



# Participation, interaction, and academic achievement in an online discussion environment



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## ABSTRACT

Though online writing can be beneficial for diverse students in out-of-school environments, there is little consensus on the value of its use in schools. This study examined the online discussion of 48 fifth-grade students and their teachers over the 2009–2010 school year in a public school with large numbers of English learners. We collected students' statewide standardized writing and reading test scores, as well as an archive of all participants' discussion threads during the school year. Students' participation and interaction pattern in the online discussion environment over a school year was examined using growth model analysis and social network analysis. The effect of students' participation on their academic achievement was analyzed using multiple regressions. The results suggest that well-designed online discussions among linguistically diverse upper elementary students can result in increased participation and interaction, leading to language and literacy development.

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## 1. Introduction

Writing is a vital skill for all students, and one that is not being mastered. On recent national tests in the United States ([National Center for Education Statistics, 2012d](#)), only 27% of eighth grade students performed at or above the proficiency level in writing, compared to 32% in science ([NCES, 2012c](#)), 34% in reading ([NCES, 2012b](#)), and 35% in mathematics ([NCES, 2012a](#)). Given that writing is connected to all content areas, these deficiencies in students' writing proficiency are hindering the development of academic English students need to achieve long-term educational success ([Jepsen & Alth, 2005](#); [Schleppegrell & Colombi, 2002](#)).

At the same time, the United States has long been marked by a sizable achievement gap in literacy between high- and low-performing students ([Abedi & Gándara, 2006](#); [Hemphill & Vanneman, 2011](#)). The impact of this gap is now magnified by changing demographics, with a rapidly growing Hispanic population that includes many English language learners (ELLs) and students from low-income families ([Fry, 2010](#)). The population of Hispanics increased from 35.2 million in 2000 to 51.9 million in 2011, a growth rate of 47.4%, compared with an increase of 10.7% for the total U.S. population ([Motel & Patten, 2013](#)). Roughly 70% of Hispanic students speak a language other than English at home ([Fry & Gonzales, 2008](#)).

These at-risk learners face a critical juncture occurs in upper elementary grades when, together with other students, they transition from *learning to read and write to reading and writing to learn* ([Chall & Jacobs, 2003](#)). While low-income and Hispanic students in lower elementary grades perform relatively well, their performance in upper elementary grades suffers as school-based literacy tasks become more complex and less dependent on contextual clues, making academic language difficult to master ([Collier, 1989](#); [Rosewell & Chall, 1992](#)). This results in a so-called *fourth-grade slump* that worsens through subsequent grades, eventually leading to an *eighth-grade cliff* ([Chall & Jacobs, 2003](#)). According to the National Assessment of Educational Progress ([Fry, 2007](#)), 35% of ELLs are behind in math and 47% are behind in reading when compared with their English-proficient peers in the fourth grade, whereas in the eighth grade 51% of ELLs are behind their counterparts in both reading and math.

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Many believe that the use of computers and digital technology may assist students' literacy development. Reading and writing via social media can be particularly beneficial for ELLs because such technology-mediated literacy activities provide ELLs more authentic opportunities to practice their written English, so the argument goes (Black, 2005; Bloch, 2007; Sun, 2009). Many students in the United States and other developed countries are engaged in a wide range of technology-facilitated literacy activities out of school, such as blogging, chatting, gaming, and publishing online. This is also the case for ELLs, who often seem to be less motivated to participate in classroom literacy activities (e.g., Black, 2005; Lam, 2004). However, students' out-of-school literacy practices are sometimes overlooked by teachers (Harklau & Pinnow, 2009; Williams, 2005). Public school teachers often lack the digital devices or robust in-class wireless access that would be necessary to exploit social media for writing instruction. Many teachers are also hesitant to use social media out of concern that attention to new digital literacies may come at the expense of academic ones. However, studies suggest that pedagogically sound incorporation of digital literacy into classroom practices can potentially lead to greater engagement and motivation by providing an authentic audience for students' writing, giving students the opportunity to get rapid feedback from others, and facilitating more equal participation of shy or reticent students (Warschauer, 1996, 2006, 2011).

