 228–233.

Kress, G. (2003). *Literacy in the new media age.* New York, NY: Routledge.

Livingstone, S. (2004). Media literacy and the challenge of new information and communication technologies. *The Communication Review, 7*(1), 3–14.

Lowenthal, P. R., & White, J. W. (2010). Minority college students and tacit "codes of power": Developing academic discourses and identities. *The Review of Higher Education, 34*(2), 283–318.

Luckin, R., Clark, W., Graber, R., Logan, K., Mee, A., & Oliver, M. (2009). Do web 2.0 tools really open the door to learning? Practices, perceptions and profiles of 11–16-year-old students. *Learning, Media and Technology, 34*(2), 87–104.

Mcilroy, D., Sadler, C., & Boojawon, N. (2007). Computer phobia and computer self-efficacy: Their association with undergraduates' use of university computer facilities. *Computers in Human Behavior, 23*(3), 1285–1299.

McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues, 58*(1), 9–31.

McLuhan, M., & Fiore, Q. (1967). *The medium is the massage: An inventory of effects*. Berkeley, CA: Gingko Press.

Messaris, P. (1998). Visual aspects of media literacy. *Journal of Communication, 48*(1), 70–80.

Mills, K. A. (2010). A review of the "digital turn" in the new literacy studies. *Review of Educational Research, 80*(2), 246.

Morgan, D. (1998). Ethical issues raised by students' personal writing. *College English, 60*(3), 318–325.

Nasah, A., DaCosta, B., Kinsell, C., & Seok, S. (2010). The digital literacy debate: An investigation of digital propensity and information and communication technology. *Educational Technology Research and Development, 58*(5), 531–555.

Nelson, M., Hull, G. A., & Roche-Smith, J. (2008). Challenges of multimedia self-presentation: Taking, and mistaking, the show on the road. *Written Communication, 25*(4), 415.

O'Brien, D. G. (1998). Multiple literacies in a high-school program for "at-risk" adolescents. In D. Alvermann (Ed.), *Reconceptualizing the literacies in adolescents' lives* (pp. 27–49). Mahwah, NJ: Lawrence Earlbaum Associates, Inc.

Pajares, F., & Valiante, G. (2008). Self-efficacy beliefs and motivation in writing development. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 158–170). New York, NY: Guilford Press.

Riffaterre, M. (1994). Intertextuality vs. hypertextuality. *New Literary History, 25*(4), 779–788.

Robison, A. (2008). The design is the game: Writing games, teaching writing. *Computers and Composition, 25*(3), 359–370.

Selwyn, N. (2007). The use of computer technology in university teaching and learning: A critical perspective. *Journal of Computer Assisted Learning, 23*(2), 83–94.

Slattery, P. J. (2010). The argumentative, multiple-source paper: College students reading, thinking and writing about divergent points of view. *Journal of Teaching Writing, 10*(2), 181–200.

Spiro, R. J., Feltovitch, P. L., Jacobson, M. J., & Coulson, R. L. (1991). Cognitive flexibility, constructivism and hypertext: Random access instruction for advanced knowledge acquisition in ill-structured domains. *Educational Technology, 31,* 24–33.

Stern, S. (2008). Producing sites, exploring identities: Youth online authorship. In D. Buckingham (Ed.), *Youth, identity, and digital media* (pp. 95–117). Cambridge, MA: The M.I.T. Press.

Strano, M. M. (2008). User descriptions and interpretations of self-presentation through

facebook profile images. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 2*(2), 5.

Strayhorn, T. L. (2011). Bridging the pipeline: Increasing underrepresented students' preparation for college through a summer bridge program. *American Behavioral Scientist, 55*(2), 142–159.

Street, B. (1998). New literacies in theory and practice: What are the implications for language in education? *Linguistics and Education, 10*(1), 1–24.

Trappes-Lomax, H. (2004). Discourse analysis. In A. Davies & C. Elder (Eds.), *The handbook of applied linguistics* (pp. 133–164). Malden, MA: Blackwell Publishing.

Turkle, S. (2008). Always-on/always-on-you: The tethered self. In J. Katz (Ed.), *Handbook of mobile communication studies* (pp. 121–137). Cambridge, MA: The M.I.T. Press.

Upton, T. A., & Cohen, M. A. (2009). An approach to corpus-based discourse analysis: The move analysis as example. *Discourse Studies, 11*(5), 585–605.

Van Deursen, A. J., Van Dijk, J. A., & Peters, O. (2011). Rethinking Internet skills: The contribution of gender, age, education, Internet experience, and hours online to medium-and content-related Internet skills. *Poetics, 39*(2), 125–144.

Vie, S. (2008). Digital divide 2.0. *Computers and Composition, 25*(1), 9–23.

Walker, K. (2000). "It's difficult to hide it": The presentation of self on Internet home pages. *Qualitative Sociology, 23*(1), 99–120.

Walpole, M. B. (2003). Socioeconomic status and college: How SES affects college experiences and outcomes. *Review of Higher Education, 27*(1), 45–74.

Warschauer, M., & Matuchniak, T. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use, and outcomes. *Review of Research in Education, 34*(1), 179.