The purpose of this study is to investigate linguistically diverse fifth grade students' participation and interaction in classroom reading-writing connected activities in an online discussion environment, and the relationship between their participation and academic achievements in reading and writing.

## 2. Conceptual framework

The conceptual framework that serves the current study is drawn from research related to 1) the reading-writing connection and 2) computer-mediated communication (CMC) and participation.

### 2.1. The reading-writing connection

Literacy is a form of communication between readers and writers in the sense that writers consider the expectations of their readers, and readers try to understand the intentions of writers (Nystrand, 1986). Understanding and promoting this reading-writing connection is especially important as students develop their identities as readers and writers during literacy development. Having students write about what they read can help students better connect, analyze, personalize, and manipulate ideas from the reading material and thus expand their literacy skills (Graham & Herbert, 2010).

Learning tends to be deeper and more meaningful when students develop their sense of authorship and audience as part of the reading-writing connection. Readers who have a good sense of authorship tend to better negotiate the meaning of texts and think critically about what they read, while writers who have a strong audience awareness are able to write more coherently than those who are less aware of their audience's needs (Baker, Rozendal, & Whitenack, 2000).

Building readers' sense of authorship enables them to adopt a communication-centered stance (Tierney & Shanahan, 1991) and to recall more information from texts (Salvatori, 1985; Tierney, LaZansky, Raphael, & Cohen, 1987). McKeown, Beck, and Worthy (1993) propose that students interact with the texts they read with a "reviser's eye" (p. 561). Interacting with texts helps students engage more actively in meaning-making, gain a deeper understanding of the content, and often find inspiration for their own writing (Langer, 2010). Studies have shown that writing during reading helps strengthen readers' sense of authorship, leading students to more critical, reflective and evaluative thinking (Colvin-Murphy, 1986; Salvatori, 1985; Tierney & Shanahan, 1991). As Smith (1988) notes,

To read like a writer, we engage with the author in what the author is writing. We anticipate what the author will say, so that the author is in effect writing on our behalf, not showing how something is done, but doing it with us. (p. 25)

This anticipation of meaning is valuable for tackling more complex language, since it provides a frame of reference for linking symbolic representation to its message. Students become more aware of the rhetorical structure of texts as they gain their own sense of authorship (Flower, 1987). Studies suggest that older and more proficient readers tend to have a stronger sense of authorship while younger readers show less awareness of authorial intent (McGee, 1992; Tierney & Shanahan, 1991). A lack of this sense of authorship may lead to difficulties in identifying the coherence or interpreting the rhetorical strategies of texts, which in turn may hinder reading comprehension (Tierney et al., 1987).

Just as a sense of authorship is valuable for readers, awareness of audience is important for writers. Better writers tend to be more sensitive to their audience and are able to adapt their texts to meet the needs of different audiences (e.g., Flower & Hayes, 1981; Roen & Willey, 1988). Writers who exhibit strong audience awareness are also more capable of making decisions about the topic, genre, and supporting details of their writing to facilitate effective communication (Nystrand, 1986).

It is widely believed that an interactive and dialogical environment has the potential to help deepen students' understanding of literacy texts during reading, and to strengthen their audience awareness during writing (Graves & Hansen, 1983; Soter et al., 2009; Tierney et al., 1987). Soter et al. (2009), based on a literature review of discussion approaches, suggest that learning tends to be deeper when students negotiate the meaning of reading texts with each other and collaboratively seek to interpret authors' ideas. Tierney, Leys, and Rogers (1986) compared writing by third graders in a collaborative learning environment to that of their peers in a traditional teacher-oriented environment; the results suggested that students in the collaborative learning environment were able to consider their audience when setting up goals for their writing, whereas students in the traditional learning environments seemed to be less aware of their audience.

Students put more effort into their compositions when they learn that a broader audience will read their texts (Gallini & Helman, 1995). Social media, which supports written interactions, could thus provide a favorable environment for heightening students' audience awareness and sense of authorship. Baker et al. (2000) examined fourth graders' writing in a computer-rich environment (including computer-generated animations, bulletin boards, and multimedia slideshows), and reported that the students became more aware of their

